

**INNOVATION AND OPERATIONAL PERFORMANCE OF SMALL
AND MEDIUM ENTERPRISES IN NAIROBI CITY COUNTY**

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DECLARATION

This research project is my original work and has not been submitted for examination to any other University.

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This research project is submitted for examination with my approval as the University Supervisor.

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Above all, I thank the almighty God for the love and favour to begin and complete my MBA and all other endeavors of life. Special appreciation goes to my family who have supported me throughout my studies and made sure I am where I am today.

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DEDICATION

I dedicate this research to my family.

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ABBREVIATIONS AND ACRONYMS

CEO	Chief Executive Officer
GDP	Gross Domestic Product
KIPI	Kenya Intellectual Property Institute
KNBS	Kenya National Bureau of Statistics
OECD	Organization for Economic Cooperation and Development
R&D	Research and Development
SME	Small and Medium Enterprise
UNICEF	United Nations Children's Fund

ABSTRACT

SMEs play a crucial role in employment, wealth creation and economic development in any country across the globe. Their importance is more so crucial in Kenya where the poverty rate stands at forty two percent and unemployment rate at forty percent. They create eighty percent of employment and contribute twenty percent to the national gross domestic product. However, sixty percent of these firms fail within the first three years of operation. This has necessitated a rethink of how SMEs operate. This has resulted in these firms innovating. This study was conducted to determine the effect of innovation on the operational performance of small and medium enterprises in Nairobi County. The objectives of the study were to identify innovations practiced, identify the factors that influence adoption of innovation and determine the effect these innovations had on the operational performance of these firms. The researcher used a cross-sectional descriptive research design for this research. The population of the study was small and medium enterprises in Nairobi County. The researcher used judgmental sampling method to select one hundred and fifty SMEs to represent the population. Questionnaires were used as the tools for data collection. The data was analyzed using descriptive statistics such as means, standard deviations and frequency distributions. The findings from the study established that innovation was widely practiced in SMEs. Factors such as employee training programs, competitive pressures and market segments served were identified to have a large influence on adoption of innovation. The study also established that innovation resulted in improved operational performance in the practicing firms. It was recommended that SMEs in Nairobi County should continually practice innovations this would lead to better performance. The study also recommended that the government should offer incentives for innovation and also roll out training programs for owners and employees of these firms.

CHAPTER ONE

INTRODUCTION

1.1 Background

The micro and macro environment within which businesses operate is constantly changing and the players have to adapt in order to survive and grow (Smit, 2006). The role of operations management has become increasingly important as firms align their strategies at achieving greater efficiency and effectiveness through lower costs, faster production cycles and delivery, higher inventory turnover and higher quality (Barnes, 2008). It is perhaps not a surprise that almost all of the Fortune 500 companies have an Operations division tasked with ensuring efficiency and effectiveness in the firms' activities (Tomar, 2009). This has led to an increased expectation that through operational excellence firms will realize improved performance.

Many businesses today practice some combination of operations management best practices such as total quality management, just in time inventory control, continuous improvement, outsourcing, lean and green operations. However, firms have to rethink how to do work in their industry. This has led to some change, in other cases a radical change, in how they operate (Hammer, 2004). Firms are innovating. Innovation is increasingly becoming the single most important element in creating and sustaining competitive advantage (Tidd, 2001). Innovation has been central to some of the greatest success stories in recent business history, including Wal-Mart, Toyota, Apple and Dell. Wal-Mart pioneered many innovations in how it purchased and distributed goods. Some of these innovations were cross-docking and companion innovations which led to lower

inventory levels and lower operating costs, which Wal-Mart translated into lower prices (Hammer, 2004; Qi, 2008). Toyota pioneered the Toyota Production System which led to smooth, consistent and efficient operations (Monden, 2011). Apple's design of its facilities and stores coupled with the design, functionality and quality of its products has seen the company soar from the threat of bankruptcy to a technology giant with sales of 101,406 units in the first quarter of 2015 (Apple, 2015).

The ability to respond to the changing nature of the environment under which firms operate is vital to any business. The firm's performance is pegged on how well it leverages on its strengths to tackle threats and exploit opportunities (Management Training Australia, 2015). Firms that are able to optimize their operations and create new value for their consumers often survive and grow. Hence, it is critical that firms offer new or improved products and services, streamline processes, take up new marketing strategies and modify organizational structures and policies.

In today's global marketplace, businesses are springing up every day across the globe as more and more entrepreneurs commercialize their ideas. More and more people are becoming entrepreneurial across the globe. This has led to an increase in the number of businesses and as a result spiked up competition in the market. As a result it is increasingly becoming necessary for firms to innovate and manage their operations. Collis (2007) posits that all businesses, in the midst of competition, are doomed to die if they fail to innovate. This has been evident across the globe as big and small businesses collapse because of not being able to operate and compete favourably. With the world population growing by the day, the number of businesses and consumers is expected to grow significantly and so will the need to innovate.

Sectorial shifts in the composition of national economies and the increasing openness of the global economy has necessitated a readjustment and reengineering of firms and the nature of their operations (Griffiths et al. 2007). Globalization, as caricatured by shrinking space, shrinking time and disappearing borders, has affected the strategic and operational behavior of SMEs and they are readjusting their value chains. Globalization has led to the removal of national and regional boundaries. This has resulted in competition moving from the local scene to the global scene. The pressures of competition in the market as well as globalization have provided the incentive for innovation (Birchall et.al, 1996). Globalization of markets and competitive pressure are best represented by the development, introduction and creation of new services and products or services and product components, or new procedures or processes implemented in doing things for benefiting the stakeholders in the respective organization.

1.1.1 Innovation

Anthony (2012) defines innovation as something different that has an impact. This definition highlights two important elements: “different” and “impact”. Kantor (2001) defines innovation as the process through which an invention or idea is translated into a service or good which creates value. Drucker (1985) describes innovation as a tool used by entrepreneurs to exploit change as an opportunity for a different business or service. For this study Anthony’s definition of innovation will be applied. Thus, for something to qualify as innovative it has to be different from the status quo and produce a positive effect (make an impact).

The perception that innovation and growth are just random is untrue (Anthony, 2012). Innovation is a key driver of growth and prosperity and firms that fail to innovate are doomed to fall behind and fail. A good example is the fall of the once global photography giant Kodak and mobile phone giant Nokia. Kodak's demise was caused by its lackluster response to innovate in the era of the shift towards digital photography, Nokia's case was one where management hampered and shot down innovative ideas and products from making it into the market (Cord, 2014; DiSalvo, 2011). Innovation is key if firms want to remain relevant. Traditional ways of operating are no longer sufficient enough to guarantee growth. There is need to improve and do things differently.

1.1.2 Operation Performance

Operational performance is the processes geared at coordination and enhancement of work activities and outcomes within an organization (Khakata, 2014). Operational performance is the appraisal of prescribed indicators or standards of effectiveness, efficiency, and accountability such as productivity, cycle time, regulatory compliance and waste management (Venkatraman and Ramanujam, 1985). Operational performance is a subset and one of the key constructs that contribute to the overall performance of the organization. Operations are evaluated from the time the orders are placed and materials are supplied to the organization, to production until they reach the ultimate final stage of delivery and feedback. A firm's operations is concerned with the conversion of inputs into outputs, using resources, so as to provide the desired utilities to the customer while meeting the other organizational objectives of effectiveness, efficiency and adoptability. It distinguishes itself from other functions such as human resource, marketing and finance by its primary focus on 'conversion by using physical resources'(Kumar and

Suresh, 2009). The operations of a firm entail the following activities: location of facilities, plant layouts and material handling, product design, process design, production and planning control, quality control, materials management and maintenance management.

The main themes in operational performance are efficiency and effectiveness. According to Lee and Johnson (2013) efficiency refers to how well a relevant action is performed, that is, “doing things right”. It is the ability to deliver products and services cost effectively without sacrificing quality. Effectiveness on the other hand is the selection of the best action that is, “doing the right thing”. It is the ability to carry out a task the best way possible to realize a desired outcome. Hence, a firm is effective if identifies appropriate strategic goals, and efficient if it achieves them with minimal resources (Lee and Johnson, 2013)

1.1.3 Small and Medium Enterprises

SMEs constitute the biggest percentage of businesses in any economy since they are easy to start and run. They are often described as efficient and prolific job creators, the seeds of big businesses and the fuel of national economic engines (Kayanula & Quartey, 2012). The European Commission (2003) defines an SME based on the number of employees, annual turnover and balance sheet total. Under this definition an SME has fewer than two hundred and fifty employees, annual turnover not exceeding fifty million euros and a balance sheet total not exceeding forty three million euros. Enterprises with less than ten employees are considered micro enterprises. Enterprises with less than fifty employees are considered small while those with less than two hundred and fifty are considered medium enterprises.

According to the World Bank Report (2005) the number of SMEs in Kenya is growing rapidly. This sector accounts for 75% of the total employment in Kenya while contributing 18.4% of the country's Gross Domestic Product (Waweru, 2012). In Kenya poverty rate is at 42% (UNICEF, 2014) and unemployment rates are at 40% (KNBS, 2011). Poverty rate is 21% in Nairobi County (KNBS, 2014). This has resulted in more and more people venturing into business as a means to improving their livelihoods. This has resulted in businesses springing up in every town and village in the country with the youth playing a big part.

The Government of Kenya through its various departments has initiated programs across the 47 counties to facilitate the growth and realization of the entrepreneurial spirit and culture in the society. Programs such as the Youth Enterprise Fund and the Uwezo Fund provide a means for financing SMEs. The Government's e-procurement portal has opened up the process of tendering for government works to all its citizens. The thirty percent quota that requires that at least thirty percent of all public procurement be apportioned special interest groups such as the youth, women and people with disability, has led more interest in entrepreneurship in the mentioned interest groups.

SMEs in Nairobi County are broadly categorized under light manufacturing, services and commercial and trade. According to data obtained from the Kenya National Bureau of Statistics (2014) there are approximately 5,000 registered small and medium enterprises in Nairobi County. There are many similarities visible in SMEs in Nairobi County such as the nature of products and services they provide to the customers and their mode of operations. This in mind, there is pressure on the SMEs from competitors and customers to lower prices and accept shrinking margins on sales (Susman et. al, 2006). This has led

the SMEs to adopt innovative ways of carrying out their activities. This has resulted in lower costs of production and operation allowing the SMEs to lower prices without necessarily eating into their margins. Innovation has also spurred customization of product and services such as the introduction of vernacular media stations, bespoke apparel makers and car leasing services as a mode of transportation. This has resulted in expansion and creation of new market allowing more and more businesses to start and flourish

1.2 Problem Statement

One of the most encompassing influences on productivity and success of a firm is the environment in which the firm operates. This environment is always changing. Competitors are coming up with new products and services and new ways of operating and engaging customers. Consumers' demands and preferences are evolving and government actions such as regulations, deregulations, tax policies and municipal bylaws have a profound impact on firms. As such, firms have to be proactive and reactive to these changes. Traditional operations management practices have to be complemented with new ways of doing things. According to Rajagopal (2012), the models that defined businesses in the twentieth century won't meet today's challenges. Firms are rethinking traditional ways of working and changing how they interact with customers, employees and others, hence the need to innovate.

In Kenya SMEs constitute 96% of all businesses (Kiprotich, 2014) and in OECD, SMEs also constitute 96% of businesses (Caniels and Romijn, 2005). This implies that there is a huge number of SMEs in Kenya and globally. However, according to the Kenya

National Bureau of Statistics (2007), three out of five businesses fail within their first three years of operation.

Research has been carried out on innovation. Various recommendations have been put forward on best practices in innovation. Branzei and Vertinsky (2006) proposed application innovation. This involves applying existing technology for new uses in new markets. Christensen (2003) introduces disruptive innovation, which is a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors. However, innovation doesn't have to be something complex or radical. Innovation should be understood as something new to a local context (Aubert, 2005).

Wanjiku (2014) carried out research on innovation and performance of Micro and Small Enterprises (MSEs) in Kiambu County. MSEs were grouped into the sectors they served and the types of innovation (product, process, paradigm and positioning) practiced in these sectors identified as well as the effect on performance of these firms. Her findings indicated a direct relationship between innovation and firm performance. Kiarie (2012) carried out research on service innovation and its effect of commercial banks. He established that there exists a direct relationship between service innovation practices and the extent of customer satisfaction in the commercial banking sector. Karanja (2014) researched on innovation and its effect on the performance of commercial banks in Kenya. He identified that banks face multiple pressures and that banks with serious innovation strategies, improved their profitability.

From the research carried out the significant gap is; what is the effect of innovation on operational performance of SMEs in Nairobi. This research seeks to answer the following questions: which types of innovations are practiced, which factors affect adoption of innovation and what effect does innovations have operational performance.

1.3 Research Objectives

The objectives of the study are to:

- i. identify innovations in SMEs in Nairobi County
- ii. determine factors that influence adoption of innovation among SMEs in Nairobi County
- iii. determine the effect of innovations on operational performance among SMEs in Nairobi County

1.4 Value of the Study

There are studies from all over the world on innovation and operational performance. Such research on Kenyan SMEs, and in particular SMEs in Nairobi City, is limited so is the information that Kenyan business people can use to advance their SMEs. This study will provide findings on the effect of innovations on operational performance of SMEs in Nairobi City. The results from this study will be beneficial to the Nairobi and Kenyan business community at large. The study will also benefit both the county and national government, in that the governments will be able to know how it can assist in improving the business structure and environment within which SMEs operate. The study will be available to the world and this information will be helpful to all who need it with regards to SMEs.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks at the various literatures that constitutes and informs the study. The main areas of review under this include literature on innovation, operational performance and Small and Medium Enterprises in Nairobi county.

2.2 Theoretical Foundation

Traditional arguments on innovation have circled around two schools of thought: the market based view and the resource based view. The market based view argues that the firm's innovativeness is facilitated or constrained by market conditions. Innovation is a result of the external social factors and influences such as demographic changes, economic influences and industry characteristics. The market-based view is founded on the premise that innovative organizations attempt to exploit changing market conditions. Market conditions are said to provide the initial conditions that govern the direction and quantity of an organization's innovative activities. Innovative organizations are those that scan their environment to absorb and process information regarding potential innovation. The ability of the organization to align its strategies with identified enablers and constraints in their environment are found to highly influence its competitive advantage (Tidd et al, 2001; Barrett et al. 2001; Trott, 2008; Drucker, 1985; Porter, 1985).

On the other hand, the individualistic school argued that innovation is a result of individual's characteristics. A firm's own resources provide a much more stable context

in which to develop its innovation activity, and to shape its markets in accordance to its own view. This school argues that the market-based view offers a weak foundation for innovative strategies, particularly in dynamic and volatile markets. Instead, it is believed that the organization's own resources, such as its assets, capabilities, processes and knowledge base, offer a strong foundation for innovation. Theoretically, the central premise of resource based view addresses the fundamental question of why firms are different and how firms achieve and sustain competitive advantage by deploying their resources (Drucker, 1985; Dollinger, 2003; Kostopoulos et al., 2004).

The theory of diffusion of innovation is important in understanding innovation as it explains how new ideas or innovations are adopted. Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1997). The rates of adoption for innovations are determined by an individual's adopter category (Innovators, early adopters, early majority, late majority, laggards). In general, individuals who first adopt an innovation require a shorter adoption period (adoption process) when compared to late adopters. Within the adoption curve at some point the innovation reaches critical mass. This is when the number of individual adopters ensures that innovation is self-sustaining. The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption.

2.3 Innovation

There have been reports of use of the term innovation in the late 1880s to mean something unusual. It wasn't until German economist Joseph Alois Schumpeter's work that the concept came to be influential in business. Schumpeter (1912) made reference to innovation as the process of making new combination. He later described innovation as

product, process and organizational changes that do not necessarily originate from new scientific discoveries, but may arise from a combination of already existing technologies and their application in a new context (Žižlavský, 2011). The notion that innovations relates to making new combinations whether of the same things or in addition to new elements is relevant to this study.

Gamal et al. (2011) defines innovation as introduction of a new product, service, or process through a certain business model into the marketplace, either by utilization or by commercialization. From this definition, innovation encompasses: product innovation, service innovation, process innovation, and business model innovation, and all contribute to strengthening the competitive advantage of a company. This definition highlights the fact that innovation is a complex and multidimensional activity that is necessary for firms to compete favourably in the market (Gamal et al., 2011).

The OECD Oslo manual (2005) identifies and defines four types of innovations, namely: product innovation, process innovation, marketing innovation and organizational innovation. Under this typology, product innovation encompasses both product (physical good) and service innovations while organizational innovation encompasses both structural organizational innovation and procedural organizational innovation. However, in subsequent chapters the researcher studied product innovation and service innovations as separate variables as well as structural organizational innovation and procedural organizational innovation. The researcher also included market innovation to this typology for the purpose of the study.

2.3.1 Product Innovation

The Oslo manual (2005) defines product innovation as a good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics. Rainey (2005) defines product innovation as the conceptualization, design, development, validation and commercialization of new products and services that provide superior solutions to the needs and expectations of customers, stakeholders, and society. Kiarie (2012) specifies service innovation as a new or significantly improved service concept that is taken into practice. Product innovation is a key strategic approach for creating and maintaining competitive advantage in the dynamic, global economic environment. It's used to create new products, re-invigorate existing products and solve product related defects and difficulties with customers. Hart (1996) posits that improved and radically changed products are very important for long term business growth. According to Kiraka (2013) product innovation is a major source of competitive advantage in small enterprises.

2.3.2 Process Innovation

The Oslo Manual (2005) defines process innovation as a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products. Production methods include software, techniques and equipment used to produce goods or services. Delivery methods are linked to the logistics of the company

and include the software, techniques and the equipment for the supply of inputs, the allocation of supplies within the company or the distribution of final products.

According to Davenport (2013), Japanese companies discovered and implemented process innovation way before the West, hence their dominance. For example it takes a shorter duration to assemble a model of a Toyota car than Ford takes to assemble one of theirs. Process innovation isn't just about reducing process cycle times but also reducing / eliminating errors and improving efficiency.

Davenport (2013) identifies the drivers of process innovation as: industry competitors, customers, finances, opportunity and culture. Competition from industry competitors is one of the main drivers of process innovation since being able to make processes quicker and more efficient results in lowered costs and shorter cycle times hence products can be made available to consumers quicker and cheaper. Customers spur process innovation especially in the service sector. Customers seeking credit would choose the bank that processes loans quicker than the one that requires them to wait for weeks.

2.3.3 Marketing Innovation

The Oslo Manual (2005) defines marketing innovation as a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales. Marketing innovation comes in addition to innovation of the products and the development of new methods and tools in marketing play an important role in the overall evolution of the industry (Chen, 2006). Gathering

consumer information is a marketing tool and in recent years innovation has led to improved marketing technologies and programs that allow firms to get to their consumers more effectively. Online stores such as EBay and Amazon are examples of trading techniques that have come up due to marketing innovation.

Over the years the world has experienced different forms of marketing innovation but do not realize it due to the little research existing on marketing innovation as compared to process and product innovation. There are two major forms of marketing innovation; new technology or programs that assist in acquiring consumer information as well as changing individualized prices and new methods in trading that reduce transaction cost for the consumer (Chen, 2006). Marketing innovation is different from product innovation where innovation is beneficial to both the firm and the consumer. For instance, with marketing innovation on consumer information, an innovation that benefits the firm may be hurtful to the consumer. Competition, however, doesn't affect all marketing innovation forms in the same way. Some may produce a positive change while others, negative.

2.3.4 Organizational Innovation

The Oslo Manual (2005) defines organizational innovation as a new organizational method in business practices, workplace organization or external relations. It aims at improving outcomes by reducing administrative or transaction costs, by improving workplace satisfaction, by gaining access to external knowledge or by reducing supply costs. Organizational innovation is broad and hard to define, in addition to the scattered and diverse literature available. Literature recognizes three main strands in the identification of organizational innovation. First is through the identification of structural characteristics of an innovative organization and the effects on technical process and

product innovation (Armbruster et al., 2008). Second is in line with organization development and change theories (Armbruster et al., 2008). Third is on the emergence of organization innovations, development and growth within the organization (Armbruster et al., 2008). Organization innovation is not as clear as all the forms of innovation. According to Armbruster et al. (2008), the independent contribution of organization innovations to the competitiveness and performance of the organization have faced neglect up to date.

Due to its broadness, the available clusters for organizational innovation include structural organizational innovations and procedural organizational innovation (Armbruster et al., 2008). It is further clustered as inter-organization innovations and intra organizational innovations. This categorization makes more sense in that structural innovation affects the accountability, responsibilities, information flow and command lines in the organizations structure while procedural affect the routines, operations and processes of the organization. Inter and intra organization is about the boundaries of the innovation; those that occur outside the company's boundaries and within the organization respectively.

2.3.5 Market Innovation

Market innovation aims at improving the mix of target markets and how chosen markets are best served (Karanja, 2014). The purpose is to identify better (new) potential markets, and better (new) ways to serve target markets. Market innovation has a positive effect on sales growth (Neely, 2002). As a result it is important firms frequently scan the environment to identify potential markets and target these markets appropriately.

2.4 Influencers of Adoption of Innovation

Thanks to competition and other pressures in the markets, firms are forced to accelerate their rhythm of innovation and to expand their capabilities. However, the speed and frequency with which new innovations are created and diffused is contingent of several factors. These factors include both internal factors and external factors. Internal factors that influence adoption of innovations include: how long the firm has been in operation, its size, the nature of its offerings, education employees poses and training employees undergo to impart skills and competencies required to carry out their job. External factors include: competitive pressures from rivals, segments of the markets the firm operates, consumption patterns of customers, and the general economy (Moreno and Surinachi, 2014; Anthony, 2012; Trott, 2008; Kemp; 2003; Rogers, 1997).

2.5 Measures of Innovation

The measurement of innovation is difficult due to the broad nature of the scope of innovative activities (Rogers, 1998). Innovation is a complex and multidimensional activity that cannot be measured directly or with a single indicator, and hence needs to have a composite measure that reflectes the organization innovative capability for the purpose of benchmarking, diagnoses, and supporting building up innovation culture and practices (Gamal et al., 2011). Measures of innovation are quantitative and qualitative.

Quantitative measures includes: number of new products or product improvements, patents and patents applications, research and development projects undertaken, R&D acquired from other firm, total research and development spending, number of employees in R&D, number of quality ideas generated, number of ideas commercialized, number of

publications, number of acquisitions of equipment and technology used for innovation related activities (Gamal et al., 2011; OECD, 2005, Rogers, 1998).

Qualitative measures include: speed to market, employee characteristics, management characteristics, firm characteristics, value creation/addition, and customer perception on firm's innovativeness (Gamal et al., 2011; OECD, 2005, Rogers, 1998).

2.6 Innovation and Operational Performance

According to Casals (2011), globalization of the markets and increasing competition force SMEs to search for new, innovative, flexible and imaginative ways to survive. In the World Bank report (2009), innovation has been viewed as vital in ensuring that the firm's operations are smoothly run. The importance of innovation as a key factor of economic growth and development was also highlighted by Joseph Schumpeter in his Theory of economic development (1912). He considered the entrepreneur's task and capacity to realize new combinations of the production factors, that is, innovation, as the basis of his theory. These studies hypothesize the relationship between innovation and organizational performance and by extension operational performance. His studies illustrated the important role innovation plays in successfully realizing growth. He identified that innovation is an important factor that contributes to better performance. Oncioiu et al (2003) highlighted that innovation was an important ingredient in this knowledge based society which SMEs operate in.

An important issue facing SMEs worldwide is consistent performance and continuous improvement. In today's markets the inputs of customers and their fast changing needs makes it imperative that enterprises continuously improve the way business is conducted.

SMEs need to consider continuously improving production cycles, delivery schedules, manufacturing skills, supplier relationship and productivity in all practices (De Wit et al, 2007). According to Gaither and Frazier (1999), SMEs constantly experience shortages in capital and employee skills to improve production capacity, which makes it necessary to continuously improve their production strategies with customized products and process-focused operations. Moreover SME operational functions should embrace competitive priorities of low production costs, fast on-time deliveries, high quality products and customer services. SMEs that have adapted their production systems to be flexible will be able to compete and capture increased market share.

Kemp et.al (2003) in their research, found that the innovation output was determined by the innovative input, that is, the transformation of input into output. The innovative output was related to the firm's performance. They stated that innovative output, via firm performance, would affect the innovation expenditures. The overall operation performance of a firm would affect the innovation process of a firm. The growth of total sales would be higher for innovating firms than for non-innovating firms, as a result of this interrelatedness of the relationships, the innovation process should be tested simultaneously. In the same, Oncioiu et al (2003) in their study in Romania noted that innovation improved all levels of SMEs operation in Romania thus signifying that innovation resulted in improved operational performance of SMEs and as a result the their overall success of an organization. Tushman and Nadler (1986), point out that effective operations management in the SMEs sector demands that the institutions should have effective systems in place, to offset unpredictable events, which can maintain their operations and reduce the risks implicated through innovations.

2.7 SMEs in Nairobi City County

SMEs are widely regarded as the catalyst for economic growth that Kenya aims for in its 2030 master plan. Kenya has risen from a negative growth rate in 2001 to 7% in 2007 before a fall as a result of the post-election violence in 2008. The World Bank is forecasting a 6% growth rate in 2015 which, in part, has been spurred by the growing SMEs sector.

The number of SMEs is increasing each year as more and more Kenyans are taking advantage of the opportunities in the market and the Government incentives on offer. SMEs are hailed for their pivotal role in promoting grassroots economic growth and equitable sustainable development (Pelham 2000). According to the African Economic Outlook (2011) there are approximately 2.2 million SMEs in Kenya which contribute to 20% of the country's GDP. Growth in this sector has helped Kenya's Gross Domestic Product grow to \$60.9 billion (World Bank, 2014).

These SMEs play a crucial role in the national economy. The importance of the sector was first recognized by the International Labour Organization (1972) as promoting growth in incomes, employment and equity. In Kenya SMEs create 80% of Kenya's employment (Africa Economic Outlook, 2011). In Kenya, the small business sector has both the potential and the historic task of bringing millions of people from the survivalist level, including the informal economy, to the mainstream economy. Recognizing the critical role small businesses play in the Kenya economy, the Government through Kenya Vision 2030 envisages the strengthening of SMEs to become the key industries of tomorrow by improving their productivity and innovation (Ministry of Planning, National Development & Vision 2030, 2007).

Innovation hasn't gone unnoticed and a national intellectual property audit conducted by Prof. Tom Ogada in 2006 revealed that between 1990 and 2001, Small and Medium Size Enterprises (SMEs), also known as (Jua Kali), was the most innovative sector, with a total of 116 patent applications at Kenya Industrial Property Institute (KIPI). They were followed by Industry with 45 patent applications. Research and development institutions had 14 applications; individuals from universities had 2 applications, while secondary schools had one application. Public universities were conspicuously absent.

Kenya has institutions that are mandated to protect intellectual properties. The Kenya Industrial Property Institute (KIPI), a parastatal in the Ministry of Trade and Industry administers the Industrial Property Act 2001 of the laws of Kenya covering Patents, Trademarks, Service marks, Industrial designs and Utility models. Copyright is administered by the Copyright Board of Kenya an office in the Attorney General Chambers under the Copyright Act 2001 of Kenya.

2.8 SMEs: A Global Perspective

At the heart of the global economy are Small and Medium Enterprises (SMEs). SMEs are highly regarded in most countries for the major role they play in economic development at all levels (Caniels and Romijn, 2005). SMEs generate employment at great levels since they constitute of 96% of the firms on OECD countries and 60-70% of the employment in these countries (Caniels and Romijn, 2005). According to U.S. Census Bureau data, in 2011, there were 5.68 million employer firms in the United States. Firms with fewer than 500 workers accounted for 99.7 percent of those businesses, and businesses with less than 20 workers made up 89.8 percent. In Korea, there are over 30 million SMEs

constituting about 99.9% of the enterprises and employing over 88.1% of the labor force (Mwarari and Ngugi, 2013).

Global economic conditions have spurred the growth of SMEs worldwide over the last ten to fifteen years (Levi et al. 2004). SMEs are often considered as a single homogenous group by researchers and policy makers, but they are not. They are diverse with heterogeneous structures, needs and objectives. This heterogeneity arises from: size, scope, context (geographical location and industry served), prevailing regulatory environment, and nature of business, organizational structure, and owners' personal characteristics among others (Levi et al. 2004).

SMEs serve an economy by satisfying the demands of various economic entities for which there are no or lower scale economies of production or distribution. SMEs also serve an economy by satisfying demands where the managerial costs of large business are greater than the market transaction costs of dealing by contract rather than by control within a firm (Bryman, 1998; and Mazur, 2007).

For many owners of small businesses, lifestyle choices are the reason that they set up. For others, the entrepreneurs, it is the excitement and risk of growing a business into an empire. Between these extremes there are a range of reasons for people wanting their own business, not least of which is to provide a pension plan or something to pass on to their children (Levi et al. 2004).

In starting and running a new business, the role of the entrepreneur is vital as the whole process is often heavily dependent on him or her. In part, the know-how in the business is a result of personal contacts and networks the entrepreneur has in relation to other

businesses (Niitykangas 1992). Personality and emotions play a larger role in decisions made in privately held SMEs. Research suggests that the age and tenure of an SME CEO are negatively related to his or her interest in innovation (Khan and Mattapichetwattana, 1989). Research also suggests that only 20% of SMEs are interested in growth through acquisitions, geographical expansion or innovation (Nooteboom, 1994)

SME innovation behavior varies by industry sector. In capital intensive sectors SMEs are very cautious about innovations that require large capital investments. Thus, it is understandable that half of the innovation in these capital intensive industries is incremental (Huang et al., 2002).

The type of innovation that SMEs pursue also depends on whether their industry is emerging (where radical innovation is more likely) or is mature (where incremental innovation is more likely) (Nooteboom, 1994). In computer electronics and optics industries, where obsolescence rate are high, more continuous investment in incremental innovation is required (March-Chorda et al., 2002).

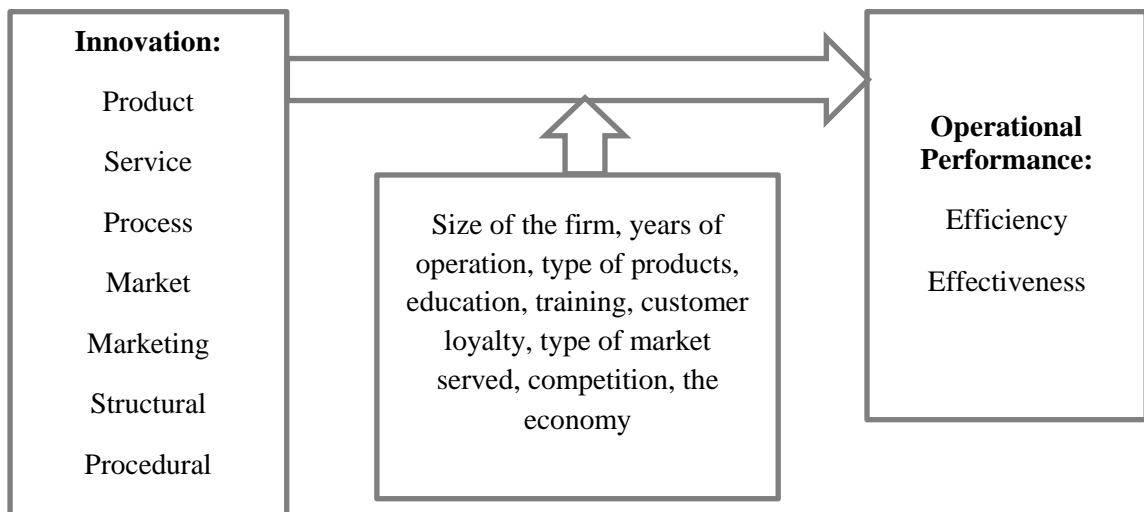
Market hostility also influences innovation (Wright et al., 2005). Firms operating in highly competitive (hostile) markets are likely to be more successful innovators by increasing the number of new product introductions through incremental innovation in order to meet customer needs. The study suggests that the resources of firms embedded in highly competitive markets would be better spent on incremental innovations rather than radical ones because of the cut-throat nature of the environment. In contrast, Khan and Mattapichetwattana (1989) found that environmental hostility lessened SME innovativeness.

Another factor affecting innovativeness in SMEs is the type of customers served. Firms whose customers are mostly other firms generally have fewer customers than those that sell consumer products since they sell in bulk. As a result they focus on efficiency and this may result in outsourcing certain processes to remain lean

2.9 Conceptual Framework

In this study, operational performance was the dependent variable. This study sought to establish what effect innovation had on operational performance of SMEs. Hence, innovation is the independent variable. The extent to which innovation affects operational performance is influenced by some factors. These factors that affect adoptability of innovations are intervening factors. They are illustrated in Figure 2.1

Figure 2.1 Conceptual framework



Source: Author (2015)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the research methodology used in the study is described. It describes the procedure used in the study to collect and analyze the data collected from the field. It covers the research design and methodology, including sampling, population, data collection, ethical considerations and data analysis

3.2 Research Design

The researcher will use two designs: descriptive and cross-sectional designs. Descriptive research is used to describe the characteristics of a particular phenomenon in a situation. It is appropriate for this study because the researcher is looking to identify the research variables which are: the key innovations in SMEs, their catalysts and determine how these innovations lead to competitive advantage.

The research design will also be cross-sectional. The reason why the researcher chooses to use this study design is because of the changing nature of the environment in which businesses operate hence the forms of innovation are also changing. This will also provide consistency in the data collected since it will be collected at the same point in time.

3.3 Population of the Study

According to data obtained from the Kenya National Bureau of Statistics (2014) there are approximately 5,000 registered small and medium enterprises in Nairobi County. These SMEs formed the population for this study.

3.4 Sample Design

The researcher used judgmental sampling method to select one hundred and fifty SMEs. The reason for the choice is because of the familiarity and expertise the researcher had in relation to SMEs in Nairobi City County. The researcher believed one hundred and fifty SMEs adequately represent the population and the researcher was conversant with the area and was aware of the distribution of SMEs in the area.

3.5 Data Collection

The researcher used questionnaires as the instrument for data collection. The questionnaire had both open-ended questions and closed-ended questions. Questionnaires are useful when large amounts of data are to be collected from a large number of people in a short period of time and in a relatively cost effective way.

3.6 Data Analysis

Based on the structure of the questionnaire both quantitative and qualitative data was generated. The data was checked, cleaned and tabulated for completeness and consistency.

To realize research objectives one, two and three, content analysis was used to analyze qualitative data while descriptive statistics was used to analyze quantitative data. Data presentation was done by use of pie charts, percentages, frequency tables and prose form

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

The chapter presents the findings and analysis of data collected based on the research objectives of the study. The data was analyzed and presented in the form of frequency tables and pie charts.

4.2 Background information

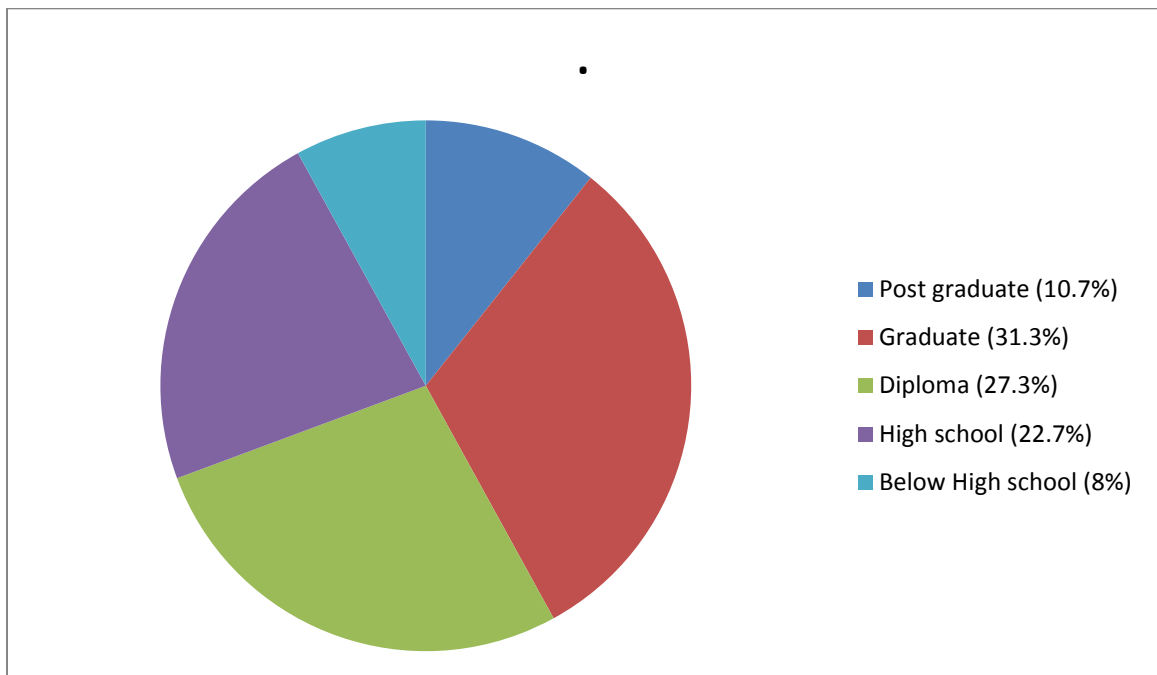
The researcher collected information on the characteristics of the owners/managers of the SMEs and the SMEs themselves. These included level of education of the owners/managers, type of business, years of operation, number of employees and branches. This information was intended to give an insight into the nature of SMEs in Nairobi City County.

4.2.1 Level of education

Although there is no definitive literature showing the relationship between education level of owners and managers of SMEs in Nairobi County and the performance of these firms, the researcher, for the purpose of understanding the demographic profile of SMEs in Nairobi County, collected data on the education level of these owners/managers. Also, this information was useful to gauge the ability and proficiency of the respondents to understand and adequately fill the questionnaire. As presented in Figure 4.1, approximately 70% of respondents had a tertiary level education. This indicates that majority of the respondents had advanced knowledge and skills and could sufficiently

read, understand and fill the questionnaire handed to them. The researcher guided the approximately 30% of respondents who had a high school education or lower in filling the questionnaire. This was necessitated by nature of the questionnaire which had some technical terms and statements.

Figure 4.1: Level of Education of Respondents



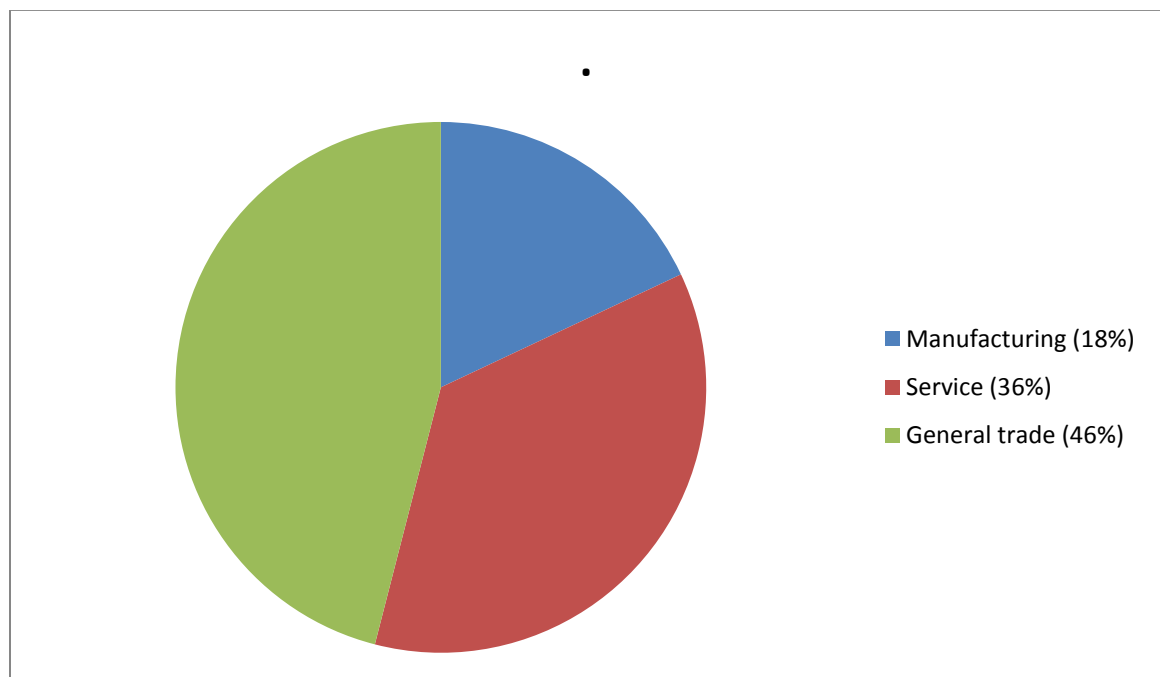
Source: Author (2015)

4.2.2 Type of business

As shown in Figure 4.2, it was established that 46% of them are general trade businesses. These are firms that deal in the retail and wholesale of goods. This number is attributable to the fact that general trade businesses require relatively fewer technical skills set and product offerings are usually homogenous. 36% of respondents ran service businesses. These are businesses that deal with provision of services. Employees have to have certain

skills sets to facilitate provision of services. 18% of respondents ran manufacturing firms. These are firms concerned with the creation of products through a conversion process from one form, usually raw form, to an end product usable by the intended customers. The small number of such firms can attributed to the fact that they require more capital to start and run, specialized skills and are heavily regulated by the government.

Figure 4.2: Type of Business



Source: Author (2015)

4.2.3 Years of Operation

The number of SMEs that had been in operation for less than one year constituted to seven percent of the respondents as illustrated in Table 4.1. This supports assertions from literature that more SMEs are starting up. Majority of the respondents' firms had been in operation for less than five years. These firms account for approximately seventy percent

which is consistent with numbers from the Kenya National Bureau of Statistics that sixty percent of businesses do not last more than three years. However this data also indicates that at least ten percent of SMEs were still operational for more than ten years. This was attributed to sound strategies to innovate.

Table 4.1 Years of operation

Years of operation	Frequency	Percentage
Under 1 year	11	7.3%
1-5	93	62%
5-10	30	20%
More than 10 years	16	10.7%

Source: Author (2015)

4.2.4 Number of employees

By definition, SMEs are businesses with fewer than two hundred and fifty employees. However, this encompasses micro, small and medium enterprises. To make this distinction based on the number of employees, micro enterprises constituted thirty seven percent, small enterprises constituted forty two percent and medium enterprises constituted twenty percent. It is evident from the data in Table 4.2 that most SMEs in the county are small.

Table 4.2 Number of employees

Number of employees	Frequency	Percentage
1-9	56	37.3%
10-49	63	42%
50-249	31	20.7

Source: Author (2015)

4.2.5 Number of branches

As illustrated in Table 4.3, most firms operated just one branch. This was attributed to the fact that most firms are small and micro enterprises and do not have the resources or capabilities to expand. Another reason was that these SMEs had been in operation for less than five years which in some cases was not sufficient to grow in size and market share to justify expansion. SMEs with more branches were generally bigger in terms of size, revenue, staff numbers and years of operation.

Table 4.3 Number of branches

Number of branches	Frequency	Percentage
1	64	42.7%
2-5	70	26.7
6-10	10	7%
11 and above	6	4%

Author (2015)

4.3 Innovations Practiced

Table 4.4 Types of innovations practiced

Type of innovation	Number of respondents practicing specified form of innovation	Percentage of respondents practicing specified form of innovation
Product innovation	97	64.7%
Service innovation	82	54.7%
Process innovation	83	55.3%
Market innovation	63	42%
Marketing innovation	120	80%
Structural organizational innovation	48	32%
Procedural organizational innovation	57	38%

Source: Author (2015)

Data from Table 4.4 shows that the most common form of innovation practiced by small and medium enterprises in Nairobi was marketing innovation. This is due to the fact that almost all businesses engage in one form or another of marketing. Firms in manufacturing, service and general trade all practiced marketing of their products and services. Service innovations were not limited to service firms alone. Firms in general trade and manufacturing also practiced service innovations, commonly offering innovative after-sale services. Many manufacturing firms practiced product innovations mainly by making improvements to existing products and by introduction of new products. Service offering firms also practiced product innovation, commonly in the products they use in the provision of their services. Process innovations were practiced across all business processes including in the buying, selling, storage and pricing

processes. Its intended purpose was to reduce cycle times, streamline processes, reduce costs and reduce errors and defects. Market innovations were practiced by firms seeking to enter new markets. This is done by conducting market research and identifying market segments that the firm can exploit. However, this was only carried out by firms which wanted to diversify or had saturated their existing market. Structural and Procedural organizational innovations were practiced by the few firms seeking to restructure or improve their management structure, philosophy and organizational culture.

The researcher further probed the respondents on the nature of these innovations practiced. Innovations were either: new, modified or duplicated from other sources or a collaboration of some or all. The results are illustrated in Table 4.5.

Table 4.5 Nature of innovations

Type of innovation	Nature of innovation practiced		
	New (%)	Modified (%)	Duplicated (%)
Product	16.9	54.2	66.3
Service	10.6	63.6	46.9
Process	31.8	60.3	72.1
Market	15.7	45.9	54.9
Marketing	42.6	55.1	65.3
Structural	18.8	37.5	72.3
Procedural	10.2	52.7	30.5

Source: Author (2015)

Data from Table 4.5 indicated that most innovations were either duplicated from other sources or slight modifications were carried out on the existing items. The level of

ingenuity and invention of new innovations was low. However, SMEs were inventive in their marketing practices which were attributable to the high customer contact and the uniqueness of these customers which necessitated creativity and ingenuity in the marketing approach. It was noted that SMEs were unwilling and sometimes unable to roll out new original innovations due to the investment in resources and manpower required. Most of the SMEs did not make budgetary allocations for innovation and neither did they have an R&D division. As a result they imitated what was done by other locally and globally either wholly or with modifications.

4.4 Factors influencing adoption of innovation

Table 4.6 Factors influencing adoption of innovation

Factor	Very small extent	Small extent	Mode rate extent	Large extent	Great extent	Total	Mean	SD
Size of the firm	0	30	95	21	4	150	2.99	0.671
Years of operation	0	17	87	32	14	150	3.29	0.789
Type of products	0	32	47	67	4	150	3.29	0.83
Education level of employees	43	34	16	49	8	150	2.63	1.338
Training	0	2	33	74	41	150	4.03	0.741
Customer loyalty	19	8	53	60	10	150	3.23	1.088
Type of market served	12	6	48	43	41	150	3.63	1.161
Competition	0	20	35	41	54	150	3.86	1.056
The economy	0	32	53	52	13	150	3.31	0.904

Source: Author (2015)

Findings from Table 4.6 support literature on factors influencing innovation adoption and proceeds to indicate to what degree each factor influences adoption in small and medium

enterprises. The key factors influencing adoption were employee training, competition and market segment served. These had been identified by the respondents to have a large effect on adoption. Other factors; size, years of operation, product types, education, loyalty of customers and the economy also influence adoption. However their influence is to a moderate degree.

4.5 Effect of innovation on operational performance

Table 4.7 Effect of innovation on operational performance

Measures of operational performance	Total respondents	Mean (%)	Standard deviation
Per unit cost	148	-7.07	7.742
Total operational cost	150	-11.89	12.808
Total revenue	146	9.47	12.403
Profitability	150	9.73	8.52
Cycle times	150	-14.24	13.51
Inventory turnover	150	16.59	17.11
Per unit equipment utilization	150	12.69	9.2
Perceived quality of products	138	9.4	10.82
Defects and errors	150	-4.2	6.7
Customer satisfaction	146	16.62	10.72
Market share	150	10.66	7.36
Response time	150	-5.65	8.24
Backlog	150	-7.2	8.96
Market coverage	150	11.57	9.05

Note: A negative (-) value indicates a reduction effect

Source: Author (2015)

Operational performance is measured on how efficient and effective a firm is. Innovation, by definition, is something different that has an impact. From literature the role of

innovations is to make improvements, either slight or radical, to the status quo. This study collected data on several measures of efficiency and effectiveness, which collectively constitutes operational performance, to identify the impact innovation has on operational performance. The information on Table 4.7 empirically shows that the results of innovation in SMEs were cost reductions, shortened cycle times and response times, reduced errors and defects, increased revenue, profitability inventory turnover, equipment utilization, quality, customer satisfaction, market share and coverage. This approves findings from past studies.

4.6 Summary of Findings

A majority (seventy percent) of SMEs in Nairobi County have been in existence for less than five years which conforms to the assertion that three out of five businesses fail within their first three years of operation. However, there are those that survive and operate for more than ten years. This can be attribute to their flexibility and consciousness to the changing environment which necessitates innovativeness. A majority (80%) has less than fifty employees and 43% operate only one store. This indicates that many SMEs are small and centralized.

The objectives of the study were to identify innovations practiced, factors that influence adoption of innovation and determine the effect innovation has on operational performance. The findings of the study illustrate that SMEs in Nairobi County practice all forms of innovation, albeit to a varying degree. It was also identified that most of these innovations were modifications and duplications. It was also identified that training of employees, markets served and competitive pressures influenced innovation adoption to a

large extent. However, factors such as size, duration of operation, product type, education, customer loyalty and the economy also influenced innovation adoption but to a moderate degree. The impact innovation had on operational performance was evident. Indicators of operational performance empirically showed that the practice of innovation significantly increases efficiency and effectiveness hence improved operational performance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings of this study, conclusions arrived at from the data, limitations observed or experienced during the study and recommendations for further research.

5.2 Summary of the Study

As discussed in the introductory part of this research, SMEs play a significant role in improving the livelihood of people, by being both an employer and a provider of goods and services, and building and sustaining the economy of any country. It is in this light that the Government of Kenya has established various initiatives to promote and grow SMEs in Kenya. However this alone is not sufficient. SMEs operate in environments where they face pressures from competitors, customers, suppliers, substitute products, new entrants into the market and the government. Since according to the Kenya National Bureau of Statistics (2007) three out of five businesses fail within the first three years of operation, firms have to do things better and differently. This has resulted in an uptake in innovation as a strategy for competing and growth.

This research has established that SMEs have extensively adopted innovation practices. SMEs are reengineering their processes, offering new and improved products and services, carrying out creative market and marketing strategies, restructuring organizations and rethinking procedures in a bid to boost their performance. As a result

this has had an impact on these firms. This research set out to identify the forms of innovations practiced by SMEs in Nairobi, the factors influencing adoption of these innovations and what effect these innovations had on operational performance of SMEs. From the study, it was evident that SMEs in Nairobi have embraced innovation and widely practiced it. Among the most common forms of innovations practiced were marketing innovations (which was practiced by eighty percent of the respondents), market innovations and product innovations which were practiced by more than half of the respondents. Other forms of innovations practiced were service innovation, process innovation, structural organizational innovation and procedural organizational innovation. The study also established that these innovations were either duplicated, new creations or modifications to existing items. However, the most common form of innovations was duplications and modifications. Some of the weighty factors that influence adoption of these innovations include competitive pressures, types of markets served, training of staff and the economy.

The study also established that innovation impacted the operational performance of SMEs. Innovation had a significant impact in reducing cycle times, operational costs, per unit costs and backlogs. Innovation practices also led to increased per unit equipment utilization, inventory turnover, market coverage, customer satisfaction and market share. Hence innovation increases efficiency and effectiveness thus improved operational performance.

5.3 Conclusion

Appreciation for innovation among SMEs in Nairobi County is high. Many of these firms are changing, either slowly or radically, how they operate. Manufacturing firms are reviewing and changing their production processes, handling and storage practices, facility layout and designs, and distribution networks. These improvements to their value chains have resulted in improved quality of products, cost reductions, shortened cycle times, and higher per-unit-equipment utilization rates. The overall net effect is greater market share and profitability. Firms in the service sector are coming up with new improved ways of serving clients. This has been achieved through use of new techniques, products used in the provision of these services, exploration and exploitation of new market segments and better ways of engaging customers. Firms in general trade are reviewing and making changes to their supply chains to reduce costs and lead times. Use of social media as a marketing tool has boosted sales and customer feedback. This illustrates that the uptake of innovation is high. However, the nature of these innovations are mostly duplications and modifications. Although this can be attributed to the ease and cost effectiveness of incorporating duplicated and modified innovations, emphasis should be placed on investing resources and manpower to creating and developing new innovations.

The reason for these businesses to innovate was to realize improved performance. This study has empirically shown that innovation has led to greater efficiency and effectiveness and as a result improved operational performance in small and medium enterprises in Nairobi City County.

5.4 Recommendations

It is the recommendation of this study that small and medium enterprises practice innovation to achieve improved performance. Firms should continuously evaluate their strengths and weaknesses and scan the external environment for threats to mitigate and opportunities to exploit. Firms should not only be reactive but proactive. Firms should also carry out training on their employees to equip them to be change agents themselves.

The Government should also incentivize innovation through policies and programs such as offering tax exemptions on expenditure attributable to research and development, offer training to business owners and create an environment that provides ease of doing business. The government should also ensure a stable and growing economy.

5.5 Limitations of the Study

The researcher was constrained by the duration available to carry out this research and financial resources available to him. However, the researcher was able to carry out sufficient research required to generate a reliable study. The researcher encountered respondents that had difficulty reading and understanding the questionnaire. The researcher guided them by way of reading and explaining using several languages and illustrations necessary to ensure the respondents were able to adequately provide required information. The researcher also encountered respondents that were not comfortable disclosing information they considered confidential and trade secrets. However the researcher was able to convince a majority that their data would be handled confidentially and the respondents proceeded to disclose information.

5.6 Suggestions for Further Research

This study focused on innovations in SMEs in Nairobi. Further research should be carried out on innovations in SMEs in other regions in Kenya. Since SMEs are closely identified with their owners/managers, research should also be conducted to show relationship, if any, between SME owners'/managers' traits and characteristics and innovativeness of their respective firms. Research should also be carried out to identify success factors for innovation and challenges inhibiting innovations in SMEs. These would facilitate a comprehensive understanding of innovation in small and medium enterprises in Kenya.

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3. Type of Service innovation

New	[y]	[n]
Modified	[y]	[n]
Duplicated	[y]	[n]

4. Type of Process innovation practiced

New	[y]	[n]
Modified	[y]	[n]
Duplicated	[y]	[n]

5. Type of market innovation

New	[y]	[n]
Modified	[y]	[n]
Duplicated	[y]	[n]

6. Type of Marketing innovation practiced

New	[y]	[n]
Modified	[y]	[n]
Duplicated	[y]	[n]

7. Type of Structural organizational innovation practiced

New	[y]	[n]
Modified	[y]	[n]
Duplicated	[y]	[n]

8. Type of Structural organizational innovation practiced

New	[y]	[n]
Modified	[y]	[n]
Duplicated	[y]	[n]

Part 3: Factors influencing diffusion of innovation

To what extent do you think the following factors influence assimilation (diffusion) of innovation within your firm?

	Very small extent (1)	Small extent (2)	Moderate extent (3)	Larger extent (4)	Great extent (5)
Size of the firm					
Years of operation					
Type of products					
Education level of employees					
Training					
Customer loyalty					
Type of market served					
Competition					
The economy					

Part 3: Effect of Innovation on Operational performance

What effect has innovation had on the following?

(Indicate using percentages increase or decrease, if not sure approximate)

- a) Per unit cost
- b) Total operational costs.....
- c) Total revenue
- d) Profitability
- e) Cycle times
- f) Inventory turnover
- g) Per unit equipment utilization.....

- h) Perceived quality of products/services.....
- i) Defects and errors
- j) Customer satisfaction.....
- k) Market share
- l) Response time
- m) Backlog
- n) Market coverage

Any other comment on innovation is welcome