EFFECT OF INNOVATION ON FIRM COMPETITIVENESS: A STUDY OF SMALL AND MEDIUM ENTERPRISES IN THE MANUFACTURING SECTOR IN NAIROBI CITY COUNTY, KENYA

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DECLARATION

This Thesis is my original work and has not been presented for a degree in any other University. No part of this thesis should be reproduced without authority of the author or/and Kenyatta University

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DEDICATION

This Thesis is dedicated to my family, my husband Prof. Shitanda, my children Staice, Zayali and Zanelle; you are my inspiration and the force behind my determination and to my parents Mr. Paul K. Buyavo and Mrs. Peritah Kiveu, you laid the good foundation in education I will forever be indebted to you.

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TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

ABBREVIATION AND ACRONYMS

COMESA	Common Market for East and Southern Africa
EAC	East African Community
GDP	Growth Domestic Product
GOK	Government of Kenya
IFC	International Finance Corporation
KAM	Kenya Association of Manufacturers
KER	Kenya Economic Report
KNBS	Kenya National Bureau of Statistics
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KITP	Kenya Industrial Training programme
MOHEST	Ministry of Higher Education Science and Technology
MOIED	Ministry of Industrialization and Enterprise Development
MSMEs	Micro Small and Medium Enterprises
OECD	Organization for Economic Cooperation and Development
R&D	Research and Development
SMEs	Small and Medium Enterprises
STI	Science Technology and Innovation
UNCTAD	United Nations Conference on Trade and development
UNDP	United Nations Development Programme

OPERATIONAL DEFINITION OF TERMS

Competitiveness:	The ability and performance of a firm in the production and sale of their products and services in a given market in relation to the ability and performance of other related firms in the same market
Innovation:	The implementation of a new or significantly improved product, process, a new marketing method, or a new organisational method by the SMEs
Product Innovation	The development and implementation of a new or significantly improved product
Process Innovation	The development and implementation of a new or significantly improved process
Marketing Innovation	The development and implementation of new or significantly improved marketing methods
Organizational Innovation	The development and implementation of new or significantly improved organizational methods, procedures, systems
Innovation activities:	All activities involved in the development or implementation of a new or significantly improved product, process, marketing and organizational methods including those planned for implementation in the future. Include all scientific, technological, organisational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations.
Innovation Input:	Factors employed in the development and implementation of an innovation and include; Skills and Knowledge, finances, R & D activities, technology
Innovation Output:	Output of Innovation activities and include new products, service, process/ technology and new market.

Small and Medium Enterprises:	Enterprises that employ 5-99 permanent employees. Small enterprises employ 5-49 employees while Medium enterprises employ 50 -99 employees
Innovative SMEs:	SMEs which create value through innovation and have implemented at least one type of innovation
Firm:	A Business decision-making unit that employs productive resources to produce products/ services and offer them in the market with the aim of making some profit
Manufacturing Enterprises:	These are enterprises involved in the transformation of raw materials into intermediate goods or final products through a mechanised process. They include building, construction and mining enterprises; those engaged in chemical processing, agro-processing, metal processes, those involved in the production of pharmaceutical and medical equipment, energy, electrical and electronics, production of paper products, leather and leather products, plastics and rubber, textile and apparel
Radicalness of an Innovation:	Describes the degree of change in a product, service, or process
Radical Innovation	Completely new innovations that are unique, novel and that involve major changes leading to the substitution of existing products, services, processes or methods. The innovations are either new to the market, industry and the world.
Incremental Innovation	Innovations that involve minor improvements in existing products, processes, methods and systems. They involve adaptations, refinement and or enhancement.
Market Share	Firm's market share is the percentage it controls of the total market for its products and services.

ABSTRACT

SMEs are considered key drivers of socio-economic development and competitiveness due to their multifaceted contributions to the economy. Despite the crucial role they play in the economy, SMEs face various challenges that stifle their potential and contribution to socio-economic development. Manufacturing SMEs are critical in Kenya's development and yet remain uncompetitive, characterised by production of less diversified products, stagnated growth and contribution and low survival rates. To effectively contribute to economic development, the SMEs need to establish and maintain their competitiveness. Innovation is widely acknowledged as one of the key factors in SME competitiveness and has become prominent in SMEs strategies and government policy. In Kenya, Vision 2030 seeks to intensify the application of Science, technology and innovation to improve productivity and competitiveness of the key sectors.Despite the ardent attention on innovation, empirical studies linking innovation and firm competitiveness are very limited in developing countries like Kenya. This study therefore sought to establish the effect of innovation on firm competitiveness by focusing on manufacturing SMEs in Nairobi County, Kenya. The general objective of the study was to investigate the effect of innovation on firm competitiveness while the specific objectives of the study were; to establish the effect of product innovation on firm competitiveness, to analyse the effect of process innovation on firm competitiveness; to assess the effect of marketing innovation on firm competitiveness; to determine the effect of organizational innovations on firm competitiveness; to examine the combined effect of process, product, marketing and organizational innovations on firm competitiveness and lastly to investigate the moderating effect of firm size on innovation and SMEs' competitiveness in Manufacturing SMEs in Nairobi county. The study is anchored in Schumpeter's theory of entrepreneurship and innovation; the theory of the innovative firm; the resource based theory and the dynamic capability theory. To realise the research objectives, a descripto - explanatory research design with a survey strategy was employed. The target population for the study was manufacturing SMEs in Nairobi City County. A sample of 284 enterprises from three industrial Clusters; Industrial area, Ruaraka/babadogo and kariobangi /outering/ the area off mombasa and airport road was drawn. The main instrument of data collection was a semi-structured questionnaire administered to the owner/ manager of the enterprises. Descriptive and inferential statistics were used to analyse data. Multiple Linear regression model was used to analyse relationships and the effect of innovation on firm competitiveness. Study findings reveal that all the four types of innovation; Product, Process, Marketing and Organizational had positive effect oncompetitiveness. However product innovation had insignificant effect (β=0.19, p=0.834> 0.05) while process (β=0.306, p=0.001< 0.05), Marketing Innovation (β=0.205, p=0.021< 0.05), Organizational innovation (β=0.194, p=0.033< 0.05) and combined Innovation (β=0.521, p=0.000< 0.05) had signgificant effect on firm competitiveness.The study also revealed that firm size had significant moderating effect on the innovation and competitiveness relationship. The study recommends that SME practioners consider implementing innovations to enhance their competitiveness, especially innovations with higher novelty that are new to the market, industry, country or the world. To achieve this SMEs need to form linkages and cooperate in innovation with knowledge generating institutions that provide new knowledge. The government on the other hand need to promote and support research that leads to the creation of new knowledge critical for innovation. Lastly the study recommends further research on the relationship between the nature of innovations and the level of impact on firm competitiveness and to empirically establish that radical innovations have a higher impact on firm competitiveness.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Small and Medium Enterprises (SMEs) are globally recognised as catalysts for global economic growth. SMEs are considered key drivers of socio-economic development and competitiveness due to their multifaceted contributions to the economy. The sector generates significant income and employment, provides opportunities for developing and adopting appropriate technology, and is a major source for innovations (OECD, 2000; Shiu & Walker, 2007; Subrahmanya, Mathirajan & Krishnaswamy, 2010). SMEs also play a critical role in the penetration of new markets and stimulate growth and development of economies (UNDP, 2015).

SMEs being at the centre of innovation practices are considered key players in the competitiveness and growth of nations(UNCTAD, 2002). These enterprises dominate world businesses and are estimated to be more than 95% of all enterprises worldwide, providing over 60% employment in the private sector. In developed countries, SMEs contribute about 64 percent to the GDP and 62 percent of employment (Ayyagari et al., 2007). In Kenya, SMEs cut across all sectors of the economy, and are a major source of employment, income and is key in poverty reduction (GOK, 2005). Ninety eight percent (98 %) of all businesses in the country are SMEs wich contribute about 25 % of GDP and 50% of formal employment giving an employment growth rate of 12-14% per annum (MOIED, 2015; KNBS, 2016).

Kenya Vision 2030 the national blueprint strategy for development and growth acknowledges the crucial role played by SMEs in the economy. SMEs are central in national development strategies aimed at stirring up economic activity and reducing unemployment and poverty. Hence a competitive SME sector is a must if the country is to and attain vision 2030 (GOK, 2007). The sector has over the years been recognized for its role in the provision of goods and services, in stirring competition, fostering innovation, generating employment and poverty alleviation (KNBS, 2016, KAM, 2015).

SMEs are important in national development as they form linkages between small-scale producers and local, national, or export markets; drive competition and innovation; introduce new business methods, products, and services, enhance the enterprise culture; drive industrialization and are a seedbed for entrepreneurial pursuits. SMEs stand out as the definite foundation of economic diversification and expansion, contributing enormously to socio-economic growth (MOIED, 2015; Kiraka, Kobia & Katwalo, 2013; GOK, 2005).

SMEs due to their contribution are thought to be the foundation of entrepreneurial development in economies and key in inculcating an entrepreneurial culture that drives industrial and economic development (OECD, 2004). Entrepreneurship on the other hand is an important lever for employment creation and economic development and is being fronted world wide as a model for socio-economic development. In Kenya, entrepreneurship has almost become synonymous with the SME sector. SMEs are the seedbed of entrepreneurship owing to the fact that entrepreneurship is majorly practiced and nurtured in the SMEs. Hence to promote entrepreneurship for development, the

Government of Kenya seeks to establish an enabling legal framework for the development of the SME Sector (GOK, 2005; KNBS, 2016).

Despite the crucial role played by SMEs in economic growth, the enterprises face serious challenges that stifle their potential and contribution to development. One of the 21st century challenges for most firms especially SMEs is increasing global competition in a market that is very dynamic(Kadosca, 2006; Kiraka, 2009; Mensah & Acquah, 2015). The prevailing business environment is characterised by increasing globalization, rapid technological advancement and short product cycles. This requires firms to establish and maintain their competitiveness for survival and growth (Kiraka, 2009). It is therefore imperative that SMEs increase their individual competitiveness to compete effectively and benefit from opportunities in the environment (USAID, 2012; Kiraka, Kobia & Katwalo, 2013).

SMEs primary competitive advantage has been attributed to their potential to innovate and the flexibility to promptly adjust to meet market needs (Delbridge et al., 2005). Innovation is considered vital to the existence of a typical SME. Quick decision-making to alleviate external threats while capitalizing on opportunities also gives SMEs an advantage (Murphy & Ledwith, 2007). This is possible due to the fact that SMEs are more horizontally - integrated with fewer levels of management and bureaucracy in comparison with larger enterprises making them simplify their management (Kumar et al. 2005).

1.1.1 The Concept of Competitiveness

In the current dynamic economic environment, competitiveness is a critical factor for a firm's survival, growth and success (Oral & Kettani, 2009). Intense competition requires firms to be competitive for survival. Small firms in developing countries need to enhance

their competitiveness to survive by surmounting the limitations in their local markets to thrive. A thriving SMEs due to their contribution will also have an impact on the competitiveness of economies (Liargovas and Skandalis, 2015).

Despite the fact that there is agreement and acknowledgement on the need and importance of competitiveness for firms and economies, a concise definition of the concept still remains elusive. Competitiveness is a multifaceted and relative concept that makes it complex (Szerb, 2009). This has led to broad and varied definitions of competitiveness based on the school of thought ascribed to.

Ramasamy (1995) defines "competitiveness as the ability of an enterprise to increase its market share, profit and growth while sustaining its position in the market for a period of time". According to Porter (1990) firm competitiveness is "the ability of a given firm to successfully compete in a given business environment". According to him competitiveness is dependent on dynamism, innovation and the ability to change and adjust. Lall (2001) on the other hand considers competitiveness as "the ability of a firm to do better than others in terms of profitability, sales and market share". He argues that firm competitiveness is essential for them enhance and defend their position in the market.

Altenburg *et al.* (1998) defines enterprise competitiveness as "the ability to sustain a market position by providing quality products on time and at competitive prices". Hence for firms to be competitive they need the flexibility to rapidly adjust to changes in the market by strengthening their innovative capacity. Firm competitiveness is also considered as "its ability to outperform rivals with an impact on its present market share" (Stojcic, Hashi & Telhaj, 2011). Pedraza (2014) defines competitiveness as "the ability of firms to

sell products that meet market requirements while ensuring profits overtime for the firm to enable it survive and thrive in competition".

The relativeness of competitiveness makes it difficult to come up with a definitive conclusive measure. However there seems to be consensus on several factors/ measures that can be used to measure competitiveness. Competitiveness is a function of several firm factors that are interrelated and include productivity, market share, profitability, efficiency, product range, value creation and customer satisfaction. Sources of firm competitiveness include product differentiation, product/ service quality and variety, novelty, process efficiency, cost reduction, adoption of technology and export attractiveness (Pedraza, 2014).

Competitive enterprises are expected to exhibit higher growth rate in terms of sales and revenues, better returns on investment, higher market share, higher market access and control of distribution as compared to non-competitive firms (Selcuk, 2016). Such firms are characterised by reduced production cost leading to increased profits and have the ability to sell in the market while meeting market requirements. These factors ensure constant profits with an increasing market share in the face of competition (Pedraza, 2014).

Several measures of competitiveness have been considered from the use of simple indicators to complex indexes (Buzzigoli & Viviani, 2009). For some time, competitiveness was closely linked to a firm's long-term profit and superior returns (Buckley *et al*., 1988). According to Konstantinos and Skandalis (2009) financial

performance can be used to measure firm competitiveness thus a good financial performance indicates a competitive firm (Konstantinos & Skandalis, 2015).

Firm competitiveness has been measured using several financial indicators that include return on sales, return on assets, turnover. The advantage of financial performance measures is the easiness of computation as well as the presence of standardized universal definitions. Apart from financial indicators, several non-financial indicators have also been used to indicate competitiveness and these include market indicators like market share and market share growth of the firm (Liargovas & Konstantinos, 2009). For firm competitiveness, sales, volume, productivity and market share have been used as indicators. Financial performance has also been used to indicate market share (Buckley *et al.*, 1988).

Productivity has also been associated with competitiveness and is considered a good indicator of a firm's long-term competitiveness. Porter relates firm competitiveness to productivity growth of the firm. (Porter, 1990). Hence high productivity may indicate higher competitiveness (Momaya & Ambastha, 2004).Export competitiveness has also been used to indicate competitiveness. A firm that is able to export its goods to global markets may be considered to be competitive in the global market (UNCTAD, 2002).

Financial and Market performance indicators are widely used as measures of competitiveness. Market performance indicators usually correlate with financial performance (Slater & Olson, 2000). An increasing market share and sales will most likely correlate with increased profits. Improved and efficient processes will at most translate to reduced costs which translate to higher profits. Export growth / attractiveness will most

likely translate to sales leading to increased profits. Several studies have adopted the use of profit and market share as proxies to measure firm competitiveness (Liargovas & Konstantinos, 2009; Lalinsky, 2013; Selcuk, 2016).

More often than not, outsiders normally rate a firm's competitiveness using its performance and hence the use of performance to indicate how competitive a firm is (Sidek & Rosli, 2013).It is assumed that competitiveness often results in good performance and competitive firms perform better than other firms. Commonly used performance measures for firms that include profitability, productivity, market share and export performance have been used as a proxies for firm competitiveness (Sidek & Rosli, 2013; Lalinsky, 2013; Selcuk, 2013). Profitability measure has been frequently used to measure firm competitiveness **(**Najib, 2013).

1.1.2 The Concept of Innovation

Innovation is one of the key features of entrepreneurial behaviour that has been significantly linked to SMEs (Oke & Myers, 2007). Innovation is widely acknowledged as a core factor to increased productivity and competitiveness. It is one of the key practices underpinning the survival and competitiveness of firms in a competitive globalised environment (Sheu, 2007; Kiraka, Kobia & Katwalo, 2013; Lin & Chen, 2007). According to Porter (1996), a firm is able to compete effectively if it generates a specific and durable differentiating factor and innovation is one of the key ways through which firms can create the differentiating factor.

Within the business context, innovation is often considered the basis of strategic change through which firms can gain and sustain competitive advantage (Lin & Chen, 2007). An

essential tool of firm strategies, innovation can enable firms to differentiate their products, improve efficiency, penetrate new markets and raise market share to establish competitiveness (Gunday, Ulusoy, Kilic & Alpkan, 2008). Based on this notion, SMEs are increasingly turning to innovation to develop and sustain their competitiveness.

Innovation is considered a dominant factor in firm competitiveness and the ability to innovate the single most important factor in enhancing and sustaining competitiveness (Tidd, 2001). Drucker (1985) describes innovation as "the explicit tool for entrepreneurs and firms'' leading to the growth of a strong and vibrant SME sector. Porter (1998) describes innovation as "a business practice that firms can employ to achieve their objectives by the implementation of better methods and processes for competitiveness. A firm's ability to compete is largely determined by its capability to create a specific and durable differentiating factor and be achieved through innovation among other firm activities (Porter, 1996). Increasing global competitive pressure, shortened product lifecycles and ease of imitation make it necessary for firms to innovate to sustain competitiveness (Hamid & Tasmin, 2013).

Innovation is increasingly becoming an vital competence factor and source of strategic change for sustained competitive advantage (Lin & Chen, 2007; Sheu, 2007). As a result, pressure on all businesses to continually innovate by developing and launching new products and services is greater than ever (Kiraka, Kobia & Katwalo, 2013). Innovation is a key source of competitiveness in SMEs most of which have limited resources (Dibrell, Davis, & Craig, 2008; Varis & Littunen, 2010). Innovative enterprises are able to implement new products and processes that position them ahead of their competitors (Griffith *et al*., 2009).

Innovation is a major practice underpinning the survival and competitiveness of firms in a competitive globalised environment (Sheu, 2007; Kiraka, Kobia & Katwalo, 2013; Lin & Chen, 2007). As an essential tool for firm strategies, innovation enables firms to achieve sustained profitability and growth, to acess new markets, enhance their market share hence compete effectively (Ulusoy, Kilic & Alpkan, 2011). As such innovation has become central to firm strategies and government policies in the pursuit of firm competitiveness and ultimately national competitiveness. Innovation in pursuit of competiveness remains a credible goal of many firms, national policies and is central in many firms' competitiveness (Cantwell, 2003; Gray, 2006; Aikeli, 2007).

Despite the acknowledged importance and a lot of attention on innovation among researchers, academicians, practitioners and policy makers, there is still no standard approved single definition of innovation (Johannessen, Olsen & Lumpkin, 2001; Afuah, 2003). Innovation still remains a broad concept that is conceptualised in different ways. As such, attempts to define the term has resulted in widely varying definitions and conceptualisations. This study reviewed several definitions put forward by different authors with the view of getting a clear and broad understanding of the concept.

Schumpeter (1934) defines innovation as "the introduction of a product which is new to consumers or one of higher quality than existing products, new methods of production, the opening of new markets, the use of new sources of supply and new forms of competition, that lead to the restructuring of an industry" (Schumpeter, 1934). According to him, innovation leads to economic development through "creative destruction".

Forsman (2010) defines “innovation as the generation and implementation of new or improved processes, products/ services, production methods or single actions aimed at increasing the competitiveness of an enterprise”. Drucker (1985) views innovation as a major condition for entrepreneurship and a tool for entrepreneurs.

Oslo OECD Innovation manual defines “innovation as the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations” (OECD, 2005). According to the manual, the essentials of innovation include newness and commercialization whereby the products, process, methods are brought to the market and to practical use includes products, processes and methods developed by the firm and those adopted from other external organizations (OECD, 2005).

Even though the firm is central in the innovation process and is considered the driving force behind innovations, it is acknowledged that innovation need supportive institutional settings for knowledge creation and diffusion. The innovation systems framework was developed to integrate the role of other actors in the innovation process (OECD, 2005). This framework is based on the fact that in essence firms do develop and implement innovations in solitude hence require the contribution and collaboration of other actors in the system (Miika & Varis, 2010).

The concept of national systems of innovation emerged as an alternative way of understanding the innovation process (Iizuka, 2013). Lundvall (2010), a proponent of this systems considers external institutions and their linkages as having an influence on the innovation process and activities of firms (Lundvall, 2010). Such institutions include the

government and its agencies, research centres and universities. The systems approach to innovation also considers the innovation environment that includes history, cultural factors and socio-economic conditions that shapes the innovative behaviour of firms. Innovation in firms will be boosted if the innovative environment is conducive and the firms have some linkages and collaborations with the other actors in the system (Iizuka, 2013; Lundvall, 2010)

Different types of Innovation have been identified in innovating firms. These types are based on two conventional ways of categorising innovations; the object of change and the newness or extend of the change. This first categorisation based on the object of change was proposed by Schumpeter (1934). Accordingly, innovation is categorised into product, process, market and organizational innovations. Based on the second categorization in relation to the "newness" or "radicalness" the degree of change, innovation is categorised as being radical or incremental. OECD Innovation Manual identifies four main types of innovation based on the object of change and these are product, process, marketing and organizational innovations (OECD, 2005). Schumpeter (1939) on the other hand classified innovations into five types: new products; new processes (technological process innovation and organisational innovation); new sources of supply/raw materials; new markets and new ways organisation.

Alternatively, innovations are classified as radical or incremental based on the nature or degree of newness. Radical innovations are defined as unique, novel and influential innovations that involve major advances/ changes that lead to the substitution of existing products/ services based on existing technology. They involve revolutionary changes; serve as the prompts for completely new technological path (Varis & Littunen, 2010).

Radical innovations are either new to the market, industry, and country or world.These innovations offer significant unprecedented performance that lead to the creation of new markets or transformation of the existing ones (Leifer *et al*., 2001).

Radical innovation requires completely new knowledge, technology and/or resources while they provide more benefits and utility (Varis & Littunen, 2010; Trott, 2008). They also require a high degree of internal R&D, hence are more supported by cooperation of the firm with universities and research organizations (Todtling & Kaufuman, 2001). On the other hand incremental innovations provide improvements in the functionality and performance of an already existing product/ service or processes. Such innovations include adaptations, refinement, enhancements or line extensions by adding new features (Garcia & Calantone, 2002). This is the most common type of innovation in many organizations especially in SMEs and it builds upon existing knowledge and resources within a firm.

There are indications of a relation between innovation novelty and impact dimensions of innovations (Keijl, 2011). Radical innovations are thought to be the driving forces that change industries due to their high impact and competitive advantages (Ahuja & Lambert, 2001). Schumpeter (1947), sees radical innovations as quite important to firms implementing them and other firms in the same industry as they lead to Industry changes. These innovation are influenced by firm characteristics and its networks.

Firms, governments, researchers, and other stakeholders need to measure innovation for analysis and comparison to better understand the process. Various indicators have been developed to measure innovation intensity as it cannot be sufficiently represented by a single indicator (Boonen , 2007). The indicators include innovation inputs that include firm

expenditure on Researd and development and innovation outputs that include the number of new products, services and the resulting patents (Ahuja & Katila, 2001).

A commonly accepted and used measure of innovation is the innovation input indicator; R&D intensity indicated by R&D expenditures and permanent employees committed to R&D activities in the firm (Hadjimanolis, 2000; Romijn & Albaladejo, 2002; OECD, 2005; Cefis & Marsili, 2006). However, a limitation to this indicator is that innovation also involve non-R&D activities. Generally SMEs face various challenges translating R&D into innovation (O'regan, Ghobadian & Galler, 2006). Moreover, inputs to innovation processes in SMEs are increasingly seen to be to be coordinated by external actors, to the firms that include universities, research institutions and customers enabling the firms to reduce R&D costs (Belderbos, Carree, & Lokshin, 2004). Innovation output has been commonly considered as a measure of innovation in SMEs.

Several output indicators of innovation have been identified, three of which have received a lot of consideration: number of registered patents, new product alerts, and the number of new products and services developed (Ahuja & Katila, 2001; Garcia & Calantone, 2002). The number of registered patents as an indicator for innovation based on the means of innovation protection owned by a firm has been used to indicate innovation. However this indicator may not be appropriate in innovation studies of SMEs in developing economies.This is because most of them don't patent all their innovations due to the technicalities involved and limited resources. (Ahuja & Katila, 2001; Katila and Shane, 2006). New developed products are a common indicator of innovation output used to measure innovation (Wakasugi & Koyata, 1997; Romijn & Albaladejo, 2002).

According to Vincent, Bharadwa and Challagalla (2004), the measure of innovation used can significantly affect the outcome of a study. They suggest that the measure of innovation adopted should consider the nature and objectives of the study. They further recommend that studies focused on the implementation of innovation generated by organizations are better off using frequency counts of innovation as a measure.

1.1.3 Manufacturing Sector in Kenya

Manufacturing is among the key sectors in Kenya's socio-economic development. Kenya's Vision 2030 aims at the country becoming a newly industrialised achieving middle level income status with a sustainable annual average GDP growth rate of 10%. To this end, the manufacturing sector is among the key productive sectors identified in vision 2030 to spur economic development and deliver the 10% annual growth. Further, the sector is expected to generate 136,000 formal and 212,000 informal jobs by 2017 (GOK, 2013). Manufacturing has immense potential for wealth creation and capital accumulation, knowledge spill-overs poverty alleviation and employment generation (GOK, 2007). The sector is thus expected to play a significant role in propelling the country to sustainable growth path towards the achievement of vision 2030.

The Manufacturing sector due to its potential is expected to be a source of employment for majority of Kenyans resulting in poverty reduction. In the recent years, employment in this sector has grown at a faster rate than in other sectors with the enterprises employing about 2.7 million (GOK, 2012). In 2016, the manufacturing sector documented an employment growth of 1.8 per cent accounting for 11.8 per cent (300,800 jobs) of the 2.55 million wage employment (KNBS, 2017). Even though employment in the sector has been increasing in absolute terms, its share in formal employment has declined marginally in

recently as a result of the sector's sluggish growth rate. Unemployment remains a major challenge in the country's development and well being and a critical priority for the government if Vision 2030 is to become a reality.

Despite the huge potential, the manufacturing sector has over the years experienced minimal growth with a declining proportionate share in total GDP from 11.8 per cent in 2011 to 9.2 per cent in 2016 (KNBS, 2017). The sector's growth in 2016 decreased to 3.5 per cent from 7.2 per cent in 2011. This is against Vision 2030 sector's annual growth rate projection of 10 per cent. The growth of the sector compares unfavourably to the 10.0 per cent annual growth envisaged in Vision 2030, and also to the average sector growth for developing and emerging industrial economies at 6.2 per cent (UNIDO, 2015). Moreover, it also compares unfavourably with regional economies such as Ethiopia and Tanzania, which have recorded sector growth in excess of 10.0 per cent and 6.0 per cent, respectively between 2011 and 2014 (World Bank, 2016). Manufacturing sector contribution to GDP slowed down from 10.4 per cent in 2013/14 to 9.3 per cent in 2014/15. Globally, the sector share in GDP unfavourably compares to that of newly developed economies like Korea at 30 per cent, Malaysia at 23 per cent, Mauritius at 16 per cent, and South Africa at 13 per cent (World Bank, 2016).

SMEs dominate the manufacturing sector of most developing countries including Kenya accounting for about three-quarters of total employment (Ayyagari *et al.*, 2007). The Kenya's manufacturing sector comprises mainly of micro, small, medium enterprises. The share of medium and large firms about 5 per cent and yet their contribution to sector's GDP is above 60 per cent. About 95 per cent of manufacturing firms are small, contributing only about 20 per cent of sector's GDP (KER, 2017). Competitive

manufacturing SMEs form an essential part of Kenya's development strategies to be a globally competitive and prosperous nation by 2030 (GOK, 2007). The development of competitive manufacturing SMEs form the foundation for the growth of manufacturing industry (KAM, 2017). It is thus imperative that Manufacturing SMEs become competitive, efficiency-driven and raise their productivity.

The competitiveness of SMEs in the Manufacturing sector is affected by several challenges that hinder them from maximizing their potential, consequently limiting their contribution to socio-economic development. The challenges include stiff competition from larger enterprises and multinationals; limited access to resources and markets; overcrowded saturated markets; limited technology and unfavourable legal regulation among others (GOK, 2005). These have been compounded by globalization, shortening product lifecycles, rapid advancement in technology, increased standards requirements and changing consumer needs and preferences (Kiraka, 2009; KAM, 2012).

Globalization and market liberalization have led to increased importation of new and second hand cheaper products from industrialized countries posing serious competition to SMEs targeting the domestic and regional market. In addition, the vulnerability of local enterprises targeting the export market has been amplified by preference erosion and global economic crisis. As a consequence, manufactured goods are forced to compete with cheap quality products mostly from emerging economies China, India, and Brazil. This has resulted to the cheap imports out competing locally manufactured products. This has contributed to the shutdown of small-scale manufacturing enterprises (McCormick *et al*., 2009).These constraints require SMEs to raise their efficiency, diversify and produce

quality products and services while responding timely to market changes (Kiraka, Kobia & Katwalo, 2013).

Despite the manufacturing SMEs having contributed to the creation of recently, they are still characterised by low productivity and value addition. When compared with larger enterprises and SMEs in other countries, Kenyan SMEs are clearly lagging behind. Productivity in SMEs that form the bulk of manufacturing enterprises is stagnating or even marginally deteriorating pulling down the aggregate productivity of the sector (Anzere, 2016).

Several factors contribute to low productivity in manufacturing SMEs and include the use obsolete and inefficient technologies, machine and systems. There is urgent need for the enterprises to upgrade and modernise their machinery, technology and processes to become competitive. Furthermore, there exists opportunities for enterprises to develop and implement cheaper efficient and appropriate technology that will reduce the production cost while increasing productivity (Anzere, 2016).

Manufacturing SMEs also are constrained by insufficient resources and allocate very little if any for R&D. Resource constraints is coupled with high cost of production affecting their operations and productivity. R&D is essential in generating knowledge that is necessary for innovations, improved performance and competitiveness. Majority of Manufacturing SMEs are disadvantaged as they are not able to benefit from internal R&D like their larger counterparts. Such enterprises can benefit from R&D undertaken by research institutes and universities. However research uptake from research institutes and

think tanks is low, due to limited linkages between the SMEs and the institutes (Anzere, 2016).

Limited access to national, regional and global markets also affects the competitiveness of manufacturing SMEs.Firms can be competitive if only they are able to access the different levels of markets for their products (Anzere, 2016). Market access limitations can be attributed to a saturated national market that is infiltrated with second hand products mainly sold by informal traders (KER, 2017). This has resulted in a dwindling domestic market for the sectors products. There is also need for these enterprises to be globally competitive if they are to access the regional and international markets. This is especially so for enterprises in the textiles and leather subsectors (Anzere, 2016).

Barriers exist that make market access to regional markets difficult. In the EAC, several factors contribute to the reduction of Kenyan exports to the region. They include limited export growth within the region coupled with the commencement of the EAC customs union, leading to the termination of preferential treatment under various export promotions schemes (Anzere, 2016, KAM, 2017).These barriers neccesiates SMEs to extend their markets beyond the region to be able to survive.

Kenyan SMEs targeting the regional market are also got up in a scenario where neighbouring countries are developing their own manufacturing sectors, to target their domestic market. This is aimed at preventing imports that include Kenyan goods in a bid to develop and reserve their domestic markets to themselves (Anzere, 2016).The result is stiff competition from the domestic markets, driving some Kenyan products out of the market. This has led to a decrease in the volume of manufactured products from Kenyan

SMEs in Tanzania and Uganda. The diminishing regional market is worsened by the entry of cheap to imports from China and India into the markets (KER, 2017).

In the international markets, there are indications that Kenya is exporting far less than expected to the market in terms of the scope and quantity of manufactured products. SMEs continue to struggle with access issues in international markets as compared to larger enterprises whose access is fairly good. This can be attributed to low product quality and volumes and low levels of awareness of the current preferential trade agreements (Anzere, 2016).

The above challenges have affected the competitiveness of the SMEs in terms of survival and growth leading to the death or closure of many manufacturing SMEs. A total of 2.2 million MSMEs closed down in the last five years. On average, small and medium enterprises were closing at the average age of 3.8 years (KNBS, 2016). New start-ups or acquired enterprises within 2014 and 2015 were more vulnerable to closures accounting for 61.3 per cent of total businesses that closed (KNBS, 2016). The closures have been occasioned by increased operating expenses, limited markets and declining income. Lack of competitiveness has also affected the growth of the manufacturing SMEs leading to the missing middle phenomenon, where majority of small enterprises have failed to graduate to middle and large enterprises.

SMEs in the manufacturing sector can only remain relevant in national development as envisaged by Kenya Vision 2030 if they can survive and compete effectively. This will enable them participate in industrialization and poverty reduction strategies leading to socio-economic development. It is imperative that manufacturing SMEs come up with

sustainable strategies to enable them survive and compete effectively in the globalised, dynamic environment. These enterprises need to reposition their competitive priorities to enable them compete effectively in dynamic market place. This can be achieved through the process of innovation (Mosey, Clare & Woodcock, 2002).

1.2 Statement of the Problem

The competitiveness of manufacturing SMEs' is critical in the achievement of vision 2030 that aims at propelling Kenya into a newly industrialized economy by the year 2030. These enterprises form an integral component of Kenya's development strategies to be a globally competitive nation (GOK, 2007). The competitiveness of SMEs in the manufacturing sector is affected by several challenges that hinder them from maximizing their potential consequently limiting their contribution to socio-economic development. The challenges include stiff competition from large enterprises and multinationals; limited access to resources, information and markets; overcrowded saturated markets; limited technology and unfavourable legal regulation among others (GOK, 2005). These have been compounded by globalization, shortened product lifecycles, advancement in technology, increased standards requirements and changing consumer needs (Kiraka, 2009; KAM, 2012). Hence for the enterprises to remain relevant in national development, they need to develop strategies that will help them develop and sustain their competitiveness.

Innovation is widely acknowledged as a core factor in firm competitiveness, survival and growth (Becheikh, Landry & Amara, 2006; Kiraka, 2009; Lin & Chen, 2007). Within the business context, innovation is often considered a key source of strategic change through which firms can gain competitiveness (Lin & Chen, 2007). Consequently, pressure on all businesses to continually innovate by developing and launching new products and services

is greater than ever (Kiraka, Kobia & Katwalo, 2013). It has been emphasized that SMEs require greater innovation to establish and sustain competitiveness given they lack the resource advantage of their larger enterprises (Lin& Chen, 2007; Aikeli, 2007). SMEs' innovation is thus purposely at the heart of their growth, survival and competitiveness. SMEs are considered to be more flexible, adaptive and are better placed to innovate (Lin & Chen, 2007).

Innovation is necessary to enable manufacturing SMEs produce quality products, utilise efficient processes and systems to achieve competitive advantage (Gunday, *et al*., 2008). SMEs indeed require greater innovation in order to sustain their competitiveness as they lack the resource advantage of their large enterprises(Lin& Chen, 2007; Aikeli, 2007). SMEs' innovation is thus purposely at the heart of their growth, survival and competitiveness as well as that of a nation's economic competitiveness and growth. SMEs are considered to be generally more flexible, adaptive and are better placed to innovate and usually come out as being more innovative as compared to large firms (Lin & Chen, 2007). Audretsch (1995) identified SMEs as contributing 2.38 times more innovation per employee as compared to large firms.

Despite SMEs being acknowledged as being more innovative and better placed to innovate, most of these enterprises remain uncompetitive as compared to their larger counterparts. Whereas there is a lot of emphasis on firm innovation as a strategy for competitiveness based on the view that innovation positively impacts competitiveness, empirical studies linking innovation and firm competitiveness are very limited. Of the few available studies,majority are based on firms in developed countries (Belderbos, Duvivier & Wynen, 2010; Terziovski, 2010; Rojas, Cerda, Garcia & Barcenas, 2012; Kiss, 2011).

Most of the studies on innovation impact have also focused on the relationship between innovation and firm performance with very few considering the effect of innovation on competitiveness (Belderbos, Duvivier &Wyen, 2010; Kiss, 2010; Gakure *et al*., 2013; Rojas *et al*., 2013).

Available studies done on the effect of innovation show mixed findings, whereas some found no significant effects of innovation on performance and competitiveness (Kiss, 2011;Terzioski, 2010) others found a significant relationship between innovation and competitiveness and firm performance (Lin & Chen, 2007; Varis & Littunen, 2010; Ar & Baki, 2011; Atalay et al., 2013; Najib, 2013, Gakure *et al*., 2013; Rojas *et al*., 2013, Mensah & Acquah, 2015)

Based on the notion that innovation positively impacts on competitiveness, Kenya seeks to become a knowledge based economy in which innovation is a key factor lending competitiveness. In this pursuit, the government seeks to harnesses Science, Technology and Innovation (STI) in all aspect of its social and economic development to foster wealth creation, national prosperity and competitiveness (GOK, 2009). To this end, Vision 2030 proposes intensified application of STI in priority sectors that include manufacturing to raise productivity, efficiency levels and competitiveness (GOK, 2007; GOK, 2009). The Government has since formulated a national STI Policy to promote innovation in all sectors of the economy with a focus on the priority sectors that have a high potential to harness STI in attaining a 10% annual growth rate. It is clear that SMEs innovation especially in manufacturing sector is at the heart of the nation's economic development and competitiveness.

Despite the proposition on the application of innovation to spur the competitiveness of key sectors including manufacturing, this is not backed empirically. Studies linking competitiveness to innovation in Kenya are very scanty (GOK, 2007). The few studies carried out are not conclusive enough and are limited in terms of scope. Gakure, Chemengich, Gichui and Katuse (2013) investigated the role of innovation in determining the competitiveness of electrical and electronic manufacturing enterprises in Kenya, Ngirigacha and Bwisa (2013) also carried out a study on the importance of enterpreneurial innovations on SMEs' market competitiveness in Thika town. Njogu (2012) examined the effect of innovation on financial performance of SMEs in Nairobi county and this study only considered financial perfromance and considered all SMEs. Besides, despite low competitiveness of Manufacturing SMEs, there is evidence of Innovation taking place in the sector. Infact the National Innovation survey report rated the Manufacturing sector as being a head of other sectors in innovation intensity (KNBS & MOHEST, 2012).

This study therefore sought to make a contribution to the knowledge gap by providing some empirical evidence on the relationship between innovation and competitiveness in Manufacturing SMEs. The study investigates the effect of innovation in manufacturing SMEs in Nairobi City county by considering four types of innovation practiced in Manufacturing SMEs that include product, process, marketing and organizational.

1.3 Objectives of the Study

1.3.1 The General Objective

The purpose of this study was to investigate the effect of innovation on Manufacturing SMEs' competitiveness in Nairobi City county, Kenya.

1.3.2 Specific objectives

i. To establish the effect of product innovation on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya
ii. To analyse the effect of process innovation on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya
iii. To assess the effect of Marketing innovation on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya
iv. To determine the effect of organizational innovation on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya
v. To examine the combined effect of product, process, marketing and organizational innovation on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya
vi. To investigate the moderating effect of firm Size on innovation and competitiveness of Manufacturing SMEs' in Nairobi City County, Kenya

1.3.3 Research Hypotheses

This study tested the following Research Hypotheses in line with the specific objectives;

H_{01}: Product innovation has no significant effect on the competitiveness of Manufacturing SMEs in Nairobi City County, Kenya

H_{02}: Process innovation has no significant effect on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya

H_{03}: Marketing innovation has no significant effect on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya

H_{04}: Organizational innovation has no significant effect on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya

H_{05}: Combined innovation (Product, process, marketing and organizational) has no effect on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya

H_{06}: Firm size has no moderating effect on the relationship between SME Innovation and competitiveness in Manufacturing SMEs in Nairobi City County, Kenya

1.4 Significance of the Study

This study contributes to a better understanding of the innovation practice in Manufacturing SMEs in Kenya and how it affects firm competitiveness. This is important to SME practioners, Government agencies and other researchers. Specifically the study findings provide a link between innovation and competitiveness' by validating the role of innovation in firm competitiveness. The study findings provide a basis for the use of innovation strategy to enhance firm competitiveness.

For the Kenyan government and its relevant arms that include Kenya Intellectual Property Institute, National Commission for Science Technology and Innovation, Ministry of Industrialization and enterprise development (MOIED),the study findings provide the knowledge necessary for the formulation of relevant and effective policies and programmes in the area of enterprise development and use of innovation as a tool to enhance development and for stimulating innovativeness.

This study's findings also add to the existing body of knowledge in the area of SMEs innovation and firm competitiveness. Owing to the limited studies linking innovation and firm competitiveness, the study contributes to empirical knowlegde and to the framework of research in SME competitiveness and innovation.The study also attempts to validate existing theoretical knowledge in the area of innovation and firm competitiveness. Lastly,

the study findings may ignite further research in these area of innovation and SME competitiveness to fill up any research gaps, or to widen the scope.

1.5 Scope of the Study

The study sought to investigate the effect of innovation on firm competitiveness focusing on the manufacturing SMEs. A sample 284 Manufacturing SMEs was drawn from manufacturing SMEs in Nairobi county where majority of enterprises from all sectors are located. The enterprises were drawn from three manufacturing clusters in Nairobi ;Baba Ndogo/ Ruaraka, Industrial area and road/ outering/ off airport road. Data on innovation and competitiveness was collected for a period of 3 years(2012-2014) as recommended for innovation studies (OECD, 2015). The dependent variable firm competitiveness focused on two constructs, profitability and market share while the dependent variable innovation considered product, process, marketing and organizational innovation. Multiple Linear regression analysis was used to analyse the effect of innovation on firm competitiveneness

1.6 Limitations of the Study

Eventhough the study was designed to enable the researcher collect accurate and aunthetic data that can be used to make some inferences, it was however not free from limitations. First, while the study targeted all manufacturing SMEs in Nairobi County, however data was collected from samples drawn from three main clusters from Nairobi county. This may introduce some biasesness. However the researcher reduced this by using multistage sampling where cluster sampling was followed by stratified random sampling to increase the representativeness of the sample and reduce biasness.

Secondly, Innovation effect on enterprises have a time lag after implementation before they are realised. The research attempted to deal with this limitation by obtaining innovation data for a period of three years as opposed to one year. Lastly, data collection on the dependent and independent variables enterprises was self-reporting and this can lead to subjectivity. This was used because most entreprises are hesitant to share records or audit reports from where the data can be extracted while others lack the reports.

1.7 Organization of the Study

This thesis is organized in five different chapters. Chapter one of the study introduces the research, the reseach variables and the context . The chapter contains the background information, statement of the research problem, research objectives, significance of the study, the scope and the study limitations.

Chapter two presents literature review that includes theorerical, conceptual and empirical literature of the main study variables that include competitiveness, innovation. the. Based on the literature reviewed, a conceptual framework depicting the hypothesized relationship of the variables was developed.

Chapter three presents the research methodology that include a description of the research design, the research philosophy, the target population, sampling design and sample size and Operationalisation of the variables. The chapter also contains empirical models used in the study as well as data collection methods and instrument and lastly ethical considerations of the study.

Chapter Four presents the research findings, results of data analysis and a detailed discussion of the findings. The chapter also contains the descriptive statistics, diagnostic tests, and inferential statistics. Finally, Chapter Five presents the summary of research findings, contribution of the study to knowledge, conclusions, and recommendations for policy and suggests areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the theoretical and empirical literature with the developed conceptual framework that guided the study. Relevant theories were reviewed to expose the foundation underlying the concept of innovation and competitiveness. They include Schumpeter's Theory of Innovation and Entrepreneurship, Theory of the Innovative firm, Dynamic capabilities theory of Innovation and Resource based theory. Literature was reviewed on the concept of innovation; types of innovation, measures of innovation and firm competitiveness. Empirical literature reviewed focused on innovation and competitiveness/ performance. The chapter concludes with a summary of the theoretical and empirical review while identifying the knowledge gap. Based on the literature reviewed a conceptual framework was developed and presented.

2.2 Theoretical Literature Review

2.2.1 Schumpeterian Theory of Innovation and Entrepreneurship

The theory is part of the innovation based endogenous growth models put forward by Joseph Schumpeter a renowned economist of the twentieth century (Schumpeter, 1911). The theory outlines the role of Entrepreneurship and Innovation in economic growth. The theory posits that there is a continuous process of change in economies and markets. In such a dynamic economy, there is a force within the economy that accounts for change and growth personified in the entrepreneur. Schumpeter describes the entrepreneur as "an agent of innovation and pivot of change" (Schumpeter, 1911, 1934). According to him, in a dynamic world innovation and entrepreneurship are important for economic growth

(Schumpeter, 1912). Entrepreneurship is all about innovation and the function of entrepreneurs is to carry out new combinations of factors of production leading to discontinuous and radical change which forms the basis of economic development.

Schumpeter attributes economic development to innovation which may include ; “the launch of a new product or modification of an already existing product; the application of new methods of production, opening of a new market; use of new sources of supply or raw material and the creation of a new industry structure” (Schumpeter, 1934). He views innovation as a "process of industrial transformation, responsible for the transformation of the economic structure through the process he terms as ‘creative destruction’.

According to the theory, innovations lead to economic growth and the entrepreneur is the one who innovates. The entrepreneur is responsible for allocating existing resources to new uses and coming up with new combinations. Schumpeter views entreprenurship as one of the unique factors of production that contribute to economic change. According to the theory, Entrepreneurs change or transform the mode of production by exploiting an invention or open up a new source of supply of materials or a new outlet for products, by reorganizing an industry (Schumpeter, 1939).

The process of “creative destruction” creates wealth through the disruption of existing firms by the introduction of new products or services moving resources from existing market structures to new ones while allowing the emergence of new firms (Schumpeter, 1942). Innovation is thus a specific tool that entrepreneurs use to create opportunity for a different product or service. This theory supposes that the aim of innovation is to create new processes or products which gives the entrepreneur a competitive edge against competitors.

The main reason for business growth in both profits and investments is innovation. Schumpeter deludes that innovation does not necessarily mean inventing new products that have never existed but also entails new methods of doing things, combining methods or processes in order to make different products and services, making use of existing resources/materials to make new products and adapting to new technology (Schumpeter, 1942). Schumpeter argued that firms seeking profits need to innovate because entrepreneurial innovation results in increased profits. He considered innovation as a driver of firm competitiveness and economic development(Schumpeter, 1942).

Schumpeter's theory of innovation and entrepreneurship informs this study of the key role of entrepreneurship and innovation in competitiveness leading to economic development. For economic development to take place, we need entrepreneurs to innovate leading to the process of creative destruction that creates value. The theory also informs the study of the various innovation types that can be used to create value (Schumpeter, 1934). Based on Schumpeterian theory, innovation is the foundation of competitiveness and sustained economic growth.

2.2.2 Theory of the Innovative Firm

This theory was put forward by William Lazonick an economist to help explain superior performance in the wake of imperfect markets. According to the theory the function of a firm is to transform productive resources into goods and services that can be commercialised. A firm can accomplishes this by engaging in in innovation. Accordingly, superior economic performance result from innovative enterprises create products of higher quality at lower cost (Lazonick, 2013). Innovative firms have the ability to transforms productive resources into higher quality, lower cost goods and services translating to a gain for the customers and other participants in the economy (Lazonick, 2009). According to the theory, a firm is able to gain

and sustain its competitiveness to compete effectively in its industry through innovation. Such firms engage in innovation establish or sustain their competitiveness.

An innovative firm may also innovate to retain its market share against an innovative competitor or to gain a strategic market position in the market (Porter 1990). Innovative firms are able to compete, through innovation as opposed to varying price and quantity. This theory becomes relevant even as innovation economics posits that continual increase of inputs in the production process is no longer sufficient to explain the increase of output hence can be credited to a firm's innovation activities (Lazonick & O'Sullivan, 2000; Lazonick, 2006).

Innovative firms become competitive by investing in quality and quantity productive resources. This enable the firms to develop superior products, services and more efficient methods i.e. production, organizational and marketing methods (Lazonick & O'Sullivan, 2000). In the short- term, an innovating firm is not dictated by an increase in cost but produces high quality products leading to a decrease in the unit cost with an increase in the market share (Lazonick & O'Sullivan 2000). Innovation enables the innovating firm to progressively penetrate various market segments based on the different economic power of the buyers.This provides a base upon which the firms can develop capabilities to access other market segments (Lazonic, 2013)

The innovative firm is also able to use innovation to achieve differentiation by offering different products and services to customers that are unique. In this way innovation strategy enables firms to compete. Continuous improvement of products, processes and

methods as in innovation leads to differentiation which results in increased firm competitiveness in innovative firms (Porter, 1988; Lazonick, 2006).

This theory was useful in explaining the role of innovation and how it leads to firm competitiveness through the production of superior products and services in the market. Innovation also leads to differentiation an important factor in competitiveness that leads to new unique products, processes, markets and organizational methods. This helps firm's deal with competition. The theory affirms the role of innovation in firm competitiveness.

2.2.3 The Resource Based Theory

An outstanding theory in innovation and competitiveness studies is the Resource Based theory originally put forward Penrose (Penrose, 1959), but developed by others (Wernerfelt, 1984, Barney,2002; Teece, *et al.*,1997). The theory argues that firms own resources which they can employ to become competitive. The theory posits that a firm can gain competitive advantage by being in possesson of distinctive resources or capabilities which are valuable, difficult to imitate and rare in the marketplace (Baark *et al*., 2011). Proponents of this view argue that organizations need to utilise internal sources of competitiveness as opposed to external sources (Barney, 1995; Barney 2002; Teece et al., 1997)

According to RBV proponents, it is much more feasible to exploit external opportunities using existing resources in a new way rather than trying to acquire new skills for each different opportunity. Firm resources and processes are important to firms since they influence its behaviour and activities. A resource is an asset, competency, organizational processes, information, knowledge or capability and is considered to be unique if it is valuable, rare, difficult to imitate and has no close substitute (Barney, 2002). It is the

distinctive resources that lead to sustained competitiveness and superior returns in firms(Wernerfelt, 1984; Barney, 2002; Teece *et al*.,1997)

A firm is considered as a coordinated bundle of resources which can be exploited for sustainable competitive advantage by the firm (Barney, 1995). Firm resources are assets connected semi-permanently to it and include human, social, technological, knowledge, physical and financial (Barney, 2002). Firms with valuable resources that are rare and not easily copied, achieve a sustainable competitive advantage in form of innovative new products (Trott, 2008). Organizational resources positively affect the innovation process by providing the inputs that are combined and transformed to produce innovations which lead to firm competitiveness (Trott, 2008). Innovation provides means to competitive advantage of the firm by providing outputs that are valuable, rare, and hard to imitate (OECD,2009).

Financial resources are among the most important bundle of resources for a firm that can be used to to support innovative activities especially R & D. Like wise human capital is a key determinant of firm performance and competitiveness. Another key resource for firm's competitiveness is the knowledge based resources. Knowledge facilitates the discovery of ideas and exploitation of opportunities for innovation. It is therefore useful for the manipulation, transformation and the development of the other resources for competitiveness (Wiklund &Shepherd, 2003; Lee & Sukuco, 2007; Wang, He, & Mahoney, 2009).

This theory informs the study of another factor of competitiveness as firm resources that affect a firms activities including innovation. Firm resources influence a firm's behaviour

and this includes how it competes in the market. Resources that are unique, distinct, rare and hard to imitate give a firm a competitive edge.

2.2.4 The Dynamic Capability Theory

The Dynamic capability theory was put forward by Teece and Pisano (1994). This theory explains how firms achieve and sustain competitiveness based on the processes that take place in a firm to match the dynamic, volatile environment. The emergency of the theory was necessitated by the shortcoming of the resource based and action based theories in addressing dynamic economies. The Dynamic capability paradigm embraces entrepreneurship, innovation, organizational learning, and knowledge and change management (Teece, 2010). The ability of a firm to adjust to changes in the market through innovation is crucial for the competitiveness of firms. It is argued that the fundamental impulse that drives the capitalism stems from the innovation of new products, new methods of production, new markets and new forms of industrial organization (Schumpeter, 1942).

Dynamic capabilities refer to a "firm's capability that allows it to develop new products and processes in response to dynamic market situations" (Teece & Pisano, 1997). Dynamic capabilities include skills, procedures, organizational structures, and decision rules that can be employed by firms to create and capture value. The capabilities may stem from change routines ,product development and innovative managerial capabilities. They enable the firm to align their distinctive resources/competences to the changing business environment. Dynamic capabilities are critical to long-term profitability of firms (Teece, 2007).

Dynamic capabilities enable firms to profitably organize its resources, competences, and other assets if the firm is to sustain itself in changing environments and markets (Teece,

2009). The capabilities are crucial in a dynamic environment of rapid change, prevailing in a growing of industries (Teece, 2007; Teece, 2009).

Innovation is acknowledged as one of the critical firm capabilities that affect firm's sustained competitive advantage and superior performance (Albaladejo & Romjin, 2000). Innovation capability allows firm's to use current resources to create new resources, products, process and systems as well as devise new ways of using new resources to gain a competitive advantage (Teece & Pisano, 1997). Innovation capability can be enhanced through learning and training, R&D, processes , firm organization and associations with other players that include customers, suppliers, public and research institutes and industry associations.

Possession of dynamic capabilities also signify a firm's capability to solve market problems and to achieve a new and innovative form of competitive advantage(Teece, *et al*.,2007) The approach emphasizes the capacity of a firm to renew competence as well as to integrate and reconfigure resources to match and create market change through innovation (Teece & Pisano, 1997; Eisenhardt &Martin, 2000).

This theory informed the study of the relevance of a firm's dynamic capabilities that are crucial in achieving competitiveness in a dynamic volatile environment. Manufacturing SMEs operate in such environments and developing their dynamic capabilities that include innovation is critical for their survival and growth. The dynamic capability approach reflects a firm's ability to solve market problems and to achieve competitiveness (Teece et.al, 1997). The concept of dynamic capabilities provides a broader framework to help us understand how firms create value for competitiveness in a dynamic environment. This essential owing to changes in consumer needs, products, technology the competitive forces

of other firms which can threaten a firm's existing position or open the possibility of a new or better one.

2.3 Empirical Literature

2.3.1 Product Innovation and Firm Competitiveness

Schumpeter (1934) defines product innovation as "the introduction of a new good; one which consumers are not yet familiar with, such a good has new/improved quality" (Schumpeter, 1939). He underscores the role of product innovation in spurring organizational growth. He further argues that competition resulting from new products far outweigh marginal variations in the price of existing products (Schumpeter, 1942). Wan *et al.* (2005) sees product innovation as involving "the introduction of new products or services with the aim of creating new markets or customers, or satisfy current markets or customer" (Wan *et al.,* 2005).

Oslo Innovation Manual defines product innovation "as the introduction of a good or service that is new or significantly improved in relation to its characteristics or intended functionality" (OECD, 2005). Significant improvements may be in relation to technical specifications, components and materials, built-in software, user friendliness or other functional characteristics. However design changes in products that do not involve a significant change in its functional characteristics or intended uses does not comprise product innovations (OECD, 2005). Product innovation is also associated with new developments in activities carried out by firms to deliver the core product while making it more attractive to consumers (Acquah & Mensah, 2015).

Product innovation is one of the sources of firm competitiveness that can be applied to improve the quality of products leading to improved firm performance and competitiveness (Sidek & Rosli, 2013). Product innovation also provides a variety of choice of a firm's products to the customers and greater perceived value as compared to the old products (Crawford *et al.*, 2003).

Oke, et al. (2007) carried out a study on firms in UK and concluded that product innovation had a positive impact on firm performance. Atlay, Anafarta and Sarvan (2013) in their study on firms in the automotive supplier industry in Turkey concluded that product innovation had a positive significant impact on firm performance. Belderbos, Duvivier and Wynen (2010) carried out a study on innovation and Export competitiveness in Flemish firms by examining the effect of innovation on export intensity and growth using both cross-sectional and panel data of 733 firms. They concluded that the implementation of innovations especially product innovations had a robust positive correlation with export intensity of firms.

Ar and Baki (2011) carried out a study on the "Antecedents and performance impacts of product versus process innovation in SMEs in Turkish Science and Technology parks" This study confirmed a positive and significant influence of product and process innovation on firm performance. Sidek and Rosli(2013) carried out a study on "the impact of Innovation on the performance of Small and Medium Manufacturing Enterprises in Malaysia" using a sample of 284 SMEs. Research findings indicate that product innovation influenced firm performance positively.

2.3.2 Process Innovation and Firm Competitiveness

According to Schumpeter (1934) process innovation "is the introduction of a new method of production, not yet tested in theIndustry". (Schumpeter, 1934). Process innovation has also been defined as "the process of reengineering and enhancing the internal operation and capabilities of business process" (Sidek & Rosli, 2013). Such processes involve manufacturing, technical design, management and commercial activities. It includes new procedures, policies, organisational forms and knowledge embodied in products, distribution channels, applications as well as customer expectations, preferences and needs (Sidek & Rosli, 2013).

According to Oslo OECD Innovation Manual, a process innovation involves **"**the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software" (OECD, 2005). Process innovations consists of new or significantly improved methods for the production and provision of services.

Process innovations may include new or significantly improved equipment, techniques and software in auxiliary support activities, like purchasing, accounting, computing and maintenance. Such innovations can involve significant changes in the equipment and software used in services-oriented firms or in the procedures or techniques that are employed to deliver services. Process innovations are intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products. (OECD, 2005)

ONeira *et al*. (2009) argues that Process innovation is very pertinent to firms facing a lot of competition as it enhances productivity. Process innovation has a direct and immediate

impact on productivity performance of SMEs and due to their organizational simplicity (Castillejo *et al.*, 2013). Oke et al., (2013) reiterates that process innovation should be emphasized in manufacturing enterprises as a primary distinctive competence.

Varis and Littunen (2010) in their study of SMEs in Finland found process innovation to be positively correlated to firm performance. Sidek and Rosli(2013) carried out a study on the "impact of Innovation on the performance of Small and Medium Manufacturing Enterprises in Malaysia". Research findings indicate that process innovation influenced firm performance positively. The study recommended that SMEs can apply innovation to increase their performance.

2.3.3 Marketing Innovation and Firm Competitiveness

"Marketing innovation is the implementation of a new marketing method that involves significant changes in product design or packaging, product placement, product promotion or pricing" (OECD, 2005). New marketing methods can either be developed by the innovating firm or adopted from other firms or organisations and can be implemented for both new and existing products. Marketing innovations include significant changes in product design that are part of a new marketing concept; changes in the packaging of products, product placement primarily involve the introduction of new sales channels (OECD, 2005).

According to Johne (1999), marketing innovations involve the marketing mix and market offerings that are made to satisfy customer's needs. Rodriquez- Cano *et al. (*2004) assert that marketing innovation aims at fulfilling market needs while responding to market opportunities. Hence any marketing innovation need to focus on meeting customer needs

(Sidek & Rosli, 2013). Marketing innovations focus on better addressing customer needs, opening up new markets and positioning a firm's product in the market, with the objective of increasing the firm's sales (OECD, 2005). According to Johne & Davies (2000), marketing innovations increase sales by increasing product consumption leading to increase profits to the firm.

Otero-Neira *et al.* (2009) in their study on "Innovation and Performance in SME Furniture industries" found strong evidence that market innovation positively influenced business performance. Similary, Varis and Littunen (2010) in their study of SMEs in Finland confirmed a robust significant relationship between marketing innovation and firm performance. However Sidek and Rosli(2013) in their study on "the impact of Innovation on the performance of Small and Medium Manufacturing Enterprises in Malaysia" concluded that marketing innovation did not have significant effects on firm performance.

2.3.4 Organizational Innovation and Firm Competitiveness

"Organisational innovation involves the implementation of new organisational methods in the firm's business practices, workplace organisation or external relations" (OECD, 2005). These include the "implementation of new methods for organising procedures and routines for the conduct of work, introduction of management systems , business re-engineering, lean production, and quality-management system, implementation of new methods for allocating responsibilities and implementation of new ways of organising relations with external firms /institutions" (OECD, 2005).

Organisational methods are intended to improve a firm's performance by reducing administrative/transaction costs, improving workplace satisfaction, gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies (OECD, 2005). Lin & Chen (2007) argued that organizational innovations as opposed to technological innovations are most crucial for total sales.

Lin and Chen (2007) in their study, on innovation and performance, found that organisational innovation had a positive effect on firm performane. Mensah and Acquah (2015) in their study of "the effect of innovation types on the performance of SMEs in Takoradi metropolis" found a positive significant relationship between organizational innovation and firm performance.

2.3.5 Innovation and Firm Competitiveness

Firm competitiveness has largely been attributed to a firm's internal factors as compared to the external environment and is dependent of firm process, offerings in the market and the efficiency of its systems (Penrose, 1959; Porter, 1992; Cantwell, 2003). Specifically, innovation is acknowledged as being critical in the improvement of firm process, products and services, marketing and organizational systems making the firms competitive (Ferreira & Marques, 2009). Hence for firms in a dynamic environment characterized by accelerating change, complexity and uncertainty, their ability to remain competitive in their external environment is closely linked to their capacity to innovate to continuously improve their products and services (Johannessen, Olsen & Lumpkin, 2001; OECD, 2005).

Innovation is necessary to enable manufacturing SMEs produce competitive quality products, apply efficient processes to perform better and to obtain a competitive advantage

(Gunday, *et al*., 2008). SMEs require greater innovation to develop and suatain competitiveness as they lack the economies of scale and resource advantage of larger enterprises (Lin& Chen, 2007; Aikeli, 2007). SMEs' innovation is thus purposely at the heart of their growth, survival and competitiveness as well as that of a nation's economic competitiveness and growth. SMEs are considered to be generally more flexible, adaptive and are better placed to innovate and usually come out as being more innovative as compared to large firms (Lin & Chen, 2007).

Bozic and Sonja (2005) conducted a research on the effects of innovation activities in SMEs in the Republic of Croatia. The research was carried out on 498 SMEs in manufacturing and service enterprises and analysed using multiple regression. Study findings revealed that implementation of innovations led to increased market share, improved product quality and reduced material cost per unit. Lin and Chen (2007) in their study, on innovation and performance, explored the relationship between innovation and firm performance of SMEs in Taiwan. Their findings reveal that innovation had a weak link with firm sales and that administrative innovation was the most crucial factor in explaining sales rather than technological innovations.

Terziovski (2010) carried out a study on innovation practice and its implications in manufacturing SMEs using a sample of 600 SMEs in Austria. The study revealed that strategy and firm structure were drivers of innovation. However, the study did not find a significant relationship between innovation and SME performance. Kiss (2011) carried out a study on the impact of innovation on firm competitiveness in Hungary where he analysed the determinants of innovation activities and the impact of innovation on competitiveness on Hungarian firms. The study found no significant relationship between innovation and competitiveness.

Sewang *et al.* (2011) carried out research on effects of innovations on SMEs using the balanced approach in Australia and Thai SMEs. The balanced approach utilized both financial and non-financial metrics to capture full potential benefits of implementing innovations. The effects of innovations were indicated by customer satisfaction, sales revenue and growth, return on investment, product/service quality and profit margin.

The research findings indicated that established SMEs that took a balanced approach were more likely to perceive benefits of implemented innovations compared to using financial measures only.

Rojas *et al.* (2013) carried out a study on Innovation and Competitiveness in SMEs in San Luis, Potosi in Mexico. They analysed the relationship between innovation and competitiveness through the measurement of operational activities in 65 SMEs using regression analysis. Results indicated a positive significant relationship between innovation activities of SMEs and Competitiveness.

Gakure, *et al.* (2013) carried out a study on the Role of innovation in Kenyan Electrical and electronic manufacturing enterprises using multivariate linear regression analysis. Their results revealed a significant positive relationship between innovation and firm competitiveness. The study results also indicated that R&D, Human Capital and learning/knowledge sharing contributed significantly to innovation. Najib (2013) carried out a study on the internal sources of competitiveness in small and medium Indonesian food processing companies. In the study he examined the potential of market orientation and innovation as sources of competitiveness in food processing SMEs. Competitiveness in the study was represented by business performance. Business performance was operationalised as a composite variable of three measures; sales volume, profitability and

market share. Research findings indicate that innovation had positive effects on competitiveness of SMEs. They conluded that innovation was one of the most important factors that can be used to enhance competitiveness.

Njogu(2014) in her study of the effect of Innovation on the Financial performance of SMEs in Nairobi found that product, process and marketing innovation have positive significant effects on financial performance of SMEs in Nairobi, county. Aziz and Samad (2016) in their study to "examine the effect of Innovation on the competitive advantage of food manufacturing SMEs in Malaysia" revealed that innovation had a strong positive impact on SMEs competitive advantage, in which innovation contributed 73.5% of the competitive advantage. The study also found some moderating effect of firm age on the Innovation- competitive advantage relationship.

2.3.6 Firm Size, Innovation and Competitiveness/ Performance

Firm size is an important internal factor affecting both the innovation capacity and firm competitiveness. Firm size has been defined differently in different countries and economies. Firm size has been defined as organization's resources, turnover, or workforce size (Zhang *et al*., 2013). Firm size is indicated by several factors that include total number of permanent employees, turnover and capital employed. This study used the total number of permanent employees to indicate the size of the firm. Accordingly Small enterprises have 5-49 permanent employees while Medium enterprises have 50-99 permanent employees (CBS, ICEG & K-REP, 1999).

Large firms are expected to have more competitive power due to their resource advantage and economies of scales hence more competitive as compared to small firms. Larger firms are also thought to engage more in internal R&D which results in innovation a precursor

for firm competitiveness (Selcuk, 2013). According to Lin & Chen (2007) firm size maybe an antecedent for firm performance. Schumpeter (1942) posits that larger firms were more innovative due to their ability to access to funds and spread R&D risk.

Acs and Audretsch (1987) argues that small firms are more innovative in competitive markets while large firms do better in more monopolistic markets. Damanpour (1996) claimed larger firms were more innovative due to access to resources necessary for innovation and firm competitiveness. Large firms are thought to have the resource advantage over small firms which they can leverage for their competitiveness. Firm size is also thought to have has a positive correlation with innovation. Covin, et al., (2006) have also established that firm size affects the firm's processes and performance, and its innovation ability.

Firm resources have been associated with firm size and in some cases firm size has been used to denote firm resources. Based on the resource based theory, firm level competitiveness can be viewed as competencies based on available physical and human resources and networks that allow a firm to compete effectively in its market (Szerb & Ulbert, 2009). Financial resources, human resources, capabilities and organizational process are key factors contributing to the competitiveness of enterprises. Among the key firm processes affecting competitiveness is innovation that is influenced by the availability of key firm resources.

However, the empirical evidence is mixed as other scholars have observed that SMEs are more innovative than larger firms due to their flexibility and speed of response (Acs & Audretch, 1990; Afuah, 1998). Others have argued that Firm size is just one factor that

influences innovation, and how salient that size is in a given case overall depends on other factors that include resources, industry life cycle and market competition.

Secluk (2016) in his study on "factors affecting firm competitiveness: evidence from an emerging market", found positive significant effect of firm size on firm competitiveness indicated by profitability and return on assets. Liargovas and Skandalis (2010) in their study on factors affecting firm competitiveness investigated financial and non-financial determinants of firm competitiveness. Research findings showed that leverage, firm size, export activity and management competence had a significant effect on firm competitiveness indicated by return on sales and return on assets.

Dogan (2013) in their study of the impact of firm size on profitability using a data set of 200 listed companies for the period 2008-2011, found a significant positive relationship between firm size and profitability. Giovanis and Ozdamar (2014) in their study on the determinants of profitability found firm size to have positive effects on profitability only up to a certain point after which the relationship turns negative.

2.4 Summary of Literature Review and Research Gaps

Studies reviewed acknowledged the important role played by SMEs and the manufacturing sector. Reviewed literature suggests that innovation is a strategic solution to the SMEs that can be employed to enhance their competitiveness, survival and growth in a in the dynamic competitive environment. Innovation is highlighted as a core competence for SMEs for sustainable competitiveness(Gray, 2006; Dibrell *et al*., 2008; Kiraka, Kobia & Katwalo, 2013; Lin & Chen, 2007; AIkeli, 2007). It is also recognised that generally SMEs are thought to be in a better position to innovate because of their structure and flexibility but have not realised this potential due to several factors.

The concept of competitiveness was also reviewed from various literature from which several measures of competitiveness were identified. Most used performance measures that include profitability, productivity, market share and export performance have been used as a proxy for firm competitiveness (Sidek & Rosli, 2013; Lalinsky, 2013; Selcuk, 2013). According to Najib (2013), performance measures such as profitability are considered important indicators of a firm's competitiveness. This study considered both financial and non-financial indicators of competitiveness. The study used Profitability and market share as indicators of firm competitiveness. Profitability was measured by net profit for the firms while market share was indicated by sales in the market. These two indicators were relevant to this study because profit and sales are key issues for manufacturing SMEs in Kenya for their survival and performance.

Several firm related theories were reviewed to inform the study. The theories informed the study of the various independent/ moderating variables in innovation. From the reviewed theories, several factors were found to influence firm innovation and competitiveness and they include firm's resources e.g financial and human resources among others, firm size and age, firm activities and processes, innovation and firm competencies. The theories guided the choice of study variables and the conceptual framework.

An important area reviewed in literature was on the measures of innovation based on various indicators.From the studies reviewed innovation indicators can be categorised into two, indicators based on innovation inputs and activities and those based on innovation outputs. Some literature has indicated the use of R&D activities and expenditure as indicators of innovation while others used patents as a measure of innovation activities. This is especially for studies in enterprises in the developed countries. However these two

indicators are limiting in the context of Manufacturing SMEs in a developing country like Kenya where most SMEs are not involved in formal R&D and don't protect their innovations using patents. The study therefore adopted the use of the number and newness of new products, services, processes and systems to measure innovation in the Manufacturing SMEs (Ahuja & Katila, 2001).

Although innovation is generally regarded as a means of firms obtaining and sustaining competitiveness, this relationship is not strongly supported empirically. The impact of innovation on firm competitiveness and performance remains of significant interest to researchers, economist and policy makers. Much of the earlier studies and empirical literature have examined the relationship between innovation and firm performance. Very few studies have examined the relationship between innnovation and competitiveness especially in developing economies like Kenya.

Few of the empirical studies listed analysed the effect of innovation on firm competitiveness. Most of them focused on the effect of innovation on firm performance though most of them used the same indicators of performance as those proposed for firm competitiveness. The bulk of the empirical literature reviewed was from the developed countries that have a different context from the Kenyan context (Lin & Chen,2007; Rozic & Sonja, 2005; Mensah & Acqual, 2015; Secluk, 2016; Varis & Littunen, 2010; Sidek & Rosli, 2013; Atalay et al. 2013; Marques& Ferreira, 2009; Belderbos, Duvivier & Wynen, 2010; Terziovski, 2010; Kiss, 2011; Rojas, Cerda, Garcia & Barcena, 2013).

Very few studies have been carried out on innovation and its effect on competitiveness in manufacturing SMEs in developing countries especially in Kenya. Few studies available

investigated the role of innovation on firm performance. Only Gakure *et al*. (2013) did a study linking innovation to competitiveness in kenya but focused on the electrical and electronic manaufacturing enterprises while Ngirigacha and Bwisa (2013)linked entrepreneurial innovation to market competitiveness. This is indicative of a knowledge gap that this study sought to contribute to.

Table 2.1 Previous Studies and Knowledge Gaps Author(s)

Author	**Study**	**Key Findings**	**Knowledge Gaps**	**Focus of the current study**
Rozic & Sonja (2005)	Effect of Innovation Activities in SMEs in Croatia	Innovation leads to increased market share	Focused on SMEs in Croatia	Focus on Manufacturing SMEs in Kenya
Lin & Chen (2007)	Does Innovation lead to Performance?	Organizational Innovation had an impact on Firm sales Found a weak link between product innovation and firm sales.	Considered Innovation and Firm performance Study conducted in Taiwan	This study focuses on the effect of innovation on competitiveness in Manufacturing SMEs in Kenya.
Otero-Neira *et al*. (2009)	Innovation and performance in SMEs in the Furniture Industry an International Perspective	Market Innovation has a positive effect on firm performance	Focused on SMEs in the Furniture Industry in a subset of the Manufacturing Sector.	Focused on the effect of Innovation in Manufacturing SMEs in Kenya
Belderbos, Duvivier & Wyen (2010)	Innovation and Export competitiveness in Flemish Firms	Implementation of Innovations especially Product has a robust positive correlation with export intensity	Focused on Flemish firms and on export competitiveness	This study consider firm competitiveness in terms of profit and market share in Manufacturing Kenyan SMEs
Varis & Littunen (2010)	Types of Innovation, sources of Innovation and Performance in Entrepreneurial	Process innovation positively correlated with performance and marketing	Considered firm performance as the dependent variable	Considered firm competitiveness as the dependent variable in Manufacturing SMEs in Kenya.

	firms.	Innovation had a highly significant relationship with firm performance		
Terziovski (2010)	Innovation Practice and its implications in Manufacturing SMEs in Austria	Study found no significant relationship between innovation and SME performance	Focused on Manufacturing SMEs in Austria	Focused on Manufacturing SMEs in Kenya.
Ar & Baki, 2011	Antecedents and Performance impacts of product vs process innovation in SMEs inTurkish Science & Technological park.	The study found a positive and significant influence of product and process innovation on firm performance	Study only considered product and process innovations in SMEs in Turkey	Study considered more dimensions of Innovation including product, process, marketing and organizational in manufacturing SMEs in Kenya
Kiss, 2011	Impact of Innovation on firm competitiveness in Hungary	Study found no significant relationship between innovation and firm competitiveness.	Focused on Firms in Hungary	Focused on manufacturing SMEs in Kenya
Sewang et al.,2011	Effect of Innovation on SMEs in Australia and Thai	Innovation led to increased customer satisfaction, sales and profit margin	Study was done on SMEs in Australia and Thai	Study carried out on manufacturing SMEs in Kenya.
Atalay et al., 2013	Relationship between innovation and firm performance in Turkish Automotive supplier Industry	The study found a positive correlation between product innovation and firm performance	Study focused on performance in the Automotive Industry in Turkey	Study focused on firm competitiveness in manufacturing SMEs in Kenya
Gakure *et al., 2013*	The role of Innovation in determining the	Findings reveal Innovation has a significant	This study focused on the Electrical and	The study considers all Manufacturing

	competitiveness of Electrical and electronic Manufacturing enterprises in Kenya	positive relationship with firm competitiveness.	electronic manufacturing enterprises	SMEs in Nairobi county and looks at each type of innovation and how it affects competitiveness.
Najib, 2013	Internal sources of competitiveness in SMEs in Indonesian food processing firms	Innovation was found to have a positive effect on firm competitiveness	Study focused on food processing firms in Indonesia	Study focused on all Manufacturing SMEs in Kenya
Ngirigacha & Bwisa, 2013	Importance of Entrepreneurial innovations on SMEs marketing competitiveness in Thika town	Study found a significant relationship between entrepreneurial innovation and marketing competitiveness	The study only focused on Marketing competitiveness and the study was on SMEs in Thika town	Study considered general firm competitiveness and was conducted on Manufacturing SMEs in Nairobi county
Oke *et al*., 2013	Innovation types and performance in growing SMEs in UK	Product & process Innovation had a positive effect on firm performance	Study focused on SMEs in Uk	Study focused on manufacturing SMEs in Kenya
Rojas et al., 2013	Innovation and competitiveness in SMEs in Mexico	Study found a high significant relationship between innovation and competitiveness	Study carried out on SMEs in Mexico	Study carried out on manufacturing SMEs in Kenya
Sidek & Rosli, 2013	Impact of Innovation on the performance of Manufacturing SMEs in Malaysia	Product and process had a significant positive effect on firm performance while marketing innovation had a non-significant effect.	Study carried out on manufacturing SMEs in Malaysia	Study carried out on manufacturing SMEs in Kenya
Njogu, 2014	The effect of Innovation on the financial performance of SMEs in Nairobi County, Kenya	Study findings indicate that Product, Process and marketing Innovation has positive	The study focused on only three dimensions of Innovation, Product,	The study focused on four dimensions of Innovation including organizational

		significant effects on financial performance of SMEs in Nairobi, county	process and marketing in all SMEs in Nairobi County. The study only considered financial performance	and considered the competitiveness of manufacturing SMEs in Nairobi county
Mensah & Acquah, 2015	Effect of Innovation Types on the performance of SMEs in Ghana	Process, Marketing and organizational Innovation had positive significant effects of firm performance. Product innovation had non-significant effects on performance.	The study considered the effect of innovation on SMEs performance in Ghana	Study considered the effect of innovation on firm competitiveness of Manufacturing SMEs in Kenya.
Aziz & Samad, 2016	The effect of innovation on the competitive advantage of Food manufacturing SMEs in Malaysia	Findings indicate Innovation had a positive impact on SMEs' competitive advantage	Study was carried out on Food manufacturing SMEs in Malaysia	Study was carried out on manufacturing SMEs in Kenya.
Secluk, 2016	Factors affecting firm competitiveness: Evidence from an emerging market.	Study found that innovation had positive significant effect on competitiveness	Study was carried out on firms In Turkey	Study carried out on Manufacturing SMEs in Kenya

In recognition of the important role played by innovation in the growth , survival and competitiveness of SMEs and the limited empirical literature to support its its application to enhance competitiveness, an empirical study was imperative. This study sought to add to the body of knowledge on innovation in SMEs by investigating innovation in SMEs and

the effect on firm Competitiveness. If innovation is to be successfully employed to improve the competitiveness of SMEs in the the manufacturing sector, then its effect must be investigated, analysed and highlighted. This is neccesary to form the basis of innovation strategy and policy for firm competitiveness. Currently, no known study has been carried out in kenya that seeks to empirically investigate the effect of innovation practice in Manufacturing SMEs in Nairobi County.

2.5 The Conceptual Framework

The conceptual framework shows how the dependent variable is related to the independent variable and the role of the moderating variables in the innovation competitiveness relationship. These relationships are depicted in Figure 2.1

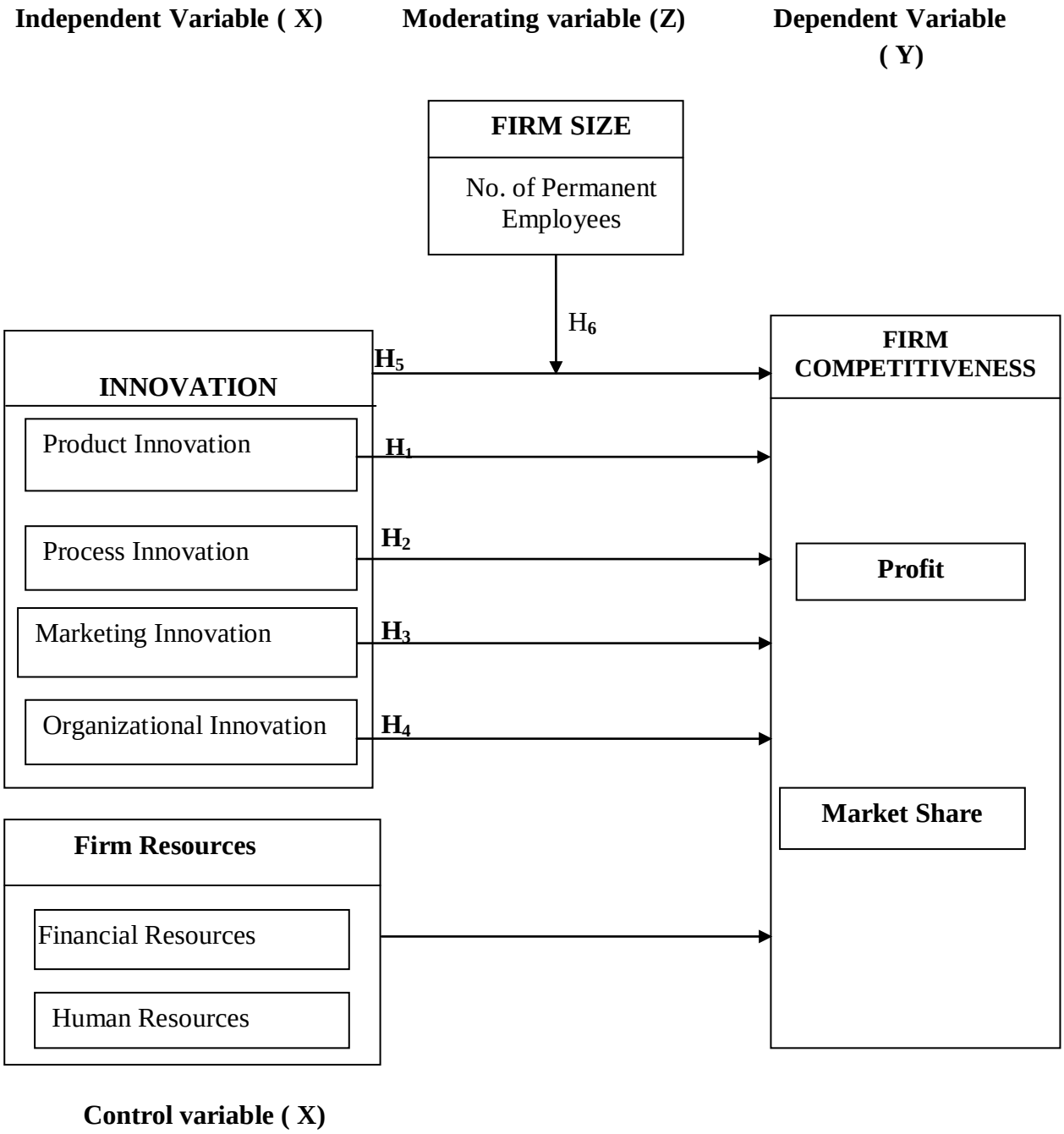

Figure 2.1: The Conceptual Framework

Source: Author (2014)

The Conceptual framework in Figure 2.1 consists of 3 sets of variables; the Independent variables: Innovation, comprising of Product Innovation, Process innovation, Marketing Innovation and organizational Innovation; Control variable: Firm resources; Moderating variables: firm size; the Dependent variable: Competitiveness represented by profit and

market share. Innovation is in four dimensions; Product, Process, marketing and organizational innovation.

Based on the above conceptualized framework, it is hypothesized that Product, Process, Marketing, Organisational and combined innovation have positive effect on firm competitiveness. The framework also hypothesize firm size has a moderating effect on the relationship between Innovation and firm competitiveness thereby influencing the strength and direction of the relationship.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1Introduction

This chapter provides a detailed description and explanation of the methodological approach used in the study that includes methods and procedures. The chapter covers the following sections: Research Philosophy; Research Design; the Empirical Model; Operationalisation and measurement of variables; a description of the Target Population and the Study sample; Sampling Design and Sample Size; Study area; Data collection methods; Instrument of data collection, Data collection procedure, Data analysis and Presentation.

3.2 Research Philosophy

Research Philosophy relates to the development and foundation of knowledge upon which assumptions and predispositions of a study are based. These assumptions underpin the research strategy and the methods chosen to be used in the study (Saunders, Lewis & Thorn hill, 2012). A Positivist Research Philosophy was adopted that has the assumption that social reality is singular and objective and is not affected by the act of investigation (Collis & Hussey, 2009). The philosophy stresses the importance of scientific rigour in the quest for knowledge. Positivism is quantitative, objective and scientific, using a highly structured methodology to facilitate replication (Saunders, Lewis & Thornhill, 2012). Based on the philosophy, formulated variables, hypotheses and operational definitions were deduced based on existing theory.

According to Saunders, Lewis and Thornhill (2012), only observable phenomenon by a researcher can lead to the production of credible data in positivism. Based on the philosophy, data was collected about an observable reality (phenomena) innovation. Trends, regularities and causal relationships in the data were used to create generalizations. The research strategy used in the study was also generated based on existing theories. Hypotheses were tested using data and were confirmed in whole or part leading to further contribution to theory (Saunders, Lewis & Thornhill, 2012).

In positivism, the researcher is independent (neither affects nor is affected by the subject) of the research. This has the implication of the research being conducted in a value free way, where the researcher is external to the process of data collection to ensure little interference with data (Collis & Hussey, 2009). Based on positivism, the study applied a deductive approach which involved collection of data that was used in evaluating prepositions related to existing theories. The study sought to explain causal relationships between variables which were operationalised in a way that enabled facts to be measured quantitatively. In order to generalise the results, a sample of sufficient size was carefully selected (Saunders, Lewis & Thornhill, 2012).

3.3 Research Design

The study adopted a descripto-explanatory design which combines descriptive and explanatory designs (Saunders, Lewis & Thornhill, 2012). Descriptive design is appropriate in describing the characteristics of a given entity/population or phenomenon. The descriptive design was appropriate in ascertaining the status and nature of innovation in manufacturing SMEs in Nairobi. On the other hand explanatory design was useful in establishing causal relationships between the independent and dependent variables

(Mugenda, A. & Mugenda, O., 2003). The design was useful in explaining the effect of innovation on firm competitiveness (Collis & Hussey, 2009; Saunders, Lewis & Thorn hill, 2012). Cross sectional survey strategy was used to collect data to gain a snapshot into the innovation phenomenon in manufacturing SMEs at a particular period (Hair *et al*., 2010). The survey strategy was deemed appropriate in view of the fact that it allows the collection of large amounts of data from a sizeable population in an economic way while giving the researcher more control.

3.4 Empirical Model

An empirical model was used to test the relationship between the independent variables and dependent variables. Multiple linear regression models were applied to establish the effect of the independent variables innovation and firm resources on the dependent variable firm competitiveness.

Competitiveness the dependent variable is represented by (Y) while Innovation the independent variable (X) is represented by the four types of innovation; product, process, marketing and organizational innovation.

The model takes the following form;

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... \ \beta_n X_n + \varepsilon$ ……...…3.1

Multiple linear regression model for the study is given by;

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$……..…3.2

Where

Y = Competitiveness

β_0 = Constant of the equation

$\beta_1 - \beta_n$ = Regression Coefficients (The estimated change in the dependent variable for a unit change of the independent variable)

$X_1 - X_n$ = Independent variables

ε = Error term

To examine for moderation, a 3 step hierarchical multiple linear regression analysis was conducted.

I. Step 1: The independent variables of the regression Financial resources, Human resources, and Innovation were regressed against competitiveness

II. Step II: Firm Size was introduced to Model one. The Independent variables for regression were Financial resources, Human resources, Innovation and the moderator variable (Firm size) are regressed against competitiveness

III. Step III: An interaction variable, the interaction between independent variable (innovation) and moderator (firm size) is created and included in the model. The independent variables of the regression are financial resources, human resources, innovation, the moderator and the interaction variable

The Empirical Model for the moderating variable is

$Y = \beta_0 + \beta_1 X_1 + \beta_2 Z$…….....3.3

$Y = \beta_0 + \beta_1 X_1 + \beta_2 Z + \beta_2 X_1 Z$ ……...……3.4

Hence our Regression Model will be;

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 Z + \beta_7 X_i Z + \varepsilon$ …….. ...3.5

Where

Y = Competitiveness

β_0 = Constant of the equation

β1 - β5 - Regression Coefficient for variables X_1, X_2 X_3 X_4

β6 = Regression Coefficient for moderating variables X_i

ε = Error term

Y = Competitiveness

Z = Moderating Variable

X_i* Z = Interaction effect between the independent and the moderator variable

Moderation Decision-Making Criteria

The moderation effect on the relationship between innovation and firm competitiveness was tested using the two models presented above. The test for moderation involves determining whether the p value for the interaction term is statistically significant. If the p value for the interaction variable is significant i.e. $P^Z < 0.05$ then we do not accept the hypothesis that the independent variable is a moderator variable otherwise. If the interaction effect between the independent variable and the moderator variable is not statistically significant, then Z is not a moderator variable.

3.5 Operationalisation and Measurement of Variables

The variables of the study were measured and operationalised as presented in Table 3.1

Table 3.1 Operationalisation and Measurement of Variables

Type of Variable	Variable Definition	Indicators	Operationalisation of the Variable	Measure
Dependent	**Competitiveness**	Profit	Net profit in Kenya shillings	5 point Likert scale
		Market Share	Total sales in the market	5 point Likert scale
Independent	**Innovation**	Product Innovation	Number of Product innovations developed and implemented in the last 3 years	5 point Likert scale
		Process Innovation	Number of Process Innovations developed and implemented in the last 3 years	5 point Likert scale
		Marketing Innovation	Number of Marketing Innovations developed and implemented in the last 3 years	5 point Likert scale

		Organizational Innovation	No. of Organizational Innovations developed and implemented in the last 3 years	5 point Likert scale
	Firm Resources	Finance Human Resource	Capital employed in the firm Education level of Employees	5 point Likert scale
Moderating Variables	**Firm Factors**	Firm Size	No. of Permanent employees in the firm	5 point Likert scale

Source: Author (2014)

3.6 Target Population

The target population for the study was manufacturing SMEs in Nairobi County that employ 5- 99 permanent employees. There were 987 registered manufacturing SMEs of which 341 are small employing 11-49 permanent employees and 646 are medium employing 50- 99 permanent employees (Nairobi City County, 2013)

Table 3.2: Target Population

Enterprises	Frequency
Small Enterprises	341
Medium Enterprise	646
Total	987

Source: Business Register, Nairobi City County (2013)

3.7 Sampling Strategy

3.7.1 Sampling Design and Procedure

A sampling frame was constructed from two sources due to lack of a complete sampling frame, from KAM directory and the list of registered SMEs from Nairobi county business register. The sample was selected from three defined Industrial clusters based on geographical location. Cluster one comprised of manufacturing SMEs in Industrial area, Cluster two comprised on Manufacturing SMEs in Ruaraka/ Baba Ndogo Industrial area while cluster three included those SMEs in the Industrial cluster Kariobangi and those off Mombasa and airport roads. Care was taken in the sampling to ensure a good representation of both the small and medium enterprises, at the ratio corresponding to the target population of the enterprises.

Sampling is the process of collecting information about a total population by investigating only a part of it (Kothari, 2009). The study employed a multistage sampling design that combined cluster and stratified random sampling. Multi-stage sampling procedure is a sampling technique that is carried out in stages and usually involves more than one sampling method (Kothari, 2009). This sampling design was considered appropriate due to the fact that most manufacturing SMEs are located in industrial clusters based on their location. Stratified Random sampling was further applied in the clusters to reduce biasness in the sample collected.

In the first stage of sampling, three clusters with high concentration of Manufacturing enterprises were selected; Industrial Area, Ruaraka/ Baba Dogo and Kariobangi and areas along and off Mombasa and Airport road. In the second stage of sampling, stratified random sampling was used to select SMEs from the three clusters. Stratification was necessary because manufacturing SMEs are heterogeneous in terms of size and the

activities they are involved in. This study considered stratification based on the size of the enterprises where they were classified as either small or medium enterprises. Enterprises were randomly selected from the strata to eliminate bias.

3.7.2 Sample Size

Several approaches are available for sample size determination and include a census for a small population; use of a similar sample size for a similar study; use of published tables or through a statistical approach by computing the sample size based on statistical formulas.

The study used Yamane (1967) formula to calculate sample sizes at 95% confidence level

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size,

N is the population size,

e is the level of precision.

When this formula is applied to the above population, we get

$$\text{Hence } n = \frac{987}{1 + 987(0.05)}$$

$$n = 284$$

The sample of 284 was distributed as indicated in Table 3.4, where by the sample distribution was based on the percentage numerical strength of each stratum.

Table 3.3 : Sample Distribution

STRATA	POPULATION SIZE (N)	SAMPLE SIZE (n)	PERCENTAGE (n/ N) *100
POPULATION	987	284	28.7
SMALL	341	98	28.7
MEDIUM	646	186	28.7

Source: Author, 2014

3.8 Data Collection Instrument

Primary data was used to achieve the study objectives hence data was collected from the enterprises. Data collected for the study was both quantitative and qualitative. A semi-structured questionnaire was developed and used as the main instrument of data collection, Appendix II. The questionnaire as a research instrument was considered appropriate because it allowed the collection of data from a relatively large sample, in an economic way. The research instrument incorporated most of the guidelines and format given in the Oslo Innovation manual on guidelines to collecting and analyzing innovation data (OECD, 2005).

The questionnaire comprised of 3 major sections. Section one focused on the Enterprise. This section collected data on the enterprise bio-data, firm characteristics including firm size the moderating variable. Section two focused on innovation and innovation activities collecting data on the types, nature and numbers of innovations implemented in the enterprise in the last three years (product, process, organisational & marketing). Lastly, section three focused on the effect of innovation on firm competitiveness. This section collected data on the dependent variable, firm competitiveness that included financial (Profitability) and market share (Sales) performance of the enterprises.

The research instrument was administered by the researcher to the manager/ owner of the enterprise with the help of well trained research assistants. Researcher administration of questionnaires was preferred to reduce cases of non-response, to ensure quick filling and return of the questionnaires and to ensure higher levels of accuracy. Data was collected from the enterprises in July, 2015.

3.9 Validity and Reliability of the Research Instrument

3.9.1 Validity

According to Saunders *et al.* (2012) validity is the extent to which data collection method or methods accurately measure what they are intended to measure and the extent to which research findings are really about what they own up to be. Validity of the research instrument refers to the extent to which the tool measures what it is supposed to actually measure. An instrument has content validity if it contains a representative sample of the universe of subject matter of interest (Cooper & Schindler, 2012; Kothari, 2009).

Overall Instrument's validity was improved by matching the questions in the instrument with the research objectives and research questions. The research instrument was further subjected to external peer review to assess the instrument. Feedback given was used to enhance and make some adjustment on the instrument (Hair, *et al*., 2012). The study also incorporated the guidelines provided by the OECD Oslo Innovation manual on guidelines on innovation data collection and analysis (OECD, 2015).

3.9.2 Reliability of the Research Instrument

Reliability is the extent to which results are consistent over time and are an accurate representation of the population under study. This implies that the results of the study can be replicated using the same methodology and instrument (Saunders *et al*., 2012; Kothari,

2009). Threats to reliability may result from instrument error, observer error or respondent error (Robson, 2002). To ensure the instrument's reliability, the researcher undertook to standardise the conditions under which data was collected and used well trained research assistants to minimise external sources of variation (Lumpkin & Dess, 1996).

The reliability of the questionnaire was calculated using the Cronbach's alpha coefficient (Cronbach, 1951), which measures the internal consistency among a set of items; i.e. the extent to which the same set of respondents responds in a consistent manner to similar questions. This was based on the data collected from the pilot study. The results of this test are shown in Table 3.5

Table 3.4: Reliability Tests Results

Variable	**Cronbach's Alpha**	**Conclusion**
Competitiveness	0.7900	Reliable
Innovation		
Product Innovation	0.7168	Reliable
Process Innovation	0.7022	Reliable
Marketing Innovation	0.7256	Reliable
Organizational Innovation	0.7220	Reliable

Source: Author, 2015

Product Innovation variable had a reliability coefficient of 0.7168, Process Innovation with had a reliability coefficient of 0.7022, marketing Innovation had a reliability coefficient of 0.7256, Organizational innovation had a reliability coefficient of 0.7220 and Competitiveness had a reliability coefficient of 0.7900. Kothari, 2005 suggests that reliability tests with α reliability coefficient above 0.50 indicate reliability while Field, 2009 recommends α value of 0.7 and above to indicate reliability. Based on the reliability test results in table 3.5, Product, Process, Marketing, Organizational innovation and

competitiveness had values above 0.7 indicating they were reliable. Appendix II shows the final tool used in the study.

3.9.3 Pilot Test

A pilot-test was carried out on a small sample of the population (20 enterprises) to test the research instrument. The response to questions in the questionnaire was used to evaluate the instrument in terms of questions' variation, meaning, clarity, length of questionnaire, and ease of answering questions by the respondents. The pilot study was also used to assess whether each question measured what it was supposed to measure, that is if all the respondents interpreted the questions in a similar way. Based on the response, the questionnaire was revised to improve validity.

3.9.4 Data Collection Procedure

Data collection for the study involved a set of activities that include identification and securing of the participation of enterprises; identifying, procuring and training of research assistants; pre-testing the research instrument through a pilot study; obtaining a research permit from the National Commission for Science, Technology and Innovation; administering the questionnaires and follow-up and collection of questionnaires. Questionnaires were pre-tested for clarity to see whether they elicited the responses required to achieve the research objectives and whether the content was relevant and adequate. Based on the feedback, they were adjusted accordingly.

Contact was established with the selected sample firms through emails and telephone to explain the research, establish their exact location and request for audience. Pre-visits were made to a few enterprises where possible to provide more information about the research.

An introductory letter, Appendix I, was attached to the questionnaire informing the respondents of the objectives and significance of the study while assuring them of confidentiality that the information is strictly for the research. A research permit, Appendix III, was obtained from the National Commission for Science, Technology and Innovation as required before proceeding for data collection. Research assistants were identified and procured to assist the researcher with data collection and were trained before embarking on data collection.

3.10 Data Analysis and Presentation

Data was analyzed using descriptive and inferential statistics. Before carrying out data analysis, the collected data was cleaned, errors identified and corrected. Data coding was done to translate other data types to numeric codes to ensure quick data entry and to facilitate analysis. Descriptive statistics were used to obtain an understanding of the data; to describe, summarize and display the data. Descriptive analysis was useful in establishing the types and nature of innovation in Manufacturing SMEs in Nairobi County. The study used frequencies, percentages and measures of dispersion that include sample means and standard deviation to attain this objective. These statistics were presented using frequency tables. Descriptive statistics were useful in identifying patterns and trends in the data that served as a basis for inferential statistics.

Inferential statistics were used to test relationships between variables. Data was analysed using the Statistical Package for social sciences (SSPS). Multiple Linear Regression was used to analyze the effects of innovation on firm competitiveness. Before performing Regression analysis, the researcher carried out various diagnostic tests to test the underlying statistical assumptions for the linear and multiple regressions (Field, 2012).

Diagnostic tests carried out include Normality, Linearity, Homescedasticity, and Multicollinearity tests.

a. Normality Test

One of the assumptions for parametric tests to be reliable is that data should be approximately normally distributed. The normality test is used to determine whether sample data has been drawn from a normally distributed population. Normality of the data was tested using Kolmogorov – Smirnov test. If the test is non-significant ($P > 0.05$), the distribution of the sample is not significantly different from that of a normal distribution hence normally distributed. If the test is significant ($p < 0.05$), the distribution of the variables is significantly different from that of a normal distribution hence it is not normally distributed violating the assumption of normality (Field, 2009).

b. Linearity Test

Another assumption for parametric tests is that the independent and dependent variables have a linear relationship. Linearity was tested using the linearity test in the regression model based on the ANOVA table output for regression. This is indicated by the value sig. deviation from linearity. If the value sig. Deviation from linearity is non-significant, i.e. greater than 0.05 ($P>0.05$) then the relationship between the dependent and independent variable is linear and if the Sig. Value Deviation from Linearity is significant, less than 0.05 ($P< 0.05$) then the relationship is non-linear (Hair *et al*., 2012)

c. Homoscedasticity Test

Homoscedasticity (homogeneity of variance) refers to the assumption that the dependent variable exhibits equal variance across the range of values for an independent variable

(Hair et al., 1998). Heteroskedasticity occurs when dependent variable exhibits unequal variance across the range for independent variables. Levene's test for equality of variance was used to test for homogeneity of variance. The Null hypothesis is that there is equal variance hence the difference between the variance is zero. If Levene's test is significant, at $P< 0.05$, we reject the hypothesis and if $P > 0.05$ is and the test insignificant, we accept the null hypothesis that the variance is equal and the assumption of homoscedaticity is fulfilled (Hair, *et al.,* 1998)

d. Collinearity Test

Another assumption of linear regression is that of collinearity that assumes that the independent variables are not correlated. Multicollinearity exists when there is a strong correlation between 2 or more independent variables. Presence of multicollinearity reduces the predictive power of individual variables. Multi-collinearity was tested using Tolerance and Variance Inflation Factor (VIF) calculated using SPSS regression procedure. A VIF of less than 3 for all the independent and dependent variables indicates no multicollinearity while a VIF of more than 10 (VIF $\geq$ 10) indicates a problem of multi-collinearity (Field, 2009).

Table 3.5: Summary of Data Analysis Techniques used in the study

Objective(s)	Hypotheses	Analytical Model	Hypothesis Test
Objective 1: To establish the effect of product Innovation on firm competitiveness	**Hypothesis 1:** H_{01}: Product Innovation has no significant effect on firm Competitiveness	$Y = \beta_0 + \beta_1 X_1 + \varepsilon$ Where: Y= Competitiveness β_0= intercept β_1 = Coefficient for X_1 X_1= Product Innovation ε = Error term	H_{01}: $\beta_1=0$ Ha : $\beta_1 \neq 0$ Reject H_{01} if p-value is ≤ 0.05, Otherwise do not reject at 5% significance level.
Objective 2: To Analyse the effect of process Innovation	**Hypothesis 2:** H_{02}: Process Innovation has no	$Y = \beta_0 + \beta_2 X_2 + \varepsilon$ Where: Y= Competitiveness β_0= intercept	H_{02}: $\beta_2=0$ Ha : $\beta_2 \neq 0$ Reject H_{02} if p-value is ≤ 0.05,

on firm competitiveness	significant effect on firm Competitiveness	β_2 = Coefficient for X_2 X_2= Process Innovation ε = Error term	Otherwise do not reject at 5% significance level.
Objective 3: To Assess the effect of Marketing Innovation on firm competitiveness	**Hypothesis 3:** H_{03}: Marketing Innovation has no significant effect on firm Competitiveness	$Y = \beta_0 + \beta_3 X_3 + \varepsilon$ Where: Y= Competitiveness β_0= intercept β_3 = Coefficient for X_1 X_3= Marketing Innovation ε = Error term	H_{03}: $\beta_3=0$ Ha : $\beta_3 \neq 0$ Reject H_{03} if p-value is ≤ 0.05, Otherwise do not reject at 5% significance level.
Objective 4: To determine the effect of organizational innovation on firm competitiveness	**Hypothesis 4:** H_{04}: Organizational Innovation has no significant effect on firm Competitiveness	$Y = \beta_0 + \beta_4 X_4 + \varepsilon$ Where: Y= Competitiveness β_0= intercept β_4 = Coefficient for X_4 X_4= Marketing Innovation ε = Error term	H_{04}: $\beta_4=0$ Ha : $\beta_4 \neq 0$ Reject H_{04} if p-value is ≤ 0.05, Otherwise do not reject at 5% significance level.
Objective 5 To examine the effect of product, process, marketing and Organizational innovations jointly on firm competitiveness	**Hypothesis 5** $H_{05:}$ Product, process, marketing and Organizational innovations jointly have no effect on firm competitiveness	$Y = \beta_0 + \beta_5 X_5 + \varepsilon$ Where: Y= Competitiveness β_0= intercept β_5 = Coefficient for X_5 X_5= Marketing Innovation ε = Error term	H_{05}: $\beta_5=0$ Ha : $\beta_5 \neq 0$ Reject H_{05} if p-value is ≤ 0.05, Otherwise do not reject at 5% significance level.
Objective 6: To Investigate the Moderating effect of firm size on innovation and competitiveness relationship	**Hypothesis 6:** H_{06}: Firm size has no moderating effect on the innovation and firm competitiveness relationship	$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 Z + \beta_7 X_i Z + \varepsilon$ Where Y = Competitiveness β_5 =Regression Coefficient for the joint innovation X_1, X_2, X_3, X_4, β_6 = Regression Coefficient for moderating variables Xi, ε = Error term Y = Competitiveness Z = Moderating Variable	H_{06}: $\beta i\ \beta_6, \beta_7 = 0$ Ha : $\beta i\ \beta_6, \beta_7 \neq 0$ Reject H_{06} if p-value is ≤ 0.05, Otherwise do not reject at 5% significance level

Source: Author, 2015

3.11 Ethical Considerations in the study

To ensure the research complied with the research ethical standards, the study adhered to the following requirements. First, research authorisation was obtained from Kenyatta University (KU) Graduate School (Appendix IV). The researcher also sought authority to carry out the research as required from the National Council for Science Technology and Innovation (NACOSTI) by applying for a research permit before the commencement of the research (Appendix III). Finally, the researcher attached an introductory letter (Appendix I) that explained the purpose and significance of the research, requested for participation while giving an assurance for privacy, confidentiality and anonymity of the information collected. The researcher also took responsibility in data analysis and reporting of the research findings to ensure the collected data is not made up or altered and continued to maintain confidentiality and anonymity.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings of the empirical study on the effect of innovation on firm competitiveness based on the research objectives. The chapter consists of two main sections. Section one presents research findings using descriptive statistics to highlight the key characteristics of the enterprises and their innovation status. Section two present research findings based on inferential statistics used to test the study hypotheses that explain the relationship between innovation and competitiveness. Research findings are also discussed in the chapter.

4.2. Response Rate

A total of 284 questionnaires were distributed to the SMEs out of which 209 were returned dully filled translating to a response rate of 73.6 %. According to Mugenda and Mugenda (2003) response rate for statistical analysis of 50% is considered adequate. Babbie (2010) considers a response of rate of 50% to be adequate for analysis and reporting, whereas 60% is considered good and 70% and above is deemed very good. Hence 73.6 % response rate was considered adequate for statistical analysis.

4.3 Descriptive Results

This section provides the research's findings on the enterprise characteristics that include enterprise sub-sector, the size, age, type of business ownership structure, capital employed in the enterprise and the nature of the enterprises' markets.

4.3.1 Distribution of Enterprises in Subsectors

Manufacturing sector consist of different subsectors that include building, construction and mining, Chemical and allied, Electricals and electronics, Food and Beverages, Metal and Allied, Vehicle and accessories, Paper and paper board, pharmaceutical and medical, Plastics and Rubber, Textiles and Apparel Wood and wood products. Respondents were asked to indicate in which subsector their main product belonged to. The sampled enterprises were distributed in different the sub-sectors as presented in Table 4.1

Table 4.1: Manufacturing SMEs Distribution in Subsectors

Manufacturing Subsector	Frequency	%
Wood and wood products	28	13.4
Metal and Allied	31	14.8
Food and Beverages	35	16.7
Building , Construction and Mining	25	12
Chemical and Allied	24	11.4
Plastics and Rubber	18	8.6
Paper and Paper Board	17	8.1
Motor vehicle and Accessories	8	3.8
Others	7	3.3
Energy, Electrical and Electronics	6	2.8
Pharmaceutical & Medical Equipment	5	2.3
Textile and Apparel	3	1.4
Publishing, Printing & Record Media	2	0.9

Source: Survey Data, 2015

Study findings on the distribution of enterprises by subsector revealed that majority of the respondent enterprises were in the food and beverages subsector comprising 16.7% (35), followed by metal and allied products 14.8 % (31) and wood and wood products ranking

third 13.4 % (28) while publishing, printing and record media were least represented at only 0.5% (1).

4.3.2 SMEs Background Information

The study collected information on the size of the enterprise, age, form of business ownership, capital employed in the enterprise and the nature of markets for the enterprises. Findings are shown in Table 4.2 below

Table 4.2 Enterprise Background Information

Background Information		Frequency	%
Number of permanent employees in your enterprise			
	5-49	74	35.4
	50-99	135	64.6
	Total	209	100.0
Age of Enterprise			
	Less than 5 years	27	12.9
	5-10 years	63	30.1
	11-15 years	36	17.2
	16-20 years	18	8.6
	More than 20 years	65	31.1
	Total	209	100.0
Business Ownership			
	Sole proprietorship	66	31.73
	Partnership	14	6.25
	Limited Company	129	62.02
	Total	209	100.0
Capital Employed in Enterprise			
	<10,000,000	64	30.6
	10,000,001-20,000,000	33	15.8
	20,000,001-30,000,000	29	13.9
	30,000,001-40,000,000	32	15.3
	Over 40,000,000	51	24.4
	Total	209	100.0

Nature of Markets for the Enterprises			
	Local	77	37
	National	90	43
	International	41	20
	Total	209	100.0

Source: Survey data, 2015

Findings indicate majority of the enterprises (65%) were Medium enterprises with 50-99 employees while 35 % were small enterprises with 10-49 enterprises. Most enterprises had operated for more than 20 years represented by 31.1% (65); followed by those that had operated for 5-10 years representing 30.1% (63).Only 8.6 %(18) had operated between 16-20 years;17.2 % (36) for between 11-15 years while 12.9 % (27) had been in operation for less than 5 years.

The study also sought to establish the legal form of business of the enterprises. Respondents were asked to indicate whether their enterprises were Sole proprietorships, Partnerships or Limited companies. Findings reveal majority of the enterprises interviewed were limited companies representing 62% (129) of all the respondents, 31 % (66) were sole proprietorships while the least 6% (14) were partnerships.

Respondents were asked to indicate the amount of capital employed in their enterprises by selecting the range in which the amount of capital employed falls in a scale of 5, ranging from > 10million, 10 – 20 million, 20,000,001- 30 million, 30,000,001 – 40,000,000, and over 40,000,000. Findings indicate that 30 % (63) of the enterprises reported that they had employed less than 10 million Kenya shillings as capital in their enterprise followed by 24.4% (51) who indicated they had employed capital of over Forty million Kenya shillings.

Most of the enterprises fell between the 2 extreme categories of less than 10 million and more than 40 million.

The nature of markets for the SMEs is an important indicator of the level of competition and market access which in turn affects enterprise competitiveness. Enterprises were asked to indicate the nature of their markets by choosing whether their markets were local, national and International. 42.9% of the enterprises had national markets, 36.9% had markets that were local while 20.2% had markets that were international.

4.4 Innovation

4.4.1 Level of Innovation

Innovation was measured by the number innovations implemented in the enterprise over a period of time in this case 2012-2014. Respondents in the survey were asked to indicate the number and type of innovations they had implemented in their enterprises in the past three years (2012- 2014). Study findings as presented in Table 4.3 below

Table 4.3: Level of Innovation

Innovation	**Number of Innovations per Enterprise**			
Type of Innovation	< 3	3-6	7-10	> 10
Product	86	64	22	4
Process	110	44	16	1
Marketing	82	12	4	
Organizational	44	9		
Total	322	129	42	5

Source: Survey Data, 2015

Table 4.3 indicate that 203 of the enterprises surveyed had at least one innovation, while 6 enterprises had none at all. 92 % of the surveyed firms had implemented product (goods or

services) innovation, 87.5 % of the enterprises had implemented process innovation while 69 % had implemented marketing and while 51.6 % had implemented marketing innovation in the period 2012 – 2014. However it is notable that even though almost all the enterprises were innovating, majority of the enterprises had few innovations in the category of 1-3 innovations.

4.4.2 Nature of Innovation

The study sought to establish from the respondents the nature of their innovation by either rating them as significantly improved, new to the firm, new to the market, new to the country and new to the world. The respondents were asked to indicate for every innovation developed whether it was significantly improved, New to the firm, New to the Industry, New to the country and New to the world. The Study findings are shown in Table 4.4

Table 4.4: Degree of Newness of Innovation/ Nature of Novelty

Type of Innovation	**Degree of Newness / Nature of Novelty**				
	Significantly Improved	New			
		New to the Firm	New to the Market	New to the country	New to the World
Product	86	62	46	2	1
Process	80	69	27	5	
Marketing	83	47	14		
Organizational	48	32	10	2	

Source: Survey Data, 2015

Novelty refers to the newness of an innovation and is positively related to the impact of an innovation (Keijl, 2013).Four broad levels of novelty of innovation are defined in relation

to the firm and the market in which the firm operates; Significantly improved, new to the firm, new to the market of the firm in Kenya (and to its competitors) and new to the world.

In terms of innovation novelty, findings indicate 50 % of the enterprises indicated they had introduced innovations that were only significantly improved the lowest level of novelty, while 34 % had implemented innovations that were new to the firm, 15 % of the enterprises had introduced innovations that were new to the Kenyan market. Only one enterprise representing 0.005 % of the total respondents had successfully implemented a product innovation that was new to the world, thus achieving the highest degree of novelty. The effect of Innovation is influenced not only by the quantity of innovations but also by the quality/ nature of innovation indicated by the degree of novelty.

A significantly improved innovation involves an improvement in the existing product, process, marketing methods and organizational to a great extent or significantly. A product, process, marketing method or organizational method may already have been implemented by other firms, but if it is new to the firm (or in case of products and processes: significantly improved), then it is an innovation for that firm. On the other hand, new to the market and new to the world concern whether or not a certain innovation has already been implemented by other firms, or whether the firm is the first in the Kenyan market or industry or worldwide to have implemented it.

Innovations are new to the market when the firm is the first to introduce the innovation on its market and an innovation is new to the world when the firm is the first to introduce the innovation for all markets and industries, both domestic and international. This implies a qualitatively greater degree of novelty than new to the market, and is the desired level to ensure competitiveness and sustainable economic growth.

Even though most of the enterprises were innovating, Research findings shown in table 4.4 indicate that majority of the enterprises were innovating at the lowest level of novelty and this may have had an impact on the level of firm competitiveness. According to Schumpeter (1947), Radical innovations have the highest level of novelty and the highest level of impact on enterprises. Low levels of novelty (as in incremental innovations) represent innovations that are not unique enough for firm competitiveness and builds upon existing knowledge and resources of the firm (Noteboom, 2002). Based on the research findings, the level of competitiveness of the enterprises may have been influenced by the degree of novelty of the innovations exhibited in the enterprises.

4.4.3 Innovators for Enterprise Innovations

Knowledge of who developed the innovation is important in ascertaining how innovative an enterprise is. The study sought to know who developed the innovations in the enterprises. Respondents were asked to indicate whether it was the enterprise itself, enterprise with other enterprises, enterprise by adapting / modifying innovations originally developed by other enterprises or institutions or other enterprises or institutions. The results are shown in Table 4.5.

Table 4.5: Innovators for the Enterprise's Innovations

	Innovator	Product	Process	Marketing	Organizational
1	Your enterprise by itself	123	16	9	4
2	Your enterprise together with other enterprises or institutions	58	21	8	4
3	Your enterprise by adapting / modifying innovations originally developed by other enterprises or institutions	18	109	24	3
4	Other enterprises or institutions	30	7	5	5

Source: Survey Data, 2015

Research findings in Table 4.5 indicate majority of the innovations 154 (34.3%) were developed by SMEs themselves by either modifying or adapting innovations originally developed by other enterprises closely followed by those developed by the enterprise itself 152 (34%) The least were those developed by other enterprises 47 (10.4%), followed by those developed by the enterprise in collaboration with other enterprises 91 (20.3). Findings indicate few enterprises were using innovations that were developed by other institutions an indication that most of the enterprises were innovative.

4.4.4 Sources of Information for Enterprise Innovation

Information is important for firm innovation, and consequently the nature of innovation is dependent on the nature and source of innovation information. This study sought to know the sources of information for enterprise innovation. Respondents were asked to rate the importance of their sources of information for their innovation activities on a scale of five from not important, somewhat important, fairly important, important and very important. The information sources were categorized as: internal sources, market sources, institutional sources and other sources. Research findings are shown in Table 4.6

Table 4.6: Importance of Sources of Information for Enterprise Innovation

Information Source		Not Important	Somewhat Important	Fairly Important	Important	Very Important
Internal	Within your enterprise / enterprise group	12	11	27	49	101
Market Sources	Suppliers of equipment, materials, components, or software	20	9	30	38	105
	Clients or customers	1	4	8	35	157
	Competitors/ other enterprises in your sector	7	7	21	49	119
	Consultants, commercial labs, or private R&D	74	35	27	18	32
Institutional sources	Government or public research institutes	64	48	29	23	25
Other sources	Conferences, trade fairs, exhibitions	63	34	28	33	42
	Scientific journals & trade/technical publications	78	29	35	29	20
	Professional and industry associations	77	26	22	26	44

Source: Survey Data, 2015

The study findings presented in Table 4.6 indicate that market sources comprising of client/ customers, competitors and other enterprises, followed by suppliers were rated as very important sources by majority of enterprises. This was followed by internal sources of information. On the other hand, Institutional/ knowledge based sources of innovation information that include universities, higher education institutions and research institutions

were rated as not so important sources of information for innovation. Consultants, commercial labs, or private R&D, Scientific journals and trade/technical publications,

Professional and industry associations' even though rich sources of information for innovation were rated as not important sources by many enterprises. These findings are indicative of a weak link between higher institutions of learning, research institutions, consultants, private R&D. The enterprises may not also access the latest knowledge generated that is disseminated in scientific journals and trade/technical publications. Radical innovations with the highest level of novelty require completely new knowledge that can be found from knowledge generating institutions and organizations that include: R&D Institutions, Journals, higher institutions of learning. Sources of information have an influence on the nature of innovation which in turn affects the impact/ competitiveness of the enterprises.

4.4.5 Innovation Co-operation Partners

Innovation cooperation is an important aspect in innovations as it facilitates enterprises enabling them to deal with some constraints to innovation. This study sought to establish if the SMEs had innovation cooperation partners, the type of innovation cooperation they had and if the cooperation partners were within the country or out of the country. Respondents were asked to indicate the type of Innovation Cooperation partner they had during the period of innovation.

Table 4.7: Type of Innovation Co-operation Partner

Type of Co-operation partner	Within the country	Other countries
Other enterprises within your enterprise group	78	6
Suppliers of equipment, materials, components, or software	62	17
Clients or customers	101	5
Consultants, commercial labs, or private R&D institutes	32	7
Universities or other higher education institutions	15	1
Government or public research institutes	36	1

Source: Survey Data, 2015

Similar to the sources of Innovation information, majority of enterprises cooperated with clients and customers, followed by other enterprises, and suppliers of equipment, materials and components. The least co-operators were Universities or higher institutions of learning, followed by consultants, commercial labs, or private R &D Institutions then government or public research institutes. Most of the co-operators were from within the country as opposed to other countries.

4.5: Inferential Analysis

This section presents the results for the diagnostic tests performed to ascertain the assumptions of linear regression. The section also presents results of the hypotheses tests conducted to determine the effect of innovation on the competitiveness of Manufacturing SMEs in Nairobi County, Kenya. Hypothesis tests on firm size as a moderating variable are also presented.

4.5.1 Diagnostic Tests

Regression analysis is based on the assumptions of linear and multiple regressions. For the regression results to be valid, the assumptions of linear regression have to hold (Hair *et al*., 2009; Field, 2009). Prior to performing the regression analysis, diagnostic tests that include normality tests, Linearity tests, Homogeneity of variance (Homoscedasticity) test and Collinearity tests were performed to verify the assumptions of linear regression.

a. Normality Tests

A normality test is used to determine whether sample data has been drawn from a normally distributed population. Normality was tested using the Kolmogorov Smirnov test. If the test is non-significant where P > 0.05, the distribution of the variable is not significantly different from a normal distribution, hence it is normally distributed. If the test is significant with a p value < 0.05, then the distribution of the variable is significantly different from a normal distribution. The results of the test are presented in Table 4.8

Table 4.8: Results of the Normality Test

Variables		Kolmogorov-Smirnov(a)		
		Statistic	**df**	**Sig.**
		.045	202	**.200(*)**
Product Innovation	<3	.081	84	**.200(*)**
	3-6	.081	55	**.200(*)**
	7-10	.099	33	**.200(*)**
	>10	.132	12	**.200(*)**
Process Innovation	<3	.055	109	**.200(*)**
	3-6	.076	40	**.200(*)**
	7-10	.191	23	**.050**
	>10	.260	2	**.**
Marketing Innovation	<3	.061	94	**.200(*)**
	3-6	.159	14	**.200(*)**
	7-10	.277	5	**.200(*)**
Organizational Innovation	<3	.116	51	**.084**
	3-6	.223	10	**.173**

Based on the results of Kolmogorov-Smirnov tests of normality, all the sig. values for each category of variable are > 0.05 hence non-significant. This implies that the distribution of the variables is not significantly different from a normal distribution, hence are normally distributed. This fulfils the assumption of normality and the data can be analysed using linear regression.

b. Test of Linearity

This test determines whether the relationship between the dependent and independent variables is linear. Linearity was tested using the linearity test in the regression model. This is indicated by the sig. value for Deviation from Linearity p, if p > 0.05 then we accept the $H_{0;}$ the relationship is linear and if p < 0.05, we reject H_0 that the relationship is not linear. The Linearity test results are shown in Table 4.9

Table 4.9: Test of Linearity

Variables	Linearity	Sum of Squares	df	Mean Square	F	Sig.
Competitiveness* Product Innovation	Deviation from Linearity	2.296	3	.765	.801	.495
Competitiveness* Process Innovation	Deviation from Linearity	.064	3	.021	.020	.996
Competitiveness* Marketing Innovation	Deviation from Linearity	.707	2	.354	.391	.677
Competitiveness* Organizational Innovation	Deviation from Linearity	.252	1	.252	.274	.602

Source: Survey Data, 2015

Based on the Linearity test results in Table 4.9, all the sig. values for deviation from Linearity p > 0.05 hence insignificant, p value for Profit/ Product Innovation is 0.495>

0.05, P value for Profit/ Process Innovation is 0.996 > 0.05, The P value for Profit/ Marketing Innovation is 0.677> 0.05 and lastly the p value for Profit/ Organizational Innovation is 0.602 > 0.05. We therefore accept the H_0 that the relationship between profit and Product, Process, marketing and Organizational Innovation is linear and conclude that the assumption of linearity between the dependent variable profit and the independent variables product, Process, marketing and Organizational innovation satisfied

c. Test for Homogeneity of Variances (Homoscedasticity)

Homoscedasticity is the assumption that the dependent variables have equal variance across the range of the independent variables. When there is unequal variance across the independent variables, we have heteroskedasticity which violates the assumption of linear regression. Levene's test statistic was used to test the variance of the error terms.

The following hypothesis was used to test for homoscedaticity

H_0 –There is homogeneity of variance, hence the difference between the variance is zero

H_1- There is no homogeneity of variance; hence there is a difference between the variance.

If Levene's test is significant and $p< 0.05$ we reject H_0 and if the test statistic is insignificant i.e. $p > 0.05$ we accept H_0, hence the assumption of homoscedaticity is fulfilled. The results of the Levene's test for homogeneity of variance are presented in Table 4.10

Table 4.10: Test for Homogeneity of Variance

Independent variable	Levene Statistic	df1	df2	Sig.
Product Innovation	.602	4	188	.662
Process Innovation	1.658(a)	3	178	.178
Marketing Innovation	1.865	3	141	.138
Organizational Innovation	.548	2	105	.580

Source: Survey data, 2015

Results for homogeneity are presented in Table 4.10, indicate the Levene's statistic for product innovation is 0.662 > 0.05, For Process innovation 1.658 (4, 188) p = 0.178 > 0.05, Marketing Innovation 1.865 (3, 141) p = 0.138 > 0.05 and Organizati0nal Innovation 0.548 (2, 105) p= 0.580. Hence we accept the H_0 hypothesis, that the variance are equal since the p value in product, Process, marketing and Organizational innovation p > 0.05 thus insignificant. The study therefore concludes that the variances are equal and the assumption of homoscedaticity was ascertained. Levene's test verified the equality and homogeneity of variance since all the sig. values are greater than 0.05. The results of linear regression hold.

d. Test for Multicollinearity

The assumption of collinearity requires that the independent variables are not correlated. Multicollinearity exists when there is a strong correlation between 2 or more independent variables and this reduces the predictive power of individual variables. This study tested the analysis variables for multicollinearity using the multicollinearity statistics of Tolerance and Variance Inflation factors (VIF).

VIF indicates whether the independent variable has a strong linear relationship with other independent variable. VIF values of greater than 10 indicate multicollinearity and Tolerance values of below 0.1 indicate serious multicollinearity problems. The results for Collinearity tests are presented in Table 4.11.

Table 4.11: Collinearity Tests

Variables	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Product Innovation	.548	1.824
Process Innovation	.720	1.389
Marketing Innovation	.645	1.551
Organizational Innovation	.653	1.532
Enterprise Size	.602	1.662
Financial Resources	.388	2.579

Source: Survey data, 2015

Based on Table 4.11 the collinearity statistics Product Innovation (VIF = 1.824, T = 0.548); Process Innovation (VIF= 1.389, T= 0.720); Marketing Innovation (VIF= 1.551, T= 0.645); Organizational Innovation (VIF= 1.532, T= 0.653); Enterprise Size (VIF =1.662, T = 0.602) and Financial Resources (VIF = 2.579, T = 0.388). All the VIF values for the independent variables are less than 10 ranging from 1.347 to 2.579, while the Tolerance values for all the independent variables as shown in table 4.15 are greater than > 0.1 indicating the non- existence of multi-collinearity (Field, 2009).Based on the results, there is no collinearity between the independent variables that can affect their predictive power, hence all the independent variables are appropriate for regression analysis.

4.5 Hypothesis Testing

The study was based on the hypothesis that Innovation has a positive effect on firm competitiveness and this relationship is moderated by firm size. Multiple linear regression was conducted at 95 percent confidence level (α =0.05). The following hypotheses were tested:

H_{01}: Product innovation has no significant effect on the competitiveness of Manufacturing SMEs in Nairobi City County, Kenya

H_{02}: Process innovation has no significant effect on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya

H_{03}: Marketing innovation has no significant effect on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya

H_{04}: Organizational innovation has no significant effect on the competitiveness of manufacturing SMEs in Nairobi City County, Kenya

$H_{05:}$ Product, Process, Marketing and Organizational Innovation combined have no significant effect on the competitiveness of Manufacturing SMEs in Nairobi City County, Kenya

$H_{06:}$ Firm size has no moderating effect on the relationship between SME Innovation and competitiveness in Manufacturing SMEs in Nairobi County, Kenya

A two stage hierarchical multiple regression was conducted with competitiveness as the dependent variable to investigate the effect of the independent variables on the dependent variable. Firm resources were included in step 1 of the regression as control variables and Innovation variables (Product, process, Marketing and Organizational) were entered at step two. This section presents the research hypotheses test results, interpretation and discussion.

Table 4.12: Goodness of Fit- Regression of Innovation Variables on competitiveness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	RSquare Change
1	.555(a)	.308	.294	.75997	.308
2	.700(b)	.489	.456	.66691	.181

a Predictors: (Constant), HR, Finance
b Predictors: (Constant), HR, Finance , Product, Process, Marketing, Organizational Innovation

Source: Survey Data, 2015

Results in Table 4.12 show an R^2 = 0.308, and Adjusted R^2 = 0.294 for model 1 with control variables. This indicates that control variables (HR and Finance resources) account for 30.8% of the variation in firm competitiveness. While R^2 = 0.489, Adjusted R^2 = 0.456 for Model 2 which includes the innovation variables indicating that innovation variables, product, process, marketing and organizational with the control variables explain 48.9 % of the variation in competitiveness. Change in R^2 with the introduction of innovation variables is given as 0.181 indicating that innovation variables alone explain 18.1% of the variability in firm competitiveness. Results indicate that both firm resources and innovation as independent variables have an impact on firm competitiveness. However it is noted that even though innovation has a significant effect on firm competitiveness its explanatory power is low.

Table 4.13: ANOVA for Regression of Innovation Variables on Firm competitiveness

Model		Sum of Squares	df	Mean Square	F	Sig.
1(control variables)	Regression	24.977	2	12.488	21.623	.000(a)
	Residual	56.023	97	.578		
	Total	81.000	99			
2(Innovation)	Regression	39.637	6	6.606	14.853	.000(b)
	Residual	41.363	93	.445		
	Total	81.000	99			

a Predictors: (Constant), HR, Finance

b Predictors: (Constant), HR, Finance , Product, Process, Marketing, Organizational Innovation
c Dependent Variable: Competitiveness

Results in Table 4.13 on Analysis of variance for model 1 indicate an F statistic of F (2, 97) = 21.623, p = .000 < 0.05 signifying a significant effect of Firm Resources (Finance and Human) on Firm competitiveness. Model 2 with the inclusion of innovation variables; product, process, marketing and organizational as independent variable has an F statistic F (6, 93) = 14.853, p = .000 < 0.05 signifying a significant effect of Innovation (product, process, marketing and organizational) on Firm competitiveness.

Table 4.14 Regression Coefficients – Innovation Variables and Firm Competitiveness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.342	.297		7.892	.000
	Finance	.330	.051	.543	6.431	.000
	HR	-.176	.153	-.098	-1.156	.250
2	(Constant)	.902	.368		2.453	.016
	Finance	.218	.051	.359	4.243	.000
	HR	-.151	.136	-.084	-1.111	.269
	Product	.018	.083	.019	.211	.834
	Process	.353	.098	.306	3.598	.001
	Marketing	.252	.107	.205	2.356	.021
	Organizational	.225	.104	.194	2.161	.033

Dependent Variable: Competitiveness
Source: Survey Data, 2015)

The following Regression results for regressing Innovation on firm competitiveness with firm resources as control variables were obtained as presented in Table 4.14

Financial resources (β= 0.543, p=0.000< 0.05) indicating a statistically significant relationship between financial resources and competitiveness. HR (β= -0.98, p=0.250 >0.05) indicating a statistically insignificant relationship between human resources and competitiveness. Product innovation (β= 0.19, p=0.834 >0.05) indicate a statistically insignificant relationship between product innovation and competitiveness. Process innovation (β= 0. 306, p=0.001 < 0.05) indicating a statistically significant relationship

between process innovation and competitiveness. Marketing innovation (β= 0.205, p=0.021< 0.05) indicating a statistically significant relationship between Marketing innovation and competitiveness. Organizational innovation (β= 0.194, p=0.033 < 0.05) indicating a statistically significant relationship between Organizational innovation and competitiveness.

Financial Resources, Process, Marketing and Organizational Innovation have positive significant effects on Firm competitiveness while human resources and product innovation have insignificant effects on competitiveness. Of the variables with significant effect, Financial Resources has more impact with β=0.359, followed by Process Innovation (β =0.306), Marketing Innovation (β= 0.205) and lastly Organizational Innovation with a coefficient (β= 0.194)

Based on the regression analysis results in Table 4.14, the following model was formulated

Competitiveness = 0. 902 + 0.330 Finance + e……..Model 1

Competitiveness = 0. 902 + 0.359 Finance +0.306 Process Innovation + 0.205 Marketing Innovation + 0.194 Organizational Innovation + e……Model 2

The findings in model 2 imply that an increase in one unit of financial resources will result in an increase of 0.359 competitiveness; a unit increase in process innovation will result in 0.306 increase in competitiveness, a unit increase in marketing innovation results in an increase of 0.205 in competitiveness and lastly a unit increase in organizational innovation results in 0.194 increase in competitiveness.

4.5.1: The Effect of Product Innovation on Firm Competitiveness

Hypothesis 1 H_{01}: Product Innovation has no significant effect on the Competitiveness of Manufacturing SMEs in Nairobi County, Kenya.

To test this hypothesis, multiple linear regression was carried out with Firm resources Control variable) and product innovation as independent variable against firm competitiveness as the dependent variable.

Regression coefficient results presented in Table 4.14 for product innovation (β= 0.19, p=0.834 >0.05) indicate a statistically insignificant relationship between product innovation and competitiveness. Hence H_{01} was accepted and the study concluded that Product innovation has a non-significant effect on the competitiveness of Manufacturing SMEs in Nairobi City County, Kenya. Hence an increase in product innovation will result in increased competitiveness though not significant.

The Findings differ with some previous study findings that concluded that there was a significant positive relationship between product innovation and firm performance/ competitiveness (Atalay *et al.*, 2013; Ar & Baki, 2011; Belderbos, Duvivier & Wyen, 2010; Oke, Jayaram & Prajogo, 2013; Sidek & Rosli, 2013; Varis & Littunen, 2010).Lin and Chen (2007) found a weak relationship between product innovation and firm sales.
Gunday et al., 2005, found that product innovation was linked to an increase in sales and market share; hence innovative firms had higher sales than non- innovative firms. However these findings are consistent with Acquah and Mensah (2015) studies that found that product innovation has a non significant effect on firm performance/ competitiveness.

4.5.2: The Effect of Process Innovation on Firm Competitiveness

Hypothesis 2, H_{02}: Process Innovation has no significant effect on Competitiveness in Manufacturing SMEs in Nairobi County, Kenya

Regression Coefficient results in Table 4.14 where Process innovation (β= 0. 306, p=0.001 < 0.05) indicate a statistically significant relationship between process innovation and competitiveness. A unit increase in Process innovation will result in 0.306 increase in competitiveness. Thus enterprises implementing process innovation are likely to be more competitive that those that are not. H_{02} was rejected at α =0.05 and the study concluded that Process innovation has positive significant effect on Manufacturing SMEs competitiveness in Nairobi County, Kenya. Overall, regression results in Tables 4.14 reveal that process innovation had the highest effect on competitiveness compared to the other types of innovation.

These findings are in agreement with the findings of Pratali (2003) who found in his study that process innovations improved a firm's competitiveness. Other studies have also found a positive correlation between process innovation and firm performance (Mensah & Acquah, 2015; Varis &Littunen, 2010; Oke *et al*., 2013; Sidek & Rosli, 2013; Atalay *et al*. 2013; Njogu, 2014). Neira et al. (2009) argues that process innovation is very relevant especially to businesses facing stiff competition as it has a direct and immediate impact on productivity performance of SMEs. Oke *et al*., (2013) emphasized the importance of process innovation in the manufacturing firms based on its distinctive competence for competitive advantage hence should be emphasized as a primary competitive factor.

4.5.3 Effect of Marketing Innovation on Firm Competitiveness

The study tested the following null hypothesis to determine the effect of innovation on firm competitiveness;

Hypothesis H_{03}: Marketing Innovation has no significant effect on Firm Competitiveness in Manufacturing SMEs in Nairobi City County, Kenya

Regression coefficient results shown in Table 4.14 show marketing innovation (β= 0.205, p= 0.021 < 0.05) indicating a statistically significant relationship between marketing innovation and competitiveness. The regression coefficient of 0.205 implies that a unit increase in marketing innovation would lead to 0.205 increase in competitiveness.

Hence H_{03} was rejected at α =0.05 and the study concluded that Marketing innovation has positive significant effect on Manufacturing SMEs competitiveness in Nairobi City County, Kenya. Hence SMEs can implement marketing innovation to enhance their competitiveness in terms of profit and sales.

These findings are consistent with the findings of earlier studies that concluded that marketing innovation had significant positive effect on firm performance (Acquah & Mensah, 2015; Varis & Littunen, 2010; Ngirigacha & Bwisa, 2013). John and Davis (2000) also concluded that marketing innovations increased sales by increasing the demand for the product leading to increased profits. According to them, marketing innovation ensured firms provided appropriate products leading to increased revenues. Marketing innovation helps to improve customer satisfaction leading to increased sales and profit (Sidek & Rosli, 2013). It is therefore important in fulfilling market needs, entering new

markets and responding to market opportunities (Rodriques- Cano *et al*, 2004). SMEs can therefore develop and implement marketing innovation to improve their competitiveness.

4.5.4 Effect of Organizational Innovation on Firm Competitiveness

The study tested the following null hypothesis to determine the effect of innovation on firm competitiveness;

Hypothesis 4, H_{04}: Organizational Innovation has no significant effect on Profit and market share in Manufacturing SMEs in Nairobi City County, Kenya

Regression coefficient results presented in Table 4.14 show Organizational innovation (β= 0.194, p= 0.033 < 0.05) indicating a statistically significant relationship between organizational innovation and competitiveness. The regression coefficient of 0.194 implies a unit increase in organizational innovation would lead to 0.194 increase in competitiveness.

Hence H_{04} was rejected α =0.05 and the study concluded that organizational innovation has positive significant effect on Manufacturing SMEs competitiveness in Nairobi City County, Kenya. This implies that Firms that implement Organizational innovation will enhance their competitiveness.

These findings are consistent with those of earlier studies (Lin &Chen, 2007; Mensah & Acquah, 2015; Bessant &Tidd 2007). Firms engaged in Organizational innovation will have an enhancement in their competitiveness. This is supported by Lin and Chen (2007) arguments that organizational innovations rather than technical innovations were vital for

increased sales. Bessant and Tidd (2007) argue that SMEs need to be involved in organizational innovation by formalising their structures and systems to become more competitive and state that large manufacturing firms have become more competitive by focusing on process innovation.

Terziovsi (2010) augment the importance of organizational innovation by arguing that organizational standards are very important and an improvement will have positive effect on the organization because they enhance the clarity of the employee roles leading to commitment, involvement and organizational effectiveness. According to Teece (2009), organizational innovation is not only an important form of creating value in enterprises but also an important form of capturing value, hence important for firm performance and competitiveness. Organizational innovation increases a firm's performance by reducing administrative/ transaction costs (OECD, 2005).However, Atalay *et al*. (2013) found no evidence of a positive significant relationship between organizational innovation and firm performance.

4.5.5 Combined effect of Innovation (Product, Process, Marketing and Organizational) on Firm Competitiveness

Hypothesis H_{05}: Product, Process, Marketing and Organizational Innovations jointly have no significant effect on Firm competitiveness in Manufacturing SMEs in Nairobi County,.

A composite variable of innovation with the four innovation variables was developed and used. Two step hierarchical regression was carried out to test this hypothesis. Step 1 included control variables (Financial Resources, HR) and Step 2 involved the addition of the combined innovation variables.

Table 4.15: Goodness of Fit for Regression of Innovation on Firm Competitiveness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change
1	.555(a)	.308	.294	.75997	.308
2	.679(b)	.461	.444	.67419	.153

a Predictors: (Constant), HR, Finance
b Predictors: (Constant), HR, Finance, Innovation

Source: Survey Data, 2015

Results of regression analysis in Table 4.15 reveal an R^2 of 0.308 and an adjusted R^2 of 0.294 for model 1.This indicate that control variables account for 30.8 % of the variation in firm competitiveness. Analysis results reveal R^2 =0 .461 while Adjusted R^2 = 0.444 for model 2. This Indicate that Innovation variables, product, process, marketing and organizational combined, with the control variables explain 45.6% of the variation in competitiveness. Change in R^2 is 0.153 indicating innovation alone explain 15.3 % of the change in firm competitiveness. This is a low explanatory power of innovation for firm competitiveness indicating apart from innovation other factors contribute to firm competitiveness including firm resources.

Table 4.16: ANOVA Regression of Innovation on competitiveness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.977	2	12.488	21.623	.000(a)
	Residual	56.023	97	.578		
	Total	81.000	99			
2	Regression	37.365	3	12.455	27.402	.000(b)
	Residual	43.635	96	.455		
	Total	81.000	99			

a Predictors: (Constant), HR, Finance
b Predictors: (Constant), HR, Finance, Innovation
c Dependent Variable: Competitiveness

Source: Survey Data, 2015

Results in Table 4.16 on Analysis of variance for model 1 reveal an F statistic of F(2, 97) = 21.623, p = .000 < 0.05 signifying a significant effect of firm resources(Finance and Human) on firm competitiveness. While the F statistic for model 2, F (3, 96) = 27.402, p = .000 < 0.05 indicating a significant effect of Innovation (product, process, marketing and organizational) on firm competitiveness. Hence both the control variables and innovation have a significant effect on firm competitiveness

Table 4.17: Regression Coefficients Regression of Innovation on competitiveness

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.342	.297		7.892	.000
	Finance	.330	.051	.543	6.431	.000
	HR	-.176	.153	-.098	-1.156	.250
2	(Constant)	1.075	.358		3.001	.003
	Finance	.210	.051	.346	4.129	.000
	HR	-.139	.136	-.077	-1.022	.309
	Innovation	.742	.142	.439	5.221	.000

Dependent Variable: Competitiveness

Predictor Variable: Control variables (HR, Finance), Innovation

Regression coefficient Results in table 4.17 show innovation (β= 0.439, p= 0.000 < 0.05) indicating a statistically significant relationship between combined innovation and competitiveness. The regression coefficient of 0.439 implies that a unit increase in innovation would lead to 0.439 increase in competitiveness. This increase in competitiveness from innovation is greater than the increase in individual innovation variables where product (β= 0.019), Process (β= 0.306), marketing (β= 0.205) and organizational (β= 0.194). This implies firms are better off implementing the various innovations jointly as opposed to implementing individual innovations as this will have a bigger effect on firm competitiveness.

Hence H_{05} was rejected at $\alpha = 0.05$ and the study concluded that innovation has a positive significant effect on Manufacturing SMEs competitiveness in Nairobi City County, Kenya

These findings are in line with previous study findings that concluded that innovation has positive effects on firm competitiveness /performance (Lin & Chen, 2007; Atalay *et al*., 2013; Varis & Littunen, 2013; Rozic & Sonja, 2005; Sewang *et al*., 2011; Gakure *et al*.,2013; Najib, 2013; Rojas *et al*.,2013; Aziz & Samad, 2016; Secluk, 2016). However the findings are not consistent with those of Tervioski (2010) and Kiss (2011) who found no significant relationship between innovation and competitiveness. It is good to note that these two studies were carried out in SMEs in Austria and Hungary respectively where firm internal and external environments may differ significantly from those of Kenya.

Study findings also echo widely accepted theoretical literature that link innovation to firm competitiveness. Enterprises can thus implement innovation to improve their competitiveness. It is however prudent that for firms to improve competitiveness, they need also to consider other factors that include firm resources especially finance.

This study's findings reveal that even-though innovation had positive significant effect on Firm competitiveness, it accounted for less than 50% of the variation. The low explanatory power of innovation though significant can be explained by different factors. One explanation is that several other factors other than innovation contribute to firm competitiveness and innovation is just one of the factors. Based on literature reviewed, such factors include firm's resources and capabilities in relation to those of other enterprises in the industry. According to Penrose (1959) a firm can gain competitive advantage by having distinctive resources or capabilities which are valuable, difficult to imitate and rare in the market place.

A firm's ability to combine and reconfigure resources effectively into complementary assets leads to the firm's dynamic capabilities and competitiveness (Teece *et al*., 1997).

This study found firm financial resources to have a significant effect on competitiveness. However human resources had an insignificant effect. The influence of firm resources on the firm competitiveness has been highlighted by various authors and studies in the literature review (Penrose, 1959; Porter, 1988; Porter, 1990; Barney, 2002; Lee & Sukuco, 2007; Trot, 2008; Szerb & Ulbert, 2009). This finding has an implication on the competitiveness of SMEs since many of the enterprises in Kenya have the challenge of limited resources and also suffers from the inability to access the required resources.

Another factor that can explain the low explanatory power of innovation though significant in firm competitiveness is the nature of innovation implemented in the firm measured by the newness or novelty of an innovation. Study findings revealed that almost all of the innovations implemented were incremental as opposed to radical innovations and this influences the magnitude of their impact. Keijl (2011) argues that there is a correlation between novelty and impact dimensions of innovations. Radical innovations with a high level of novelty are known to have a higher impact than incremental innovations.

According to Schumpeter (1947), it's the radical innovations that are quite important to firms implementing them and other firms around them in the same industry. It is acknowledged that radical innovations are the driving force that change industries due to their high impact and competitive advantages. Ahuja and Lambert (2001) link long term growth and competitiveness to radical innovation. Radical innovations are novel i.e. unique compared to prior and current innovations. These innovations are new to the industry and new to the world. Innovations that are new to the market/ industry, new to the country and

new to the world are therefore the desired nature of innovation that ensures competitiveness and sustainable economic growth (Tidd & Bessant, 2009).

The nature/novelty of innovation is influenced by various factors that include the firm characteristics, capabilities, competences, resources and networks. More advanced, innovations with a high degree of innovation require novel knowledge that stems from intensive R&D. This also requires that resources are available for R&D, innovation development and implementation (Garcia & Calantone, 2002; OECD, 2005; Todtling *et al*., 2009). Radical innovations rely more on scientific inputs, characterised by novel knowledge and or technology that is supported by cooperation and linkages with knowledge generating institutions and organizations. This echoes the sentiments of Porter (1980) that holding a leading position in innovation requires the establishment and maintenance of close relations with key sources of relevant knowledge.

The quality of knowledge and information for innovation depends on the information source. Research findings indicate that most of the enterprises rated market sources of information comprising of customers, competitor and other enterprises as very important. However institutional/ knowledge generating sources that include universities, higher institutions of learning and research institution were rated as not so important sources of information. Similarly commercial laboratories, scientific journals, trade technical publications, Private R& D were also rated as not so important sources of innovation information. This is inspite of the fact that these sources are rich in novel information and knowledge that can lead to innovations of higher novelty. This partly explains why most of the enterprises only implemented incremental innovations which represent the lowest level of novelty lowering the impact on the innovation.

Innovative activities of an enterprise and the quality of its innovation depend in part on the type of linkages it has with the sources of information, knowledge, technologies and resources. Linkages connect innovating enterprises to other actors in the innovation system that includes government labs, universities, policy regulators and makers, competitor, suppliers and customers. This can be achieved through innovation cooperation which can be in form of joint development of new technologies, products or services, strategic marketing alliances, joint development of new marketing concepts.

From the study, it also emerged that most of the enterprises cooperated with customers, other enterprises and suppliers as opposed to universities, higher institutions of learning, commercial labs, private R&D institutions and public research institutes failing to tap the potential of new knowledge transfer. Lack of linkages especially with knowledge generating institutions affect the nature of innovations in the enterprises and consequently influence the magnitude of the effect on firm competitiveness. Nevertheless, innovation has significant effect on firm competitiveness hence should be embraced to improve the competitiveness of SMEs.

4.5.6 Moderating Effect of Firm Size on the Innovation and Firm competitiveness Relationship

The study tested the following null hypothesis to determine if firm factors had a moderating effect on innovation and firm competitiveness relationship;

Hypothesis 6 H_{06}: Firm size has no moderating effect on the innovation and firm competitiveness relationship of Manufacturing SMEs in Nairobi City County, Kenya

To test this hypothesis, the study used the Whisman and McClelland (2005) three-step hierarchical regression approach to test for moderation

i. In Step one, innovation variables (independent variables) were regressed on competitiveness (dependent variable). The results for Model 1 shown in table 4.18, 4.19 and 4.20

ii. In step two, the joint innovation variable (independent variable) and firm size (moderating variable) were regressed on Competitiveness. Results for model 2 are shown in Table 4.18, 4.19 and 4.20

iii. In step three, the interaction variable Innovation* Size was included in the model as an independent variable in addition to Innovation and firm size. Regression results are presented in Table 4.18, 4.19 and 4.20

Table 4.18: Goodness of Fit for Regression of Innovation on competitiveness with the inclusion of the Moderating variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.681 (a)	.464	.447	.67562	.464	27.454	3	95	.000
2	.695(b)	.483	.461	.66723	.01 9	3.405	1	94	.068
3	.905(c)	.818	.809	.39754	.335	171.794	1	93	.000

a. Predictors: (Constant), HR, Finance, Firm size, Innovation.

b. Predictors: (Constant), HR, Finance, Firm size, Innovation

c. Predictors: (Constant), HR, Finance, Firm size, Innovation, Innovation* Size

The results in Table 4.18 shows that R^2 =0.464 and adjusted R^2= 0.447 for Model I. This indicates that Firm Resources and Innovation explained 46.4 % variation in competitiveness. With the inclusion of Firm size in Model II as an independent variable,

there was an increase R^2 change of 0.019 or 1.9 % from 0.464 to 0.483 %. Hence firm resources, innovation and firm size explains 0.483 % of the variation in firm competitiveness.

In the model III, when the interaction variable is introduced, in the model $R^2 = 0.818$ while adjusted R^2 is 0.809. Introducing the interaction variable led to R^2 change of 0.335 (33.5%). This signifies a substantial improvement in the explanatory power of the model. The interaction of the moderator and Innovation magnifies the change in competitiveness.

Table 4.19: ANOVA for Regression of Innovation on competitiveness with the inclusion of the moderating variable

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.595	3	12.532	27.454	.000(a)
	Residual	43.364	95	.456		
	Total	80.960	98			
2	Regression	39.111	4	9.778	21.963	.000(b)
	Residual	41.848	94	.445		
	Total	80.960	98			
3	Regression	66.262	5	13.252	83.854	.000(c)
	Residual	14.698	93	.158		
	Total	80.960	98			

a. Predictors: (Constant), HR, Finance, Innovation,
b. Predictors: (Constant), HR, Finance, Firm size, Innovation
c. Predictors: (Constant), HR, Finance, Firm size, innovation, Innovation*Size
d. Dependent Variable: Competitiveness

Tables 4.19 show an F statistic of F (3, 95) =27.454, p=0.000 < 0.005 for Model 1, where Firm Resources and Innovation as independent variables. This implies that firm resources and innovation have a significant effect on firm competitiveness of manufacturing SMEs in Nairobi City County.

Model II which includes firm size as an independent variable shows an F statistic of F (4, 94) = 21.963, p = 0.000 < 0.005. This implies that the fitted model of firm resources, innovation with the inclusion of firm size (Moderating variable) as an independent variable has a significant effect on firm competitiveness of manufacturing SMEs in Nairobi, county.

Model III which introduces the interaction factors with the independent variable show an F statistic of F (5, 93) = 83.854, p= 0.000 < 0.005. This implies that the fitted model of firm resources, innovation with the interaction variables(moderating variable) has a significant effect on firm competitiveness of manufacturing SMEs in Nairobi, county.

Table 4.20: Regression coefficients for Regressing Innovation on Competitiveness with the inclusion of the Moderating variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.076	.359		2.998	.003
	Financial Resource	.217	.052	.353	4.190	.000
	HR	-.150	.137	-.083	-1.097	.275
	Innovation	.737	.143	.435	5.164	.000
2	(Constant)	.755	.395		1.913	.059
	Financial Resource	.170	.057	.276	2.974	.004
	HR	-.109	.137	-.060	-.795	.428
	Innovation	.731	.141	.432	5.185	.000
	Firm Size	.288	.156	.159	1.845	.068
3	(Constant)	1.421	.241		5.905	.000
	Financial Resource	.060	.035	.097	1.699	.093
	HR	-.120	.081	-.066	-1.471	.145
	Innovation	.882	.085	.521	10.403	.000
	Firm Size	-.119	.098	-.066	-1.208	.230
	Innovation* Size	.197	.015	.664	13.107	.000

a Dependent Variable: Competitiveness

The regression coefficient results are presented in Table 4.20 with three models.

I. Model 1: Financial resources (β= 0.353, p=0.000 < 0.05) and innovation (β= 0.435, p=0.000 < 0.05) indicate that financial resources and joint innovation has a positive significant effect with the dependent variable competitiveness. Human resources (β= -0.083, p=0.275 > 0.05) indicating a statistically insignificant relationship between Human resources and competitiveness.

II. Model II: Financial resources (β= 0.276, p=0.004< 0.05) and innovation (β= 0.432, p=0.000< 0.05) indicate that financial resources and innovation have positive significant effect on the dependent variable competitiveness. Human resources (β= -0.060, p=0.428 > 0.05) indicating a statistically insignificant relationship between human resources and competitiveness and Firm Size (β= 0.159, p=0.068 > 0.05 indicating that firm size has a statistically insignificant effect on competitiveness.

III. Model III: Financial resources (β= 0.097, p=0.093 > 0.05), Firm Size (β= - 0.66, p=0.145 > 0.05 indicating that financial resources and firm size have a statistically insignificant effect on competitiveness. Innovation (β= 0.521, p=0.000< 0.05) and the interaction Innovation* Size (β= 0.664, p=0.000< 0.05) have positive significant effect on the dependent variable competitiveness.

A regression coefficient of -0.66 implies that a unit change in the moderating factor would lead to 0.66 decrease in competitiveness. A regression coefficient of 0.521 implies that a unit change in the innovation would lead to 0.521 increase in competitiveness. A regression coefficient of 0.664 indicates the change in competitiveness when innovation and the moderating factor interact with each other, implying that a unit change in the interaction of innovation and moderating factor would lead to 0.664 increase in competitiveness.

Based on the findings in Tables 4.20 the following model was formulated:

Competitiveness = 1.421+ 0.521 (Innovation) + 0.664(Innovation*firm size) + e…… (3.8)

Where

Constant, Y-intercept 1.421 indicates firm competitiveness in the absence of predictor variables (independent variables)

Hence, the study rejected the Null hypothesis H_{06} at $\alpha = 0.05$ and concluded that firm size has a moderating effect on the relationship between innovation and competitiveness in Manufacturing SMEs in Nairobi county.

These findings are in line with those of previous studies that confirm that firm size influence both innovation and competitiveness (Hadjimanolis, 2000; Wignaraja, 2002; Gunday *et al*., 2008; OECD, 2005; Marques &Ferreira, 2009). Studies also indicated that firm factors that include firm age size, strategies, collaborations and networks are more important in firm behaviour including innovation and competitiveness as compared to external factors (Gunday *et al*., 2008; Sternberg & Arndt, 2009).

Initially Schumpeter posited that small firms were more flexible and hence more innovative. But with time Schumpeter changed his hypothesis and argued that bigger firms were more innovative due to their possession of more resources needed for innovation. According to him, the development of innovation requires the accumulation of knowledge and financial resources which are endowed to larger firms as compared to smaller firms (Schumpeter, 1954; Hashi & Stojcic, 2010).

Large firms are expected to have more competitive power due to their resource advantage and economies of scales. These firms tend to have R &D related facilities, capital and superior human resources. These resources in turn influence a firms activities including innovation which impacts on competitiveness. Access to resources enables such firms to carry out their business activities effectively (Secluk, 2016, Liargovas & Skandalis, 2010).

In some cases firm size has being used to denote firm resources, knowledge and market power (Hadjimanolis, 2000; Cantwell, 2003). From the Resource based view of the firm, resources represent an important factor that determines firm competitiveness (Wernfelt, 1984).

Table 4.21: Summary of Hypothesis Testing Results

Hypothesis	**Findings/ Results**	**Decision**	**Implications**
Hypothesis 1 H_{01}- Product Innovation has no significant effect on the competitiveness of manufacturing SMEs in Nairobi county	β= 0.19, p=0.834 > 0.05 hence insignificant	Accept H_{01} Conclude that Product innovation has no significant effect on competitiveness	A unit increase in Product Innovation leads to 0.019 increase in SME competitiveness which is insignificant
Hypothesis 2 H_{02}- Process Innovation has no significant effects on the competitiveness of manufacturing SMEs in Nairobi county	β=0.306, p=0.001< 0.05 hence significant	Reject H_{02} Conclude that Process Innovation has a significant effect on competitiveness of manufacturing SMEs in Nairobi County	A unit increase in Process Innovation leads to 0.306 increase in SME competitiveness
Hypothesis 3 H_{03}- Marketing Innovation has no significant effects on the competitiveness of manufacturing SMEs in Nairobi county	β=0.205, p=0.021< 0.05 hence significant	Reject H_{03} Conclude that Marketing Innovation has a significant effect on competitiveness of manufacturing SMEs in Nairobi County	A unit increase in Marketing Innovation leads to 0.205 increase in SME competitiveness

Hypothesis 4 H_{04}- Organizational Innovation has no significant effects on the competitiveness of manufacturing SMEs in Nairobi county	β=0.194, p=0.033< 0.05 hence significant	Reject H_{04} Conclude that Organizational Innovation has a significant effect on the competitiveness of manufacturing SMEs in Nairobi County	A unit increase in Organizational Innovation leads to 0.194 increase in SME competitiveness
Hypothesis 5 H_{05}- Combined Innovation has no effect on the competitiveness of manufacturing SMEs in Nairobi county	β=0.439, p=0.000< 0.05 hence significant	Reject H_{05} Conclude that Combined Innovation has a significant effect on the competitiveness of manufacturing SMEs in Nairobi County	An increase in one unit of Innovation results to an increase of 0.439 in SME competitiveness
Hypothesis 6 H_{06}- Firm size has no moderating effect on the relationship between innovation and firm competitiveness	β=0.664, p=0.000< 0.05 hence significant	Reject H_{06} Conclude that Firm Size has a moderating effect on the competitiveness of manufacturing SMEs in Nairobi County	The interaction of Innovation and Firm size leads to an increase of 0.664 in SME competitiveness

Source: Survey data, 2015

CHAPTER FIVE:

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the research findings and conclusion while making recommendations and suggestions of areas for further studies

5.2 Summary

Manufacturing SMEs play a significant role in the growth and development of the Kenyan economy. It is therefore imperative that they establish and sustain their competitiveness. Innovation is considered a key factor in firm competitiveness and remains a credible goal SMEs strategies and government policies and strategies for competitiveness. In Kenya, Vision 2030 proposes the intensified application of innovation, science and technology to improve the competitiveness of the manufacturing sector among other key sectors.

Even though innovation is generally regarded as a means of obtaining and sustaining competitiveness, this relationship is not strongly supported empirically. Empirical studies in Kenya linking innovation to competitiveness are very scanty. The purpose of this study therefore was to establish the effect of innovation on Firm competitiveness in Manufacturing SMEs in Nairobi County.

A descripto -explanatory design with a cross sectional survey strategy was adopted. Data was collected from three Industrial clusters in Nairobi county; Industrial area, Ruaraka/

Baba Dogo and Mombasa Road/ off airport/ Kariobangi areas in June and July, 2015. Multiple linear regression models were used to establish the effect of the independent variable innovation on dependent variable firm competitiveness.

Study findings indicate a high rate of innovation among manufacturing SMEs in Nairobi County for the period 2012-2014, with the sampled enterprises having at least one innovation. Majority of the enterprises had implemented product innovation followed by process innovation, marketing innovation and the least organizational innovation. On the nature of innovations implemented, the study findings reveal majority of the manufacturing SMEs in Nairobi City County implemented minor or incremental changes, which entailed adaptations, refinements and enhancements on products, processes, method and systems. The innovations were simply innovative applications of already existing innovations. Such innovations were only new to the enterprise indicating other enterprises could have already implemented them and the enterprises were only catching up.

The first objective of the study was to establish the effect of product innovation on Firm competitiveness. From literature reviewed, the study hypothesised a positive relationship between product innovation and firm competitiveness. Research findings confirmed a positive but insignificant relationship between product innovation and firm competitiveness. This implies that with the implementation of product innovation, SMEs will have an increase in firm competitiveness albeit not significant.

The second objective of the study was to establish the effect of process innovation on Firm competitiveness. The study hypothesised a positive relationship between process innovation and firm competitiveness. The research findings revealed a positive significant

relationship between Process innovation and Firm competitiveness. Process innovation had the highest effect among the innovation dimensions on competitiveness. It has been emphasized that process innovation is very important in the manufacturing firms based on its distinctive competence for competitive advantage.

The third objective of the study was to establish the effect of marketing innovation on firm competitiveness. The study hypothesised a positive relationship between marketing innovation and firm competitiveness. The research findings revealed a positive significant relationship between marketing innovation and firm competitiveness. With the implementation of marketing innovation, there is an increase in firm competitiveness.

The fourth objective of the study was to establish the effect of organizational innovation on firm competitiveness. The study hypothesised a positive relationship between organizational innovation and firm competitiveness. The research findings revealed a positive significant relationship between organizational innovation and firm competitiveness. Hence with the implementation of organizational innovation, firm competitiveness will increase.

The fifth objective of the study was to investigate the effect of product, process, marketing and organizational innovation jointly on the competitiveness of the manufacturing SMEs in Nairobi City County. The study hypothesized a positive relationship between innovation and firm competitiveness. This was confirmed by the research findings. Implementation of the four innovation types jointly results in an increase in competitiveness. Combined innovation implementation had a higher effect on competitiveness as compared to individual innovations.

The sixth objective of the study was to analyse the moderating effect of firm size on innovation and competitiveness relationship of manufacturing SMEs in Nairobi City County. The study hypothesized a positive relationship. With the inclusion of the interacting variable there was a significant increase in the explanatory power of innovation on firm competitiveness. The role of Firm size moderating the relationship between innovation and firm competitiveness was confirmed from the study.

5.3 Conclusion

The study sought to establish the effect of innovation on the competitiveness of Manufacturing SMEs in Nairobi County, Kenya. On the basis of the findings, the study made the following conclusion.

Innovation is an important factor in firm competitiveness. Manufacturing SMEs in Nairobi had embraced it with 96% of the respondent SMEs having at least one innovation. Research findings, indicate that product, process, marketing and organizational innovation had a positive effect on firm competitiveness. Process, marketing and organizational innovation had a statistically significant effect on competitiveness while product innovation had an insignificant effect. Of the three innovation that had a significant effect on competitiveness, process innovation had the highest impact on competitiveness, followed by marketing and organizational innovation.

The study concludes that implementation of process, marketing and organizational innovations results in an increase in firm competitiveness. Manufacturing SMEs can therefore improve their competitiveness by implementing the different types of innovations. The combined effect of the four innovation types was higher than for each

individual innovation type hence firms are better of implementing different types of innovations as compared to any one type of innovation. The role of Firm size moderating the relationship between innovation and firm competitiveness was confirmed from the study.

Even though process, marketing and organizational innovation had positive significant effect on firm competitiveness, their explanatory power (contribution) was low to moderate. This is an indication that even though innovation is a significant factor in firm competitiveness other factors also contributes to firm competitiveness. From literature reviewed, such factors include firm resources; physical, human, intellectual and capital resources, R&D activities of the firm, firm competences and other external factors. Based on literature reviewed, the external environment including market conditions, economic conditions and legal environment also influences a firm's ability to compete. Hence for firm competitiveness, innovation should be coupled with a conducive, supporting internal and external environment.

Study findings also revealed that financial resources had a positive significant effect of firm competitiveness whereas human resources had an insignificant effect on the competitiveness. The study showed that firm size has significant moderating effect on the innovation competitiveness relationship. Innovation effect on firm competitiveness is amplified with the introduction of the interaction of the moderating variable firm size with innovation.

5.4 Recommendations

It is concluded from the study findings that product, process, marketing and organizational innovation have positive effect firm competitiveness. Process, marketing and organizational has significant effect. Financial resources also have a positive significant effect on firm competitiveness. This study thus recommends to owners/ managers of SMEs to develop and implement innovations in their firms to improve competitiveness. SMEs owners/ managers can consider pursuing innovation strategy to improve firm competitiveness. This should involve significantly improving their products, processes, marketing and organizational methods and coming up with completely new products, processes, marketing and organizational methods.

SMEs can consider improving their current products in terms of technical specifications, material used, user friendliness, functionality, in terms of shape, weight and design. They can also improve on the technology used in their processes, improve on process efficiency in production and delivery and consider use of better production techniques. In addition they may consider implementing significant changes in product design, packaging, placement (explore new markets) promotion, pricing and marketing methods. Lastly SMEs should develop or improve organising procedures for their firms, work routines, introduce better systems that may include management systems, quality management systems and business reengineering. These will result in cost reductions, customer satisfaction, penetration of new markets, increase in sales and improve quality products in the market.

To fully benefit from innovations firms need to improve the internal environment of the firms including firm resources, and other competences. From the research findings most of the enterprises were innovating at the lowest level of novelty implementing mostly incremental innovation. From literature review it was argued that innovations with high

novelty i.e. those that are new in the market, in the country or world have a higher level of impact on competitiveness. This study recommends that SMEs not only carry out incremental innovation that are new to the firm but also engage in innovations with a higher level of novelty that are new in the market, industry, country and even the world. This will lead to a higher level of impact on firm competitiveness. To achieve this, the study recommends the following to SMEs, Government and policy makers, Research and Higher institutions of learning;

Innovations with a high degree of novelty and impact on firm competitiveness require new knowledge resulting from R&D and new technology. To be able to develop and implement such innovations, the study recommends that the SMEs engage in internal R&D, and or collaborative research with research institutions. SMEs also need to form linkages with knowledge generating institutions like universities, R&D institutions, private research laboratories which generate new knowledge necessary for innovations with high novelty. This is important because innovative activities of firms depend in part on the type of linkages it has with sources of information, knowledge, technologies and resources.

The government is an important stakeholder in national innovation system and control the environment in which firms operate. The study therefore recommends that the government through its relevant agents (NACOSTI, Ministry of Education and Treasury) promote the development and use of innovation for firm competitiveness. This can be through sensitization, promotion of knowledge generation through research that is relevant and useful to SMEs. The government can also increase funding to research institutions while making R &D a priority for national development. Resources are a critical factor in the innovation activities of SMEs. In that case the government needs to implement programmes that improve accessibility and affordability of the various resources like

finances required by enterprises. In addition the government need to formulate relevant policy and programmes that promotes innovation and improve the innovation infrastructure and business environment for SMEs.

The systems approach to innovation relates the influence of external institutions and actors on the innovative activities of a firm. Innovation requires institutional settings for knowledge creation and diffusion in which the government plays an important role. This study therefore recommends that the government also strengthens the national innovation system to promote linkages and cooperation between the enterprises and other actors in the innovation system. In addition, the government needs to develop strong intellectual property rights that will make it possible for innovating firms to protect and benefit from their innovations.

Knowledge generating institutions are also part of the national innovation system and play a key role in the innovation process hence firm competiveness. This study recommends that these institutions especially universities focus on research and knowledge generation that is relevant to industries for innovation. How well they perform this role determines the quality of knowledge available for innovation. These institutions need to improve on their dissemination of new knowledge and findings by making it accessible to the industry for the development of novel innovations. To achieve these institutions need to pursue linkages and collaborations with SMEs to be able to generate knowledge that is relevant and useful to SMEs

5.5 Contribution of the Study to Theoretical and Empirical Knowledge

Despite the widely held view that innovation lends to competitiveness in SMEs, empirical studies and analysis to support this concept especially in Kenya is limited and not conclusive. This study therefore contributes to the body of knowledge on innovation and firm competitiveness by providing empirical evidence of the effect of specific innovation on firm competitiveness. Whereas previous studies have considered the effect/ impact of innovation on firm performance and competitiveness this study looked at the effect of the various types of innovations; product, process, marketing and organizational innovations on firm competitiveness.

This study contributes to innovation knowledge, research and policy framework. The study highlights the need to improve the quality of innovation in pursuit of increased firm competitiveness. Most studies and literature have focused only on the quantity of innovations. Higher degree of novelty should be emphasized in firm strategies and government policies for improved firm competitiveness. Lastly the study also contributes to the body of knowledge by providing a framework that can be used for innovation and competitiveness research /studies.

5.6 Suggestions for Further Research

The study suggests the following direction to future researchers. Given that this study focused only on Manufacturing SMEs in Nairobi City County, the study recommends that a similar study be conducted among all SMEs countrywide with a view to broadening the scope of knowledge and for comparison among sectors. The study based on literature review points out that the level of impact of innovation on Firm competitiveness is affected by the novelty of innovations carried out by the enterprises. It is argued that

radical innovations with higher novelty have a stronger impact on firm competitiveness as compared to incremental innovations. This may have possibly led to a low explanatory power of innovation on firm competitiveness despite having a significant relationship. The study therefore suggests further research to empirically substantiate this by investigating how the level of novelty of innovations affect their impact on competitiveness.

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APPENDICES

APPENDIX I: INTRODUCTORY LETTER FOR THE QUESTIONNAIRE

MARY KIVEU
KENYATTA UNIVERSITY
SCHOOL OF BUSINESS
P.O BOX 43844,
NAIROBI

Dear Respondent,

RE: QUESTIONNAIRE FOR MANUFACTURING SMES IN NAIROBI COUNTY

I am a PHD student at Kenyatta University in the School of Business conducting a research on 'The Effects of Innovation on Firm Competitiveness: The case of Manufacturing SMEs in Nairobi County'. The outcome of this study is intended to provide information that will be useful in informing the sector on the use of innovation strategy for competitiveness and for policy formulation in enhancing innovation in the sector to improve its competitiveness.

Because your organization is part of this sub-sector, you have been identified as a potential participant in the study. You are therefore kindly requested to spare a few minutes to respond to the questions presented in the questionnaire as honestly as possible.

I wish to assure you that the information provided will be treated with utmost confidentiality and will only be used only for the purpose of this study.

Thank you for your cooperation.

Mary Kiveu
0722-508553

APPENDIX II: RESEARCH QUESTIONNAIRE

This Survey intends to collect data on your enterprise's characteristics, innovation and firm competitiveness. According to this study, *an innovation is the introduction of a new or significantly improved product, process, organisational method, or marketing method by your enterprise. The innovation must be new to your enterprise, although it could have been originally developed by other enterprises*

CLUSTER:	**INTERVIEWER:**

Name of respondent (Optional)……

Position in Organization……..

Contacts……

Tel:…….....

Email.....

ENTERPRISE BIO-DATA

Name of Enterprise…….

Physical Address…….

Telephone Number…….

Email Address…….

SECTION 1. ENTERPRISE CHARACTERISTICS AND RESOURCES

1. Indicate by ticking the subsector to which your enterprise belongs

1	Building , Construction and Mining	
2	Chemical and Allied	
3	Energy, Electrical and Electronics	
4	Agricultural	
5	Leather and Footwear	
6	Metal and Allied	
7	Motor vehicle and Accessories	
8	Paper and Paper Board	
9	Pharmaceutical and Medical Equipment	
10	Plastics and Rubber	
11	Textile and Apparel	

2. Indicate the total number of permanent employees in your enterprise.(Tick as appropriate)

1	5 - 49		2	50 - 99	

3. How long has your enterprise been in operation? (Tick Appropriately)

0- 4 YRS		5 -10 YRS		10 – 15 YRS		15- 20 YRS		Over 20 YRS	

4. Indicate the type of Business Ownership for your enterprise (Tick Appropriately)

1.	Sole proprietorship	
2.	Partnership	
3.	Limited Company	
4.	Other (Indicate)	

5. Indicate the amount of Capital employed in your enterprise (Tick appropriately)

YEAR	**> 10,000,000**	**10,000,001-20,000, 000**	**20,000,001 – 30,000,000**	**30,000,001 – 40,000,000**	**OVER 40,000,000**
2011					
2012					
2013					

6. Using a five point rating scale where 5 – Strongly agree, 4 - Agree, 3 – Fairly agree, 2 - Disagree, 1- Strongly disagree, indicate by ticking (✔) the appropriate box the extent to which you agree with the following statements concerning your financial resources

Statement		**Rate**				
		5	4	3	2	1
1.	Our Financial Resources are very adequate					
2.	Our financial resources are adequate					
3.	Our financial resources are somewhat adequate					
4.	Our financial resources are inadequate					
5.	Our financial resources are very inadequate					

7. Indicate your extent of agreement with the following statements related to your employee's level of skills, knowledge and experience. Where Strongly Agree – 5; moderately agree – 4, Agree – 3, moderately disagree - 2, strongly disagree – 1.

	Rate				
Statement	1	2	3	4	5
Employees possess the appropriate level of Skills					
Employees possess the appropriate level of knowledge					
Employees possess the appropriate level of education					

SECTION 2 : INNOVATION

8. During the last three years, 2011 – 2013, did your enterprise introduce…

(*If yes indicate the specific number of innovation per type of innovation*)

	INNOVATION	**YES**	**NO**
		No. of Innovations	
1	New or significantly improved Product		
2	New or significantly improved Process		
3	New or significantly improved Marketing methods		
4	New or significantly improved Organizational methods/ systems		

9. Please indicate the number of product/ service Innovations in your enterprise in the last three years (tick appropriately)

Innovation	**Number of Innovations**				
	Still ongoing	1 -3	4- 10	11-15	Over 15
Product					
Process					
Marketing					
Organizational					

10. For each of the enterprise's Innovations, indicate the degree of newness (Tick appropriately)

Type of Innovation	**Degree of Innovation/ Nature of Novelty**				
	Significantly Improved	**New**			
		New to the Firm	New to the Market	New to the country	New to the World
Product					
Process					
Marketing					
Organizational					

11. Enterprise Specific Innovations

During the Last three years, 2011 to 2013, did your enterprise introduce? Tick as appropriate

INNOVATION	**YES**	**NO**
New or Significantly improved goods		
New or significantly improved services		
New or significantly improved methods of manufacturing or producing goods and services		
New or significantly improved logistics, delivery or distribution methods for your inputs, goods or services		
New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing		
Significant changes to the aesthetic design or packaging of a good or service		
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)		
New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing		
New methods for product placement or sales channels (i.e. first time use of franchising or distribution licenses, direct selling, exclusive retailing, the concept for product presentation, etc		

12. Rate the Importance of the following sources of Information for your enterprise's innovation activities where 5 – Very Important, 4 – Important, 3 – Fairly Important, 2 –Somewhat important, 1 –Not important

Information Source		**1**	**2**	**3**	**4**	**5**
Internal	Within your enterprise or enterprise group					
Market Sources	Suppliers of equipment, materials, components, or software					
	Clients or customers					
	Competitors or other enterprises in your sector					
	Consultants, commercial labs, or private R&D					
Institutional sources	Universities or other higher education institutions					
	Government or public research institutes					
Other sources	Conferences, trade fairs, exhibitions					
	Scientific journals and trade/technical publications					
	Professional and industry associations					

13. During the three years 2011 to 2013, did your enterprise co-operate on any of your innovation activities with other enterprises or institutions? *Innovation co-operation is active participation with other enterprises or non-commercial institutions on innovation activities. Both partners do not need to commercially benefit.*

YES [ ] NO [ ] (Tick appropriately)

14. Please indicate the type of innovation co-operation partner by location (Tick all that apply)

Type of co-operation partner	**Your country**	**other countries**
A. Other enterprises within your enterprise group		
B. Suppliers of equipment, materials, components, or software		
C. Clients or customers		
D. Consultants, commercial labs, or private R&D institutes		

E. Universities or other higher education institutions		
F. Government or public research institutes		

Which type of co-operation partner did you find the most valuable for your enterprise's Innovation activities? (Give corresponding letter) _____

15.Effects/ Outcomes of Innovation for the three years 2011- 2013

Rate your degree of agreement with the following Effects of Innovation for your Enterprise Where 5- strongly agree, 4- Agree, 3- somewhat agree, 2- Disagree, 1- Strongly disagree

Effects	**1**	**2**	**3**	**4**	**5**
Improved quality of products					
Improved enterprise's sales					
Increase enterprise financial returns					
Increased market share					
Improved entry to new markets / increased market Access					
Helped enterprise to gain a competitive edge in the market					

SECTION C : ENTERPRISE COMPETITIVENES

16. Indicate your enterprise's Net Profit for the three years 2011, 2012 and 2013

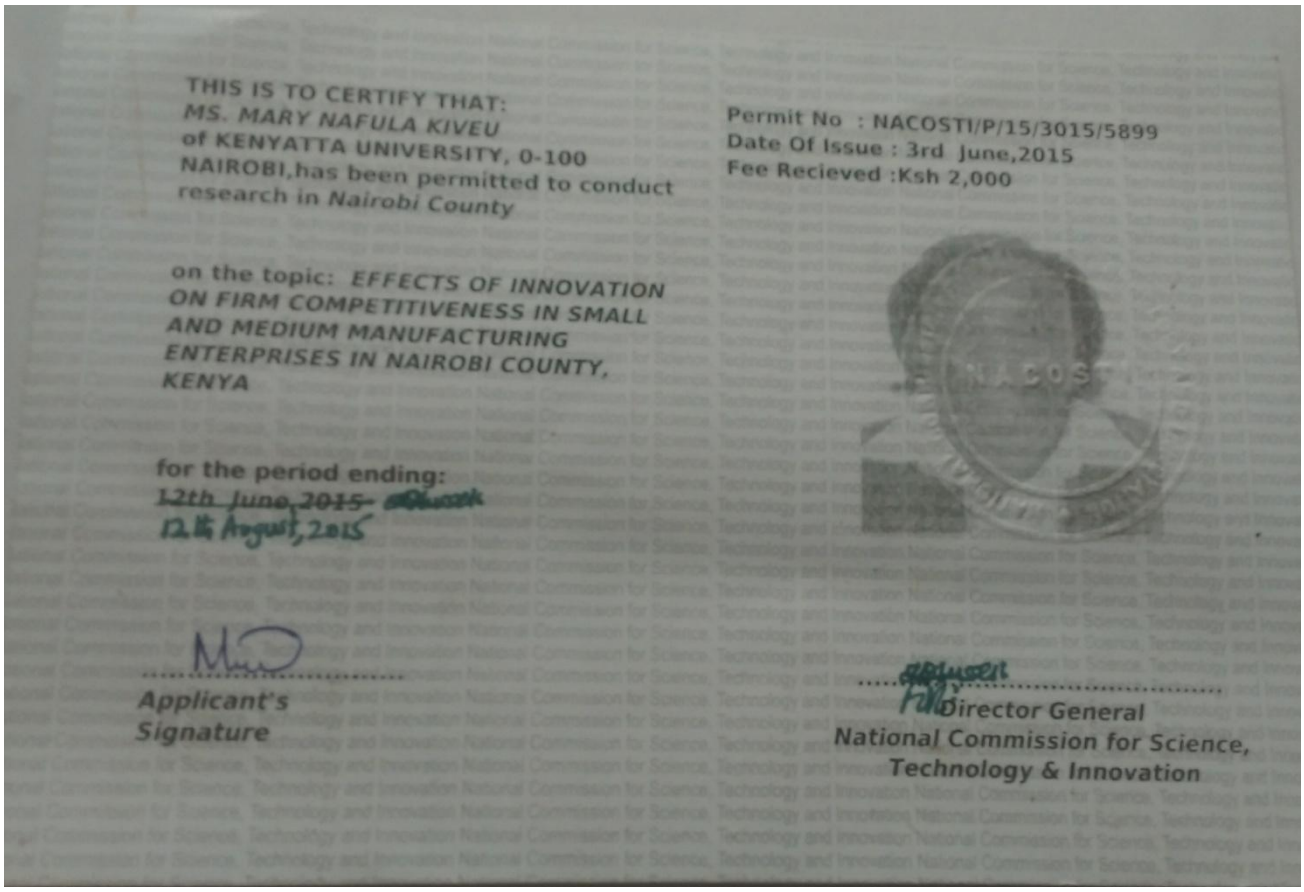
YEAR	**> 5,000,000**	**5,000, 001-10,000,000**	**10,000,001 – 15,000,000**	**15,000,001 – 20,000,000**	**OVER 20,000,000**
2011					
2012					
2013					

17. Please indicate your enterprise's sales in Kshs in the three years 2011, 2012 and 2013

YEAR	**> 10,000,000**	**10,000, 001-20,000, 000**	**20,000,001 – 30,000,000**	**30,000,001 – 40,000,000**	**OVER 40,000,000**
2011					
2012					
2013					

Thank you for taking your time to respond to this Questionnaire

APPENDIX III: RESEARCH PERMIT



THIS IS TO CERTIFY THAT:
MS. MARY NAFULA KIVEU
of KENYATTA UNIVERSITY, 0-100
NAIROBI,has been permitted to conduct
research in *Nairobi County*

on the topic: *EFFECTS OF INNOVATION ON FIRM COMPETITIVENESS IN SMALL AND MEDIUM MANUFACTURING ENTERPRISES IN NAIROBI COUNTY, KENYA*

for the period ending:
~~12th June,2015~~
12th August,2015

.....
Applicant's Signature

Permit No : NACOSTI/P/15/3015/5899
Date Of Issue : 3rd June,2015
Fee Recieved :Ksh 2,000

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

APPENDIX 4: RESEARCH AUTHORIZATION

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: D86/CTY/PT/25175/2011

DATE: 18th April 2015

The Principal Secretary,
Higher Education, Science & Technology,
P.O. Box 30040,
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION KIVEU MARY NAFULA– REG. NO. D86/CTY/PT/25175/2011

I write to introduce Ms. Kiveu Mary Nafula who is a Postgraduate Student of this University. She is registered for Ph.D degree programme in the **Department of Business Administration.**

Ms. Kiveu intends to conduct research for a Ph.D Proposal entitled, **"Effects of Innovation on Firm Competitiveness in Small and Medium Manufacturing Enterprises in Nairobi County, Kenya".**

Any assistance given will be highly appreciated.

Yours faithfully,

MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL

RM/nn