INNOVATION PRACTICES AND PERFORMANCE OF SMALL AND MEDIUM MANUFACTURING ENTERPRISES IN KENYA

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Innovation Practices and Performance of Small and Medium Manufacturing Enterprises in Kenya

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DECLARATION

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

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This thesis has been submitted with our approval as university supervisors.

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DEDICATION

To my husband Joseph, my sons, Kenneth and Erskine and my daughter, Martha. It is through your support, patience and understanding that I made it.

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LIST OF ACRONYMS AND ABBREVIATIONS

ANAS	Agent Network Accelerator Survey
ATMs	Automatic Teller Machines
BD	Business Daily
BT	Business Times
CBK	Central Bank of Kenya
CCK	Communications Commission of Kenya
CIS	Community Innovation Survey
EAC	East African Community
EFTA	European Free Trade Area
EO	Entrepreneurial Orientation
EU	European Union
FSD	Financial Sector Deepening
GDP	Gross Domestic Product
GM	General Motors
ICU	Industrial and Commercial Union
KAM	Kenya Association of Manufacturers
KBA	Kenya Bankers Association
KCB	Kenya Commercial Bank
KES	Kenya Shilling
KIPPRA	Kenya Institute for Public Policy and Research and Analysis
MFIs	Microfinance Institutions
MMR	Moderated Multiple Regression
NCSES	National Centre for Science and Engineering Statistics

NSF	National Science Foundation
NTIC	National Trends and International Comparisons
NWSC	National Water and Sewerage Corporation
OLS	Ordinary Least Squares
R&D	Research and development
ROA	Return on assets
ROE	Return on Equity
ROI	Return on Investment
RoK	Republic of Kenya
SMEs	Small and Medium Enterprises
SMMES	Small and Medium Manufacturing Enterprises
ULMC	Unmeasured Latent Method Construct
USBLS	United States Bureau of Labour Statistics
US	United States
USD	United States Dollar

OPERATIONAL DEFINITION OF TERMS

Agent banking Agent banking means providing limited scale banking and financial services to the underserved population through engaged agents under a valid agency agreement rather than a teller/cashier (Ndungu & Njeru, 2014).

Commercialization Commercialization is the process of translating research knowledge into new or improved products, processes and services and introducing them into the market place to generate economic benefits (Ardito, 2014).

Creativity Creativity refers to the ability to develop new product, new ideas and to discover new ways of looking at problems and opportunities (Hans, 2014).

Daktari 1525 Daktari 1525 is a teletriage service that enables customers to get information on various medical issues through the phone on a 24-hour basis (Otieno, 2014).

Entrepreneurial Orientation Entrepreneurial orientation refers to the extent to which a firm is entrepreneurial (Sandra, 2011).

Manufacturing Manufacturing is the mechanical, physical, or chemical transformation of materials, substances, or components into new products (USBLS, 2014).

M-Kopa M-Kopa is a mobile technology company based in Nairobi that has established an innovative system to make life changing energy solutions affordable to low income customers (Mwema, 2015).

M-Pesa M-Pesa is a short message based money transfer system that allows individuals to deposit, send and withdraw funds using their mobile phones (Ignacio & Dan, 2012).

Organizational Structure An organizational structure refers to permanently distributing work roles and administrative mechanisms to enable an organization to perform, coordinate and control its business activities and resource flows (Miller, 2011).

Innovation Innovation refers to the introduction to the market of a new product/service that is new or significantly improved with respect to its characteristics or intended uses (Moses, Sithole, Labadarios, Blankley & Nkobole, 2012).

Research and Development Research and Development (R & D) refers to all creative work undertaken on a systematic basis in order to increase the stock of knowledge and the use of this stock to devise new applications, such as new and improved products and processes (Andrea & Marco, 2013).

Small and Medium Manufacturing Enterprises (SMMEs) A small and medium enterprise is a formally registered entity with 5 to 150employees and a turnover of below US dollars 5 million (Maina, Kiragu, Butoyi, Scholastica, Michira & Nkatha, 2010).

ABSTRACT

In the global economy of the 21st century, competition is complex, challenging and fraught with competitive opportunities and threats. Innovation practices are increasingly becoming the main focus for entrepreneurs especially those in the manufacturing sector. Without effective innovation practices, the capability of a firm to achieve or sustain a competitive advantage is greatly constrained. Most SMMEs in Kenya post poor performance and majority of them do not celebrate their third birthday. Research on innovation practices and its dimensions may lead to improved performance especially for the manufacturing sector that is supposed to account for 20% of the GDP by the year 2030, as visualized in the Kenya vision2030. This study examines the influence of innovation practices on the performance of Small and Medium Manufacturing Enterprises (SMMEs) in Kenya. The objectives of the study were to determine how creativity, organizational structure, research and development and commercialization influence SMMEs performance. Entrepreneurial orientation moderated the relationship between innovation practices and SMMEs performance. This study would benefit the industry, SMMEs owner managers, financial institutions, researchers and the government. A representative sample of 254 managers or entrepreneur owner managers was selected from manufacturing firms registered under Kenya Association of Manufacturers using stratified random sampling. A self-administered, semi-structured questionnaire was used to collect the data. The questionnaire was pre-tested to ensure its validity and reliability. The study collected both qualitative and quantitative data. Qualitative data was analysed using content analysis while quantitative data was analysed by descriptive and inferential analysis. The regression analysis model was developed to establish the relationship between the dependent and the independent variables. Data was presented, from which inferences were made as well as the conclusion and recommendations. The study found that commercialization, organizational structure, Research and Development and creativity were all individually significant predictors of SMMEs performance. The results also revealed that entrepreneurial orientation significantly moderated the relationship between innovation practices and SMMEs performance. Overall, the study demonstrated positive relationship between innovation practices and SMMEs performance. This study recommends that factors associated with innovation practices need to be enhanced in SMMEs by including them in the vision and mission statements as they have the greatest impact on SMMEs performance. SMMEs should also be encouraged to increase their entrepreneurial intensity levels for superior performance.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

This study focused on the influence of innovation practices on performance of small and medium manufacturing enterprises (SMMEs) in Kenya. The manufacturing sector plays a critical role in not only improving the overall performance of the global economy, but also in driving innovation for long-term sustainable economic growth (Kennedy, 2013). A study by UNIDO (2015) revealed that the world manufacturing sector has continued to struggle in its growth as a result of the global crisis of the year 2009. The pace of growth of the manufacturing sector has over the past few years decelerated. Small and medium enterprises (SMEs) in the sector need to constantly innovate in order to ensure improved performance and success of their enterprises. Tucker (2011) posited that innovation is the best way of stimulating improved performance in a firm. The most innovative firms realize higher turnover of products and services introduced within a period of time. A study by Freeman (1982) asserted that to choose to be non-innovative is to choose death of an organization. It is for these reasons that measures should be taken to reduce the challenges defacing the sector.

The influence of innovation practices on firm performance has been one of the issues of most importance in recent literature. Innovation refers to the introduction to the market of a new product or service that is new or significantly improved with respect to its characteristics or intended uses (Moses, Sithole, Labadarios, Blankley & Nkobole, 2012). Innovation practices represent the provision of solutions to market threats and opportunities, thus creating the basis for the survival and success of the firm into the future (Rick, Andy & Jacob, 2015; Michael, 2012). Several scholars (Li, Su, and Liu, 2010; Dobbin, Lassen and Nelson, 2015) argued that innovation practices enabled a company to gain competitive advantage, establish a leadership position in the market, develop entry barriers, formulate new distribution channels and gain new customers to advance market position. A study by Fadaee (2014)

asserted that innovation practices was market-focused and primarily customer driven and therefore, had an important performance implications.

A study by Kaya and Agca (2014) posited that creativity is the seed of all innovations. Amabile (2012) argued that creativity truly enhanced innovation when senior management provided sufficient resources that included an array of elements: technological expertise, adequate time for developing novel work, training, teams, motivation, sufficient funds and material resources. It is widely accepted that creative activities and the resulting innovations emanating from them were key to driving US competitiveness and prosperity (Porter & Rivkin, 2012). Several studies (Mihaicz, 2012; Kleinscmidt, Schultz, Salomo, and, De Brentani, 2013) showed that the structure of a firm is related to innovation. Mihaicz (2012) mentioned eight dimensions of an organization structure: formalization, specialization, standardization, centralization, professionalism, complexity, hierarchy of authority and personal ratios that influence innovation practices. A study by Kleinschmidt *et al* (2013) argued that an organizational structure based on formal, functional, professionalism and formal control may increase innovations in a firm. Formal and centralized structures had a positive impact on innovation (Andrews, 2012).

Research and development played a vital role in a firm's growth, innovation and development (Pang & Chih, 2012). A study by Cooper (2011) asserted that R & D were a major source of innovation for more established firms. Proper utilization of technology by a firm could significantly decrease the time for R & D and promote innovations significantly (Peled & Dvir, 2012). Commercialization of innovation was essential for the overall performance of an innovative firm (Walsh, 2012). Albino, Ardito, Dangelico and Messeni (2013) argued that commercialization is the final phase of innovation process. The economic benefits of a new innovation are never fully realised until the innovation is actually introduced to the market (Datta, Reed & Jessup, 2013). Entrepreneurial orientation is a precursor of innovation and thus management in firms is encouraged to adopt entrepreneurial orientation in order to develop innovative capabilities (Rosli, 2015). A study by Killa (2014) found a positive effect of entrepreneurial orientation on innovation practices which implied that the higher the level of entrepreneurial orientation of the firm the higher the

degree of innovation practices. Entrepreneurial orientation created a favourable environment in which firms developed innovation practices capabilities and through these capabilities they enjoyed superior performance outcomes (Kaya & Agca, 2014).

1.1.1. Global Perspective on Innovation practices and Performance of SMMEs

The National Trends and International Comparisons (NTIC) (2012) survey revealed that the worldwide innovations and Research and Development (R&D) expenditures totalled an estimated $1, 276 billion in 2009. The United States was by far the largest innovative and R&D performer ($402 billion) in 2009, accounting for about 31% of the global total expenditures. However this was a decline from 38% in 1999 to 31% in 2009. Inadequate investment in innovation practices resulted to negative growth of SME's in the manufacturing sector in many economies of the world. In the United States (U.S) only 4,098 new agreements to license innovations were registered and revenue generated from innovations amounted to only $24,452 million. This was far less below the projected revenue in 2011 (NSF/NCSES, 2011).

Although China is emerging as a powerful economy, there is still a significant wide variation across provinces regarding new product output, new product intensity and the share of new product firms. The inland provinces such as Mongolia, Guizhou, Qinghai and Ningxia had limited new product output. The inner provinces were the least innovative with growth rate ranging from Mongolia (0.5%), Tibet (0.8%) and Xinjiang (1.3%). The inner provinces had the lowest percentage of new product firms at 1.1% to 2.9%. These findings suggested that there were large disparities in innovation practices across regions in China (Zhang 2014; 2010; Lin, Li & Yang, 2011; Martin, Mayer & Mayneris, 2011). A study on innovation indicators and performance for Danish firms revealed an insignificant Heckman's value. The Mills ratio was also negative suggesting that there were unobserved characteristics that increase the probability of being innovative (Cater & Schwab, 2008).

The South Africa innovation survey (2012) revealed that 34.6% of enterprises reported no innovation activities at all. The non-innovative enterprises accounted for 7,915 firms and only employed about 0.27 million employees. This indicated that innovation tends to create employment (Moses, Sithole, Labadarios, Blankley &

Nkobole, 2012). M-Pesa had notable success where Vodacom Tanzania had 3.6 million M-Pesa customers out of its 11.6 million mobile subscribers as at June 2012, representing a mobile money penetration rate of 31%, however, this was far much below the projected market share in 2012 (Jack, William, Suri & Tavneet, 2012; CCK, 2012; Mutiga 2014; Saylor & Michael, 2012).

In Uganda, "e.water" is a new innovation that enabled water consumers to pay their bills through their phones. Within four months of the "e.water" launch, in March 2011, over 20,000 of the National Water and Sewage Corporation (NWSC) account holders had switched to the mobile money option, accounting for 10% of the total customer base. In excess of USD 300,000 worth of water bills were paid via mobile money channels, 80% of which derived Kampala. MTN was the dominant player, accounting for 95% of water service revenue collected through mobile money channels (KBA, 2012; Equity bank, 2013; Hope, Foster, Krolikowski & Cohen, 2011).

1.1.2. Kenyan Perspective on Innovation practices and Performance of SMMEs

Safaricom was ranked the ninth most innovative company in the world in 2013. A report entitled "Global Online Payment Methods, 2014" disclosed that, there were 25 million M-Pesa account holders, where more money than Kenya's national budget of KES 2 trillion was transacted annually. The report added that online and mobile payments worldwide were forecast to KES300 trillion in the next five years (CBK, 2014; Kariuki, 2015; Mutiga, 2014; Saylor & Michael, 2012; Mugo, 2014). The M-Pesa users increased from 41% in 2009 to 67% currently. The mobile money contributed 6.59% of the total national payments. Over two thirds of the Kenyan adult population was subscribed to mobile money transfer services and 78% of this number used M-Pesa, where Individuals sent money to others via their phone through a network of over 60,000 local agents (CBK 2014; Kariuki, 2015).

Bank agents conducted over 92 million deals worth KES 500 billion by March 2014 compared to 39 million transactions worth KES 250 billion done from 2010 to march 2013. As at march 2014, there were 14 banks which had appointed 24,645 agents, who executed over 92.61 million transactions valued at over KES 498.97 billion

since 2010 (CBK, 2014; Equity bank, 2013; ANAS, 2013; Nganga & Mwachofi, 2013). A recent study by the Financial Sector Deepening (FSD) Kenya (2014) showed that agents had significantly increased access to banking services with 52% of the country's population being within three kilometres of an agent compared with only 22% within three kilometres of a branch.

M-Kopa was ranked the world's top ten most innovative companies of 2015 in Africa. M-Kopa solar introduced a Safaricom-branded solar lighting system which provided clean lighting solutions to millions of homes at a cost of KES 40 daily. M-Kopa conected 2000 homes every week and had already connected 90,000 Kenyan homes (CBK, 2015; Mureithi, 2014). More than 500,000 resource proof farmers benefited from tissue culture banana technology transfer that earned the Kenyan farmer an average of KES 5.5 billion. It was expected to hit KES 20 billion by 2015. The area under banana production increased from 43,000 hectares in 1996 to 96,000 hectares to date and has uplifted Kenyans living beyond the poverty line to earn $3 per day (CBK, 2014; Eijkman, 2013). Daktari 1525 is a 24/7 innovation product that was launched in 2011. Daktari 1525 is a 24/7 call-in service that for a small fee, connects callers one-on-one with a doctor. It had a pool of 50 doctors, and it anticipated to get more customers calling and more Kenyans healthy (ANAS, 2014).

1.1.3. Innovation practices

Innovation practices are fundamental instruments of growth strategies to enter new markets, increase the existing market share and provide a company with a competitive edge (Walter 2015; Alex 2014). Innovation is the introduction to the market of a new product/service that is new or significantly improved with respect to its characteristics or intended uses (Moses *et al*, 2012). There are four broad levels of novelty of innovations that are defined in relation to the firm and the market levels: innovations that are new only to the firm; innovations that are new to the market of the firm and its competitors; innovations that are new to the country and innovations that are a world first (Moses *et al*, 2012). Several studies (Rosenbuch, Brinckmann & Bausch, 2011; Chiara *et al.*, 2015) suggested that innovation practices were key drivers of economic performance and growth of small firms. However many

economies in the world reported a declining trend in innovative activities. In the United States (US) and the European Union (EU) member states there was a decline in innovations from 1,592,420 in 2008 to 1,152,211 in 2009, a decrease of 28 % (ICU, 2011).

The ability to pursue innovation practices is increasingly viewed as the single most important factor in developing and sustaining competitive advantage. It is no longer adequate to do things better, it is about doing new and better things (Dobin, Mark & Nelson, 2015). In China, every year organizations spend millions of dollars in research and development activities due to the fact that the reputation of those organizations is inexorably associated with innovation practices (Henard & Dacin, 2010). A study by Calvo, (2011) stated that more than half of product innovative firms in Spanish manufacturing firms did not expend in research and development.

A Survey by the Community Innovation Survey (CIS), covering European Union (EU) and European Free Trade Association (EFTA) member states, reported that, the share of innovative enterprises decreased by 3.9% during the period 2010-2012 among the EU member states. The highest shares of innovative enterprises during the period 2010-2012 was Germany (66.9%), Luxembourg (66.1%), Ireland (58.7%) and Italy (56.1%) and this was a decline from the previous period (CIS,2012). In Kenya, only a few firms have introduced innovations that are new to the Kenyan market. In the Kenyan manufacturing sector only a third of firms have developed their own innovations (Gichana, Elegwa & Romanus, 2013; Mwangi & Namusonge, 2014).

Although there is availability of innovation literature, most innovation research ignores SMMEs and only focuses on large firms (Sung, Kim & Choi, 2015; Walter, 2015). Rosli (2015) one of the authorities in innovation research stated that “not to innovate is to die”. On the downside, small firms have limited resources for innovation initiatives (Mohd, Zuhriah & Norsian, 2014; Alex, 2014). Lack of financial resources to cover the cost of innovation was identified as a key barrier in several studies (Suswatika, Ann & Southgate, 2014; Matanda, 2013; Maria, Mario & Fatima, 2014; Maleya & Muturi, 2013). These constraints exacerbate the risks of innovation for small firms, which cannot sustain many failures (Mark, 2014; Simiyu,

2013). Beside limited financial and other material resources, small firms may lack technological expertise of their large firms counterparts (Mary & Leslie, 2014; Ali, 2015) especially the R &D and marketing capabilities to exploit new products (Funda & Cihan, 2014; Jochen, 2014; Mikel, 2014).

1.1.4. Firm Performance

Firm's performance is generally defined as the firm's level of goal accomplishment (Miguel & Elena, 2009). The measurement of firm performance in different empirical researches vary as scholars select concepts of different levels of performance according to the objective in empirical study, including operating performance (Simiyu, 2013; Mikel, 2014; Chiara *et al*, 2015); financial performance, (Mary & Leslie, 2014; Vittoria *et al*, 2014;), new product performance (Dobin *et al*, 2015; Bin & Wei-qiang, 2013) and innovation performance (Suwastika *et al*, 2014; Yan & McKern, 2013). Performance improvement is the primary goal of all entrepreneurial firms as it demonstrates the level of success of its business operations (Janine & Linderman, 2013; Ljiljana & Durdana, 2015; Marie & Alan, 2014). Various firm performance measurements have been applied in previous studies. However, majority of these studies did not provide any justification for the selection of measures used, and there was no agreement among entrepreneurship scholars on the assignment of an appropriate set of measurements (Madsen, 2007).

You and Liu, (2010) stated that firm performance refers to an organizational effectiveness in terms of its financial and operational performance, and a number of indicators were used to measure it, including finance, efficiency, customer satisfaction, value addition, and market share. To capture different aspects of firm performance, multiple measures, that is, financial and non-financial were employed. However, most studies apply only financial measurement to assess performance, with firm performance being investigated as the dependent variable (Mohd & Syam, 2013). The three dimensions used in the financial measurement were efficiency, growth and profit. The Sung, Kim, and Choi (2015) model identified several performance measures including sales, growth, market share, profitability, overall performance and stakeholders' satisfaction. Financial measures of success include

Return on Investment (ROI), Return on Equity (ROE), Return on Asset (ROA) or market share are used as measure of firm performance. This study adopted sales turnover, profitability and return on investment as performance measures.

1.1.5. Small and Medium Manufacturing Enterprises

Small and Medium Manufacturing Enterprises (SMMEs) play a crucial role in driving economic growth in both developing and developed economies (Asieh, 2015; Wanjau, 2010). Their importance is not limited to adding value but also creates jobs and drives the innovation for long-term sustainable growth. According to UNIDO (2013) the manufacturing SMEs were struggling to grow as a result of the global financial crisis of the year 2009 and this resulted in developing countries being the main engine in the growth of the global manufacturing. In the United States SMEs represent an overwhelming majority of businesses and account for almost half of the GDP (Kiprem, Peng & Pollard, 2011). The United States Small Business Administration (2012) reported that SMMEs created two-thirds of all new jobs and invested more than half of all technological and innovation products. Similarly in Thailand, the largest number of businesses was comprised of SMMEs. A study by Ahu (2015) suggested that the catalytic roles of SMMEs and cottage businesses had been displayed in many economies of the world such as Japan, South Korea, Malaysia, Zambia and India among others.

According to Klynveld Peat Goerelder (KPMG) International 2015, China's growth in its GDP slowed down from the year 2013-2014 to stand at 74% partly due to the challenging environment in the manufacturing sector. The manufacturing sector in South Africa contributed significantly to its economy but its importance declined from 19% in 1993 to 17% in 2012. The contribution to GDP was 13.9% lower than that of the service sector which stood at 73% (Tarboda, 2015). The newly industrialized countries such as South Korea, Malaysia and Taiwan experienced development and economic growth because they accorded SMEs the right conditions to flourish (Nafukho, Machuma & Muyia, 2009).

The East African Community (EAC) is one of the regional integration bodies which comprise of Kenya, Uganda, Tanzania, Rwanda and Burundi (EAC, 2010). It has led to the expansion of market for manufacturing firms, and also a moderating influence on performance of manufacturing firms. Regional integration presents a challenge to firms accustomed to operating within the domestic market. The challenges were in form of increased number of competing firms, lower production and marketing costs, larger market and greater pressure on firms to regionalize (Wiklund & Shepherd, 2005). Regionally, Tanzania's manufacturing SMEs continued to lag behind than those of the other countries in the region in terms of quantity and quality of the industrial goods that were produced and exported due to its reliance on agricultural sector. In Uganda SMMEs have been struggling and experienced a slow growth below the Sub-Saharan Average (ROU, 2010). The sector's contribution to the Uganda's GDP lagged behind than that of the other countries such as Kenya, Rwanda and Burundi (KIPPRA, 2014).

In Kenya, Economic Recovery Strategy (ERS) estimated that 500,000 jobs would be created annually with 88% of those generated by SMES. Christian and Alexander (2013) observed that SMMEs generated new jobs in the economy and new products and services that facilitated economic growth. The economic impact of SMMEs can be measured by their contribution to output, innovations, employment, income investments, exports and their economic indicators (Jochen, 2014). In Kenya SMMEs employ 74% of the labour force and contribute over 18% of the country's GDP. In addition, more than 90% of business comes from this sector and this makes up 30% of total employments (Ndalira, 2013).

The performance of SME's in the manufacturing sector is still dismally low. The manufacturing value added contribution made by MSEs increased, though the contribution was still low, accounting for 14.2 per cent yet two thirds (67%) of manufacturing firms are micro and small enterprises (KIPPRA, 2013). This dismal performance is likely to slow down the path of economic development as envisioned by vision 2030 strategic plan which encourages adoption of innovation practices. The Kenyan Vision 2030 (RoK, 2008) envisaged a vibrant manufacturing sector as one of the key sectors meant to make the economy industrialize by the year 2030. However,

the manufacturing sector has recorded poor performance in the past contributing a dismal 14.2% to the country's value addition (Kippra, 2013). This phenomenon not only paints a gloomy picture of the sector, as a one of the key pillars of economic growth, but also threatens to slow down the realization of vision 2030 dream. The manufacturing SME firms outperformed large industries in terms of growth and job creation (Kippra, 2013). The manufacturing sector's contribution to Gross Domestic Product (GDP) was 10% in 2014 (RoK, 2015). However, the Kenya vision 2030 stipulates that the sector should account for 20% of GDP (RoK 2008). These manufacturing SME's in the country are likely to perform even better when they fully embrace and get committed to their innovation practices.

Manufacturing sector is vital for Kenya's economic growth. Its performance is measured in growth, employment creation and contribution to the country's overall output and exports (KER, 2012). The share of manufacturing sector's employment to overall formal employment stood at an average of 13%. The contribution of the sector to the GDP declined since 2011. In the year 2011 the contribution fell from 9.6% to 9.2% in 2012 while growth rate deteriorated from 3.4% in 2011 to 3.1% in 2012. These changes were attributed to high costs of production, stiff competition from imported goods, high costs of credit and drought incidences in 2012 (KNBS, 2013). A study by Sung, Kim and Choi (2015) revealed that SMMEs play a significant role in promoting economic growth through the introduction of innovative ideas, products and business methods. In today's competitive world, the survival of SMMEs depends on innovation, creativity and entrepreneurship (Chiara *et al*, 2015; Rick *et al*, 2015). Several studies (Tarus and Nganga, 2013; Mwangi and Namusonge, 2014) revealed that SMMEs have been facing critical challenges; high level of attrition and negative performance. In 2014, a number of SMMEs posted a negative growth: Meat and meat products processing firms declined by 0.4%, leather shoes 0.4%, industrial gas 4.2%, T-shirts and knitted fabrics 12.1% and 8.6% respectively, fish processing and preserving firms 17.9% and shoe polish, 12.2% just to name a few (RoK, 2015). This alarming trend proofed that there is need to focus on SMMEs issues.

1.2 Statement of the problem

Small and medium enterprises in Kenya are faced with many challenges. A study by Tarus and Ng'ang'a (2013) revealed that small and medium manufacturing enterprises in Kenya have been facing critical challenges of low performance, declining trend in innovative activities and a high level of attrition. This is despite the fact that they are an important factor in the attainment of the Kenya vision 2030, which stipulates that the manufacturing sector should account for 20% of the GDP (RoK, 2007). The manufacturing sector can facilitate the achievement of the Kenya vision 2030 objective through the introduction of novel products or by significantly improving the existing products with respect to their characteristics or intended uses.

Although Small and Medium Manufacturing Enterprises (SMMEs) accounted for 70% of Kenya's manufacturing sector (KIPPRA, 2014), their performance dropped from 5.6% in 2013 to 3.4% in 2014 (RoK, 2015). Despite SMME's significant contribution to GDP in Kenya they were still not performing as expected. This was the reason why in 2014, a number of SMMEs in Kenya: meat and meat products processing firms, leather shoes, industrial gas, t-shirts and knitted fabrics, and shoe polish among others all posted negative performance resulting to low sales turnover and profitability (RoK, 2015). If such failures are not checked, they may lead to lowering of GDP due to low productivity and consequently low sales turnover and profit margins for many firms thus resulting to poor performance.

The challenges facing SMMEs may be partly be addressed by innovation practices as they are suggested as key drivers of economic performance and growth of small firms (Rosenbunch, Brinckman & Bauch, 2011; Chiara Daniela & Analisa, 2015). A study by Wanjiku (2011) on industrial innovation in the face of stiff competition from Chinese imports did not specifically focus on innovation practices. Ndalira (2013) studied Effects of the type of innovation on the growth of SMMEs in Kenya but did not specifically study innovation practices in the manufacturing sector. Khiu, Ahmad and Ramayah (2010) studied innovation among Information and Communication Technology techno-preneurs in Malaysia but used a small sample of five software firms and hence their results could not be generalized. Atalay (2013) studied the

relationship between innovation and firm performance in Turkey but did not specify the size of the firms and hence the results could not be generalized. This showed that limited attention has been paid to innovation practices-SMMEs performance model. This study addressed these gaps by undertaking an empirical study on the influence of innovation practices on the performance of SMMEs in Kenya.

1.3 Research objectives

1.3.1 General Objective

To investigate the influence of innovation practices on the performance of Small and Medium Manufacturing Enterprises in Kenya

1.3.2 Specific Objectives

i. To establish the influence of creativity on performance of SMMEs in Kenya
ii. To determine the effect of an organizational structure on performance of SMMEs in Kenya
iii. To examine the influence of research and development on performance of SMMEs in Kenya
iv. To establish the influence of commercialization on performance of SMMEs in Kenya
v. To determine how entrepreneurial orientation moderates the relationship between innovation practices and performance of SMMEs in Kenya

1.4 Statistical Hypotheses

H_{01}: Creativity does not influence the performance of SMMEs

H_{02}: An organizational structure does not influence the performance of SMMEs

H_{03}: Research and Development do not influence the performance of SMMEs

H_{04}: Commercialization does not influence the performance of SMMEs

H_{05}: Entrepreneurial orientation does not moderate the relationship between innovation practices and entrepreneurial performance of SMMEs

1.5 Justification of the Study

This study was for entrepreneurs and managers of Small and Medium Manufacturing Enterprises in the manufacturing sector. The study provided them with knowledge on how innovation practices could facilitate the performance of their enterprises. The findings of the study enabled the government to achieve the broad goals outlined in the Kenya vision 2030 of making Kenya become the provider of choice for basic manufactured goods in Eastern and Central Africa before breaking into other markets (RoK, 2009). Researchers and Scholars benefited from the findings of this study as it formed a basis for further research in the sector. It also served as a reference material thus providing an empirical contribution in small and medium manufacturing enterprises in Kenya.

1.6 Scope of the Study

The study focused on small and medium manufacturing Enterprises registered with the Kenya Association of Manufacturers (KAM) as at June, 2015. These enterprises were classified into sectors which ensured that every sector was included through stratified random sampling. Kenya Association of Manufacturers is a registered organization representing Kenyan Manufacturing Organizations, and therefore the results were generalized to the SMMEs in Kenya and other enterprises globally.

1.7 Limitations of the Study

This study examined SMMEs in Kenya. It was anticipated that some respondents may be reluctant to complete the questionnaires promptly. This was mitigated by visiting them in person and persuading them to fill the questionnaires. Some respondents resisted filling the questionnaires due to their busy schedules and fear of disclosing sensitive issues pertaining to their entities such as revenues. This was mitigated by engaging two assistants who made a follow-up. In Kenya, the yardsticks used to measure SMMEs include: the total number of employees in the enterprise,

sales turnover, capital investment, the level of inventory or a combination of two or three of these yardsticks. Entrepreneurial managers or owners may consider financial aspect confidential and may not disclose it to the researcher. This limited the researcher to use only the number of employees in determining the firms within the SMMEs bracket. The companies investigated in this study were SMMEs. This study specifically focused on SMMEs and a sample of 254 firms was studied. Large enterprises in the manufacturing sector were not included in the study sample.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the relevant literature by various scholars and researchers in the area of innovation practices in enterprises with a specific focus on Small and Medium Manufacturing Enterprises. It discussed theoretical review, Conceptual framework and the empirical review that informed this study. It reviewed innovation practices as operationalized in the conceptual framework as creativity, organizational structure, research and development and commercialization as independent variables and the dependent variable as SMMEs performance. Entrepreneurial orientation was a moderating variable. Empirical literature, critique of empirical literature and research gaps were also reviewed.

2.2 Theoretical Review

A theory is a generalization about a phenomenon that explains how or why the phenomenon occurs (Avolio, Yammarino & Bass, 2009); a theory is a generalization about a phenomenon, an explanation of how or why something occurs. Indeed, any statements that explain what is measured or describe-any general statements about cause or effect-are theory based (Salkind, 2010). This section covered the theories relevant in explaining the influence of innovation practices and entrepreneurial orientation on performance of SMMEs in Kenya. Componential theory of creativity, teleological change theory, organizational learning theory, the rival theory and diffusion of innovation theory supported this study.

2.2.1 Creativity

Componential Theory of Creativity

Componential theory of creativity proposes that organizational creativity appears at the interplay between organizational components that are deemed necessary for overall innovation such as organizational resources, management practices and organizational motivation. This theory was proposed by Amabile (2008). The componential theory of creativity is grounded in a definition of creativity as the production of new ideas or outcomes that are both novel and appropriate to improving the performance of firms. The theory proposes three components that are necessary for any creative response: domain-relevant skills, task motivation and teamwork (Amabile, 2012). Domain-relevant skills include Knowledge, technological expertise, and intelligence in the specific domain where the entrepreneur is focusing such as product design that eventually boost the sales turnover and profits of SMEs. These skills comprise the raw materials upon which the individual can draw throughout the creative process (Ljiljana & Dosen, 2015).

Motivation can be intrinsic or extrinsic in nature. Intrinsic motivation arises from the individual's positive reaction to the qualities of the task itself such as interest, involvement curiosity and satisfaction while extrinsic motivation arises from sources outside the task itself such as a promised reward, meeting a deadline or winning a competition that improves the performance of enterprises in the long run (Amabile, 2012). The social environment dynamics emphasizes creation of teams. Teamwork is an important element in organizational settings as it facilitates effectiveness and efficiency in an organization thus boosting sales in a firm (Dul, Celyon & Jaspers, 2011).

The theory is important in this study as most practitioners, and managers have relied on tools and techniques developed from the theory to stimulate creativity and innovation within their organizations in order to facilitate performance (Alvaro & Calvo, 2011). The theory specifies that creativity requires a confluence of all components. Creativity should be highest when an intrinsically motivated person with high domain expertise and high skill in creative thinking works in an environment

high in support for creativity (Cooper, 2011). This theory is important to this study as recent evidence showed that some product or process innovation is taking place at every instant in time (Ljiljana & Dosen, 2015). This theory is also useful in this study since research shows that firms seeking to be competitive and responsive to environmental changes need to introduce innovations to boost their performance (Ndungu, 2014).

2.2.2 Organizational Structure

Teleological change Theory

Teleological change theory proposes that in order to construct the desired state, an organization should be purposeful and adaptive by itself or in interaction with others (Van de Ven & Poole, 1995). Changes in organizational structure and the overall flexibility of the firm, is said to be one of the most vital factors in a firm's improved performance and success (Tuminas, 2013) that are crucial to its existence, because at initial state departments' and job responsibilities, work content and processes, rules and regulations, communication and co-ordination and distribution of power, are all in a nascent state (Xiuli & Juan, 2011). At the same time, to increase efficiency over time, the firm has to create and implement flexible organizational structures in order to improve routines within an organization, such as constrained employee behaviour, high levels of formality, tight control and decisions made only by CEO (Ahmad, 2012).

There has been no pre-defined vector of how the company would reach its target, but there has always been an understanding of where it is going (Tuminas, 2013). The understanding of the company's organizational structure has emerged from the goal to create and maintain a system that would be capable of dealing with the transition from a situation of partial definition of risk to complete control of risk related to the human factor. Together with the main purpose of the firm, the environment of the company, filled with uncertainty and volatility, has been a determinant of the changes in structure and attitudes of the organization (Denison, 2000). It becomes clear, that the company's attitude towards changes is in line with teleological school of thought; thereby an organization might change its structures according to their main goal at the

given moment in time to influence better performance. Given the fact that a company might undergo certain changes in order to reach its goal, affected by external forces, a very high level of flexibility is always maintained within the company, which can at the same time be supplemented by more rigid structures in the situation, where cost efficiency and focus on exploitation of existing opportunities are needed to introduce new products to increase sales in a firm (Fakhar, Rana, Ayesha & Lalarukh, 2012). This study adopted teleological change theory to explain how an organizational structure influences innovation practices in SMMEs in Kenya.

2.2.3 Research and Development

Organizational Learning theory

Organizational learning theory was used to explain the skill sharing motives on R&D in SMEs. Organizational learning theory is regarded as the key factor in achieving sustainable competitive advantage. Organizational learning refers to the process by which the organizational knowledge base is developed and shaped (Stata, 2011). The ability of firms to acquire knowledge and to transfer it into a competitive weapon has long been a part of the research agenda (Ardito, 2014). Stata (2011) even predicted that individual and organizational learning may grow to become the only sustainable competitive advantage. As Hamel (2011) said, learning through internalization, which refers to acquiring skills to close the gap between partners, and sustainable learning helps reapportion the value-creating core competencies in an organization context, giving partners the ability to match or overtake competition through introduction of novel products and significantly improving the existing ones. Therefore, learning, be it related to technology transfer, acquiring skills, or improving learning capability (Cohen & Levinthal, (2012), is a critical consideration for firms to improve their performance (Iyer, 2010).

Winners in the global marketplace have been using firms that can demonstrate timely responsiveness and rapid and flexible innovation practices, coupled with the management capability to effectively coordinate and redeploy internal and external competences (Cheung & To, 2011). Teece *et al.* (2012) have proposed the dynamic capability approach to Cooperative research and development firm-level advantage

suggesting that a firm's ability to continually learn, adapt, and upgrade its capabilities is key to competitive success and performance. The term dynamic refers to the capacity to renew competences so as to achieve congruence with the changing business environment; certain innovative responses are required when time-to market and timing are critical, the rate of technological change is rapid and the nature of future competition and markets difficult to determine. The term capability emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment so as to influence better performance (Ferray, 2010). Dynamic capabilities thus reflect an organization's synthetic ability to gain competitive advantage and dynamic capability can be created and enhanced through experience, learning, investment and innovation (Andreas, Marina & Klaus, 2015).

As Teece *et al.* (2012) posited the concept of dynamic capabilities as a coordinative management process opens the door to the potential for inter-organizational learning. Firms are viewed by partners as vehicles that provide opportunities to learn to enhance their strategies and operations. Kogut (2011) argued, based on organizational learning theory, that firms by their inherent long-term partnering nature provide opportunities for partners to transfer embedded knowledge between them. This embedded or tacit knowledge is generally difficult to transfer between firms. Firms are like a short-circuit method for acquiring critical tacit knowledge (Hamel, (2011). Learning occurs all along the evolutionary path, and the dynamics of learning and relationship interactions continuously change as the firm grows in adjusting its sales positively. So in a sense, the alliance creates a laboratory for learning (Inkpen, 2012). This study adopted Organizational Learning theory in its study.

2.2.4 Commercialization

The Rival Theory

Rival theory was proposed by Datta. The rival theory explains the ability to commercialize an innovation by a firm (Dalta, 2011). In the theory, a firm's absorptive capacity and ability to explore and exploit internal and external networks

that include structures and collaboration within and between firms influenced its ability to bring an innovation to the market and reach the mainstream market by increasing its sales (Dalta, Mukherjee & Jessup, 2015). Jang and Chung (2015) defined an integrative commercialization of innovation framework based on the antecedents, mediators and moderators of commercialization: networks, absorptive capacity and ambidexterity which mean the ability to explore and exploit new opportunities.

The rival theory sought to identify why some organizations were better than others at bringing new innovations to the market thus enhancing their performance (Frattini et al, 2012). Dalta described the ability to commercialize an innovation by a firm's capacity to manage three aspects of the innovation process: identify a market for an innovation, develop and manufacture the concept into a product and sell the product through distribution channels. The rival theory of commercialization of innovation is distinct and examines the commercialization of innovation process from different levels of analysis (Datta, Reed & Jessup, 2015); Dalta (2011); Frattini, Massis, Chiesa, Cassia and Campopiano (2012) looked at commercialization of innovation at the organizational level. However, Dalta (2011) studied commercialization of innovation from a more of a strategic management of innovation point of view while Frattini *et al.* (2012) explored commercialization decisions from a marketing perspective. Few studies have explored the collective strategic marketing decisions business leaders make and their combined influence on the commercialization process (Jang & Chung, 2015).

All the three concepts in the commercialization of innovation framework may affect a firm's ability to launch a new innovation, realize revenue and influence the firm's performance and survival (Frattini *et al.,* 2012). It is therefore critical to understand the role those strategies played in the commercial success. As applied in this study the theory holds that the prepositions advanced by the theory model allow technology development marketing leaders to explore strategies used to commercialize a new innovation practices in the market (Datta, Mukherjee & Jessup, 2015). This study adopted the rival theory of commercialization of innovation to explain the influence of commercialization in enhancing innovation practices in manufacturing SMEs.

2.2.5 Entrepreneurial Orientation

Diffusion of innovation theory

Diffusion of innovation theory predicts that media and interpersonal contacts provide information and influence opinion and judgment. The theory centres on the conditions which increase or decrease the likelihood that a new idea, product or practice was adopted by members of a given culture. Rodgers (1995) argued that innovation occurs in four stages: invention, diffusion (communication) through the social system, time and consequences. Then the information flows through networks and the nature of networks and the roles opinion leaders play in the networks determine the likelihood that innovation was adopted. Innovation diffusion research explains the variables influencing how and why the users adopt a new information medium such as the internet, with the opinion leaders personal leaders exerting influence on audience behaviour. There are five adopter categories: innovators, early adopters, early majority, late majority and laggards. Innovators adopt innovation in the beginning at (2.5%) early adopters make up for (13.5%) a short time later the early majority (34%) the late majority (34%) and after some time the laggards make up for (16%) (See fig 2.1)

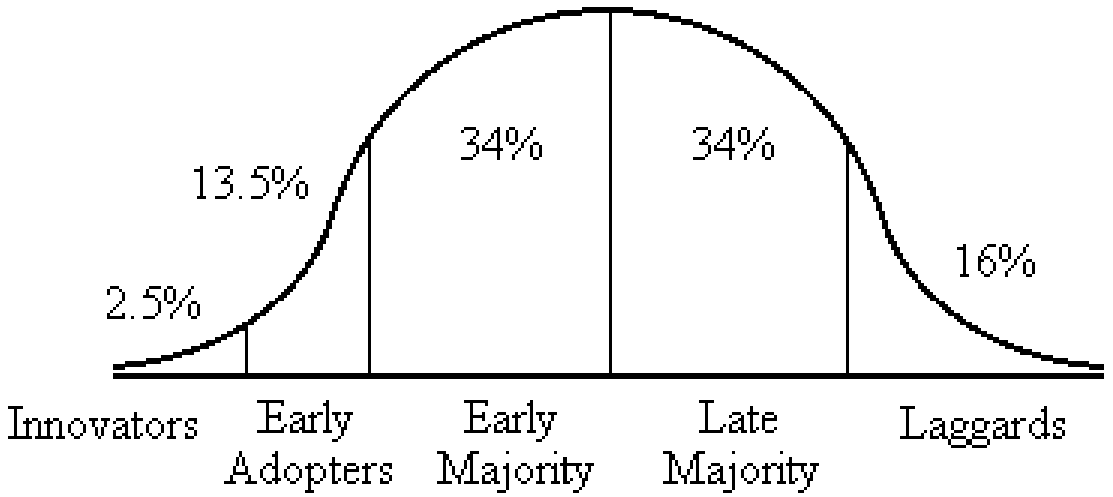

Figure 2.1: Hypothesized distribution of adopter categories within a typical population (Rogers, 1995).

There are five factors that influence adoption of an innovation and each of them is at play to a different extent in the five adopter categories. They are: Relative advantage (the degree to which an innovation is seen as better than an idea, program or product it replaces); compatibility (consistency of the innovation with the values experiences and needs of the potential adopters); Complexity (the difficulty of the innovation to understand or use); Tria-bility (extent to which an innovation can be tested or experimented before a commitment to adopt it is made) and observerbility (extent to which innovation provides tangible results) (Rodgers, 1995). The theory is important in this study as previous research shows that firms seeking to be competitive and performance oriented are responsive to the environmental changes and introduce innovations (Uzkurt, Kumar, Kimzah, & Eminough, 2013).

2.3 Conceptual Framework

A conceptual framework is a model written or visual presentation that explains either graphically, or in narrative form, the main things to be studied, the key factors, concepts or variables and the presumed relationship among them (Roger & Vaughan, 2008). A conceptual framework contains the variables under study (Elsevier, 2009).

This study investigated how creativity, organizational structure, research and development and commercialization influence SMMEs performance. The relationship was moderated by entrepreneurial orientation. The variables were extracted from the studies conducted by the following scholars: (Matanda, 2013; Onzer & Tinaztepe, 2014; Mwangi & Namusonge, 2014; Ljiljana & Durdana, 2015; Jochen, 2013; Daiya, Koheiand & Hiroshi, 2012; Kaya & Agca, 2012; Otieno, Bwisa & Kihoro, 2012; Eggers & Hughes, 2013; Lagat; Chepkwony & Kotut, 2012; Borghini, 2009; Gunday, Ulusoy, Kilicand & Alpkan, 2014; Moses, Sithole, Labadarios, Blankley & Nkobole, 2012). The conceptual framework is shown in figure 2.2.

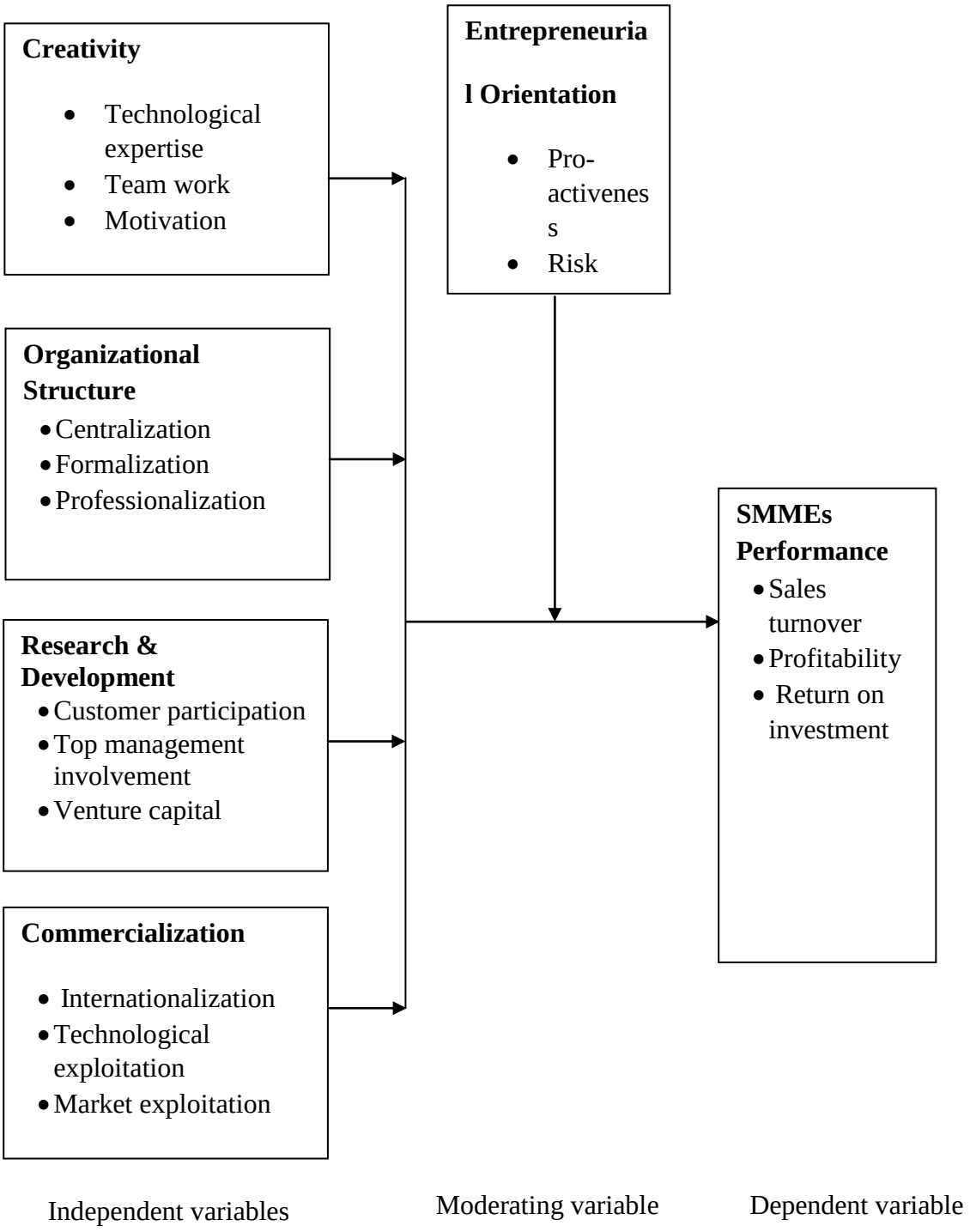

Figure 2.2: Conceptual Framework

2.3.1 Creativity

Creativity was suggested by a number of researchers as one of the strategies that when adopted may ascertain SMMEs of their survival in the competitive environment (Lowley, 2011; Rick *et al*, 2015; Hong *et al*, 2013). Creativity refers to the ability to develop a new product, new ideas and to discover new ways of looking at problems and opportunities (Hans, 2014). The creation and development of creative ideas and their manifestations as new products were considered the core elements of an innovation strategy, as creativity motivated the generation of new ideas, which was one of the key determinants of innovation practices (Edgeman, Andy, & Eskilden, 2015; Naidu, Chand, & Southgate, 2014).

A study by Amabile (2012) identified three components that were necessary for any creative response: domain-relevant skills, task motivation and teamwork. Domain-relevant skills included Knowledge, technological expertise, and intelligence in the specific domain where the entrepreneur is focusing such as product design. The three types of knowledge that facilitated innovation practices were: acquisition of substantial knowledge related to product, technological expertise of knowing how to collaborate with specific relationships and the firms accumulated knowledge about the product. Moreover, although knowledge and, technological expertise were of utmost importance for any firm that wishes to improve its performance through innovation practices (Li & Tang, 2010) empirical literature concerning the impact of firm knowledge and technological expertise related issues were scarce (Ljiljana & Durdana, 2015). These skills comprised the raw materials upon which the individual can draw throughout the creative process (Cooper, 2011).

A study by Amabile (2012) asserted that motivation can be intrinsic or extrinsic in nature. Intrinsic motivation arises from the individual's positive reaction to the qualities of the task itself such as interest, involvement, curiosity and satisfaction while extrinsic motivation arises from sources outside the task itself such as a promised reward, meeting a deadline or winning a competition. The social environment dynamics emphasizes creation of teams and therefore, an enterprise needs creative people to support the processes, not only those associated with

developing ideas, but also those involving the selection, assessment and execution of the ideas that can be persued to develop novel products. Teamwork was an important element in organizational settings as it facilitated effectiveness and efficiency in an organization that eventually enhances firm performance (Dul, Celyon & Jaspers, 2011).

Creativity lenders a sustainable competitive advantage to a firm as it is a strategic resource that is available, flexible, rare and imperfectly substitutable (Dul, Ceylon & Jaspers, 2011). Alvaro and Calvo (2011) pointed out that leaders should possess the ability to constitute effective work groups (teams) that should reflect on a diversity of skills and technological expertise, relevant to the firm's operations. The teams should be able to challenge each other's ideas in constructive ways and are mutually supportive in improving SMMEs performance. To achieve desirable results, matching individuals to work assignments on the basis of both skills and interests, and technological expertise enhances an employee's creative abilities (Clausen, Korneliussen & Madsen, 2013; Christian & Alexander, 2013). This study adopted knowledge and technological expertise, teamwork and motivation as the main factors that enhance creativity. One of the objectives of the study was to investigate the influence of creativity on the performance of SMMEs in Kenya. The following hypothesis was proposed:

$H_0$1: Creativity does not influence the performance of SMMEs

2.3.2 Organizational Structure

A critical element for companies is the formation of organizational structures that make cross-functional knowledge and resource sharing possible, ensures strategic decision making, resolution of disagreements and the active and effective coordination of the process of innovation (Shaemi, Abzari, Mazraeh & Maleki, 2013). Miller (2011) defined an organizational structure as a way of permanently distributing work roles and administrative mechanisms to enable an organization to perform coordinate and control its business activities and resource flows. A study by (Lewis, 2011) asserted that an organization structure is a significant predictor of innovation practices with less centralized and less formalized firms innovating with

somewhat greater frequency than firms with more rigid structures. Structural elements that impact on innovation include centralization, formalization and professionalism (Powley & Nissen, 2012).

Formalization referrs to the extent to which jobs within the organization are fixed to a certain standard (Teixeria, Koufteros & Peng, 2012). In jobs where the degree of formalization is low, job behaviours are usually not programmed and employees have greater freedom and discretion to exercise in their work and under such circumstances new ideas are likely to be generated (Lewis, 2011). A study by Veisi, Veisi & Hasanvand, (2012) concluded that low formalization encouraged openness and flexibility in roles, which was a prerequisite for new ideas. Latifi and Shooshhtarian (2014) in their study discovered that firms with organic structures that entail low formalization were more inclined to innovate. Shaemi *et al* (2013) argued that successful firms with less formalized and centralized but more professionalized and managerially intensive organization structures allowed them to be responsive to innovation.

Several studies (Veisi, Veisi & Hasanvand, 2012; Shaemi *et al*, 2013) suggested that centralization tend to encourage the individual to become more opportunistic and within such a context members were likely to participate and share ideas that were essential for the success and improved performance of the firm. Centralization is the extent to which decision making is concentrated at the highest level in an organization (Teixeria *et al*, 2012). A highly centralized organization is said to exist when only the top management makes key decisions in an organization. Powley & Nissen (2012) reported that flexible organization structures characterized by low levels of formalization and centralization best promoted innovation within firms. A study by Lendel and Varmus (2011) suggested that it was necessary to employ low formalization and low centralization during innovation initiation phases because at this stage information gathering and processing is crucial for success and improved sales.

The knowledge of workers and their ability to create and share new knowledge promoted innovation practices in a firm (Mietzner & Kamprath, 2013). Hodgson (2011) defined professionalization as the accomplishment of the formal internal organization of the occupation, the promotion of accredited training, the need to expand credentials within job markets for the professionals and the development of a core body knowledge that can serve to construct a world in keeping with the outology espoused by the discipline. Muzio, Brock and Suddaby (2013) agreed that within the knowledge economy of professionalism there is a broad agreement that innovation originates in the creativity and innovation capability of people. As Muzio *et al* (2013) pointed out that, the first way in which professionals restructure institutions is by opening up new spaces for their expertise such as the creation of new products. A study by Capitanio *et al* (2012) on Italian food firms found a positive relationship between knowledge based activities and innovation. The following hypothesis was tested:

$H_0$2: An organizational structure does not influence the performance of SMMEs

2.3.3 Research and Development Capability

Research and development is one of the key input factors of innovation practices (Pang & Chih, 2012). Research and Development (R & D) refers to all creative work undertaken on a systematic basis in order to increase the stock of knowledge and the use of this stock to devise new applications, such as new and improved products and processes (Andrea & Marco, 2013). Lerner (2011) posited that R & D and innovation were to a greater extent substitutable. Several studies (Dong and Hua, 2011; Sigara, 2012; Bolton, Parasuraman, Hoefnagels and Kabadayi, 2013) concluded that customer participation in new product development could assist R & D division in solving customers' demands effectively. R & D ability consisted of three main functions: customer participation in new product development, the level of cooperation about venture capital in R & D project and the level of top management involvement in R & D project (Andrea & Marco, 2013).

Customer participation in new product development helped create products that mirror latent needs, decrease costs associated with new product development activities and developed products that were less easily imitable by competitors (Ali, Jing & Ahmed, 2015). Jian, Yuan and Wen (2013) defined customer driven innovation as the process of collecting a particular type of information about the user. Customers generate innovation ideas potentially beneficial to a firm as those of in-house professional developers (Sigara, 2012). Service and innovation practicess in customer involvement attracted new customers, improved customer loyalty, opened new markets and built profitability of a firm's existing product portfolio (Chen, Yang & Tang, 2013). Peled and Dvir (2012) revealed that customer involvement resulted in ideas for new innovative and useful products and that customer involvement was heavily dependent on how involvement was managed. A study by Cooper (2011) asserted that a significant proportion of innovations in developed countries were actually developed by the description of customers involved in innovations. The user involvement not only provided useful information about the users' but also increased the understanding of users values (Djelassi & Decoopman, 2013).

One factor that was critical to the success of major innovations was top management support (Evansschitzky *et al* 2012). Evans (2012) defined top management as the degree of top management support for a new product initiative. Highly educated and more experienced managers with the required knowledge to innovate and skills, effective communication skills and ability to develop appropriate programmes were more successful in opportunity recognition (Jiang, 2012; Koch, 2012) thereby directly contributing ideas and insights to the firm's innovations. Andreas, Marina and Klaus (2015) pointed out that top management involvement in innovation could speed up R & D progress. Top managements knowledge was helpful for acquiring resources (Kleinschmidt, Schultz, Salomo & De Brentani, 2013) which in turn had an impact on the accumulation of knowledge and skills which enhanced firm performace.

Venture stimulates additional investigations of the relationship between the institutions through which innovative activities are financed (Bengtsson, 2011). Venture capital is a form of equity financing in new-born firms often active in new sectors (Kevin, Blanche & Armand, 2014). A study by Kandel and Harry (2011)

indicated that venture capital financing had positive effect on innovation. Several studies (Vries, 2012; Krishnan, 2011; Kevin *et al*, 2014) asserted that venture capitalists provided not only finance but also advice to the entrepreneur on management matters such as the definition of strategies, financing policies which help firms to adopt more professional management systems and to access new financiers and suppliers. Wadhwa, Anu and Sandip (2013) stated that successful entrepreneurs become venture capitalists in order to invest in the next generation of entrepreneurs. Most research and development studies have not focused on their influence on innovation practices. The following hypothesis was tested:

$H_0$3: Research and Development do not influence the performance of SMMEs

2.3.4 Commercialization

Commercialization is a critical phase of innovation practices (Walsh, 2012). Without prior commercialization preparation during the innovation process, new products or services may fail (Conley, Bican & Ernst, 2013). Commercialization is the process of translating research knowledge into new or improved products, processes and services and introducing them into the market place to generate economic benefits such as increased sales (Ardito, 2014). Several studies (Schroll and Mild, 2011; Datta, Reed and Jessup, 2013) asserted that the actual launch of a new product or service was the final stage of new product or service development. At this stage substantial amount of money needs to be directed towards advertising, sales promotion and other marketing efforts. Joung, Jin and Woo (2015) suggested that commercialization needs pre-commercial activities such as a marketing strategy development and business analysis to achieve success and better performance. Commercialization of innovation was greatly influenced by market exploitation, technology exploitation and internalization (Ardito, 2014).

Market exploitation is an important element of marketing strategy that is arguably among the most relevant success factors in introducing new products (Jaakko, 2013). A study by Lisboa, Skarmeas and Lages (2013) stated that market exploitation involves the development of new knowledge about the firm's existing markets, products and abilities based on intensive search and experimentation along an

existing knowledge dimension. Simultaneous investments in the exploitation of existing innovation capabilities of new products helped create a competitive edge. Chih (2011) suggested that market exploitation has two district phases: use and development of things that are already known. He defined development as the expansion of the firm's current stock of knowledge while the term use as the appropriation of economic returns of the current stock of knowledge. Product development and market-related exploitative capabilities were viewed as the value creating mechanisms through which entrepreneurial orientation affects performance (Norazlina, Izaidin, Hasfarizal, Shahrina & Lai, 2013).

Technological exploitation refers to the capability of firms to select the most appropriate technologies to create value for customers as well as exploit the selected technologies (Walsh, 2012). Accordingly, value creation is dependent upon firm's capabilities to recombine technologies (Cheng, Chang & Hung, 2011) as well as understanding the way these components have to be linked together (Li, Smith, Maggitti, Tesluk & Katila, 2013) in order to offer new products. These skills, knowledge and experience were acquired and accumulated mainly through technological exploitation (Li *et al*, 2013). It was argued that the more explicit and purposeful the technology was the deeper the capabilities accumulated to produce new innovations. A study by He and Wong (2011) in Singapore and Malaysia found out that exploitation innovation activities had significant effects on the rate of sales increase and exploitation innovation influenced positively both innovation practices and process innovation.

Internationalization refers to the extent to which firms operate outside their national boundaries (Hernadez & Torero, 2011). A study by Chih (2011) asserted that internationalization help firms to develop and acquire new resources to create value from their technologies. Dispersed R & D teams were facilitated in accessing information from a wider range of sources and new different markets (Jaakko, 2013). In addition, creativity was fostered because of the possibility to exchange ideas between researchers of different countries and cultures (Lisboa *et al*, 2013) or hire the most skilled workers (Chih, 2011). Indeed internationalization enabled firms to better react to changes in needs of their customers (Norazlina *et al*, 2013). Jaakko (2013)

suggested that firms may be more available to invest in exploitation of radical or more applicable technologies if engaged in external market. In addition the possibility to obtain complimentary assets increased (Hernadez & Torero, 2011) and the risks related to fluctuations and business cycle specific to a single market were limited (Conley *et al*, 2013).The following hypothesis was tested:

$H_0$5: Commercialization does not influence the performance of SMMEs

2.3.5 Entrepreneurial Orientation and Firm Performance

The extent to which a firm is entrepreneurial is commonly referred to as its entrepreneurial orientation (Sandra 2011). The key components of entrepreneurial orientation are risk taking, pro-activeness, innovativeness, competitive aggressiveness and autonomy (Ali & Ali 2013; Alegre & Chiva, 2014; Sandra, 2011). Risk taking refers to the risks individuals take by working for themselves rather than being employed, but has since been applied to companies. Pro-activeness describes the characteristic of entrepreneurial actions to anticipate future opportunities, both in terms of products or technologies, markets and consumer demand; innovativeness emphasise the importance of technological leadership to the company and its changes in its product lines; competitive aggressiveness refers to the company's way of engaging with its competitors, autonomy refers to the independent action of an individual or team in bringing forth an idea or vision and carrying it through to completion (Sandra 2011).

Entrepreneurial orientation was suggested as a key driver of firm growth (Wouter, Paul & Koen, 2015; Chiara, Daniela & Annalisa, 2015). Several authors agreed that entrepreneurial orientation is a construct that is associated with firm success, particularly in the long run (Hans, Mariann, Isabelle & Rutger, 2012; Alex, 2014). However, though this relationship was not entirely unambiguous Weibao, Weiwei, Bo and Check (2015) suggested that the conversion of entrepreneurial orientation into firm growth remained something of an enigma (Darian, 2011; Rajul, Johnand & Veera, 2015). The conceptual arguments of previous research suggested that entrepreneurial orientation lead to higher performance, with some studies asserting that firms that adopted a strong entrepreneurial orientation performed much better

than firms that did not adopt an entrepreneurial orientation (Khadije, Babak & Mehrdad, 2013; Hamada, Ali & Butler, 2015; Wiklund & Shepherd, 2011).

To overcome the challenges of competition and globalization, eminent scholars (EAC, 2010; Harun & Veysel, 2014) recommended that manufacturing firms adopt entrepreneurial orientation. A study by Alegre and Chiva (2014) revealed that all the entrepreneurial dimensions: pro-activeness, competitive aggressiveness, risk taking, innovation and autonomy impacted positively on firm performance within the Australian Automobile Components industry. The domestic demand for automotive components increased by 12%, turnover by 17.5% and exports accounted for more than $4.6 billion. SMMEs adopted entrepreneurial orientation to enable them pursues growth and profitability. Past research studies relating to high growth with a firm's entrepreneurial orientation revealed better performance (Ljiljana & Durdana, 2015; Walter, 2015).

Several scholars (Kroon, Voorde and Timmers, 2013; Lisboa, Skarmeas and Lages, 2011; Miller, 1983) asserted that entrepreneurial orientation has three core dimensions: innovativeness, pro-activeness and risk-taking and these three dimensions have since been used consistently in the literature. The usage of the entrepreneurial orientation model with all the aforementioned five dimensions has been rare in the entrepreneurial orientation literature when compared with the use of the model with three dimensions (Rosli, 2015; Kaya & Agca, 2014). This is because in some studies, competitive aggressiveness and pro-activeness have been treated as the same. Past studies showed a direct correlation between entrepreneurial orientation and firm performance (Egger, Kraus & Hughes 2013, Gathungu, Aiko & Machuki 2014; Mugambi & Wanjau, 2016). This study adopted pro-activeness, risk taking and innovativeness as the core dimensions of entrepreneurial orientation.

Entrepreneurial orientation was a significant factor for a firm's success (Kraus, 2012; Michael, 2012; Bruton, 2014). Entrepreneurial Orientation was conceptualized as the process and decision making activities used by entrepreneurs that leads to new entry and support of business activities (Kaya & Agca, 2014; Simiyu, 2013; Chiara *et al*, 2015). Entrepreneurial Orientation was conceptualized as comprising three

dimensions, innovativeness, risk taking and proactiveness, (Alegre and Chiva, 2014; Sandras, 2011; Gathunngu, Aiko, and Machuki, 2014) and these three components were argued by Miller (2011) to comprise basic dimensional strategic orientation.

Innovativeness was the firm's ability and willingness to support creativity, new ideas and experimentation which resulted in new products/services (Weibo, Weiwei, Bo and Check-Teck, 2015; Kaya and Agca, 2014; Callaghan and Venter, 2011), while pro-activeness was the pursuit of opportunities and competitive rivalry in anticipation of future demand to create change and shape the business environment (Eggers, Kraus, Hughes, Susan & Sean, 2013; Rosli, 2015; Kraus, 2012). Risk taking was the firm knowingly devoting resources to projects with chance of high returns but also entailed a possibility of high failure (Miller 2011; Simiyu, 2013)

The relationship between Entrepreneurial Orientation and firm performance has been studied by a number of scholars (Otieno *et al*, 2012; Eggers *et al*, 2013; Ali & Ali, 2015; Kaya & Agca, 2014; Alegre & Chiva, 2014; Gathungu *et al*, 2014). Entrepreneurial Orientation was connected to better performance (Fakhrul and Selvamalar, 2011; Ali and Ali, 2015) and success in terms of firm size and economic growth (Matanda, 2011; Dobni *et al*, 2015). Studies also found positive effect of Entrepreneurial Orientation on growth of small firms (Gathungu *et al*, 2014; Eggers et al, 2013) and profitability on firms (Ahu, 2015; Shakil, 2012). Based on this discussion, the following hypothesis was tested:

$H_0$6: Entrepreneurial orientation does not moderate the influence of innovation practices on performance of SMMEs

2.3.6 Moderating Role of Entrepreneurial Orientation on the Relationship between Innovation practices and Firm Performance

A moderator variable is a third variable that affects the strength of the relationship between a dependent and independent variables. The effect of a moderating variable was characterized statistically as an interaction that affected the direction and/or strength of the relationship between dependent and independent variables (Fakhrul & Selvamalar, 2011). The impact of innovation practices on performance depends on

firm's entrepreneurial orientation. Entrepreneurial orientation when used as a moderator strengthens the relationship between innovation practices and SMMEs performance (Boso & Cadogan, 2012).

Several studies have used entrepreneurial orientation as a moderator, Alegre and Chiva (2014) in their study on entrepreneurial orientation, innovation and firm performance found out that entrepreneurial orientation with risk taking, pro-activeness and innovation lead to higher performance; Boso and Cadogan (2012) in their study on entrepreneurial orientation and market orientation as drivers of innovation practices success found out that entrepreneurial orientation with risk taking and innovativeness enhanced firm growth but autonomy did not. Abebe (2014) in his study on electronic commerce adoption, entrepreneurial orientation and small medium-sized enterprise (SME) performance found out that entrepreneurial orientation with risk taking, innovation and pro-activeness promoted firm growth. In this study entrepreneurial orientation with risk taking, pro-activeness and innovativeness as its key components moderated the relationship between innovation practices and SMMEs performance.

2.3.7 Innovation practices concept

Innovation practices is one of the fundamental instruments of growth strategies to enter new markets, increase the existing market share and provide a company with a competitive edge (Hitt *et al* 2001; Kuratko *et al*., 2011; Walter 2015; Alex 2014). Innovation practices referred to the introduction to the market of a new product/service that was new or significantly improved with respect to its characteristics or intended uses (Moses *et al* 2012). This included activities such as technical design, Research and Development (R&D) and commercial activities involved in the making of a new or improved product (Atalay *et al.,* 2013).

Chen and Liu (2012) defined innovation practices as the planning and realization process that generate or reconstruct a new technological system and supply the needful functions to satisfy the customers' needs, with the end goal of providing a solution that can be exploited or accepted by customers. A more analytical definition of innovation practices was given by Doughtery and Bowman (2011) who described

innovation practices as a problem-solving process in three domains of an activity. The first domain deals with the conceptualization of the product design and then bring it into existence, the second domain concerns organization of work across functions and the third domain has to do with the linkage between product and the firm's structure resources and the strategy.

Cormican and O'sullivian (2013) described innovation practices as a continuous and cross-functional process involving and encompassing a growing number of various competences inside and outside the organizational boundaries. Simply stated, it is the process of transfiguring business opportunities into tangible products and services (Cormican & O'Sullivian, 2013). For requirements of this study, the researcher adopted the definition of innovation practices given by (Moses *et al* 2012). There was strong empirical evidence that successful entrepreneurs were more innovative than non-innovative entrepreneurs (Gurol and Astan, 2011). Lack of innovation in SMEs lead to stagnation in growth, irrelevancy and eventually call for forced exit of an enterprise (Freeman & Soete, 2011; Atalay *et al* 2013).

2.4 Empirical review

2.4.1 Creativity

Ozge and Mette (2011) undertook a study on: Does organization creativity really lead to innovation? The study was done in a particular region in Denmark to analyse whether organizational creativity leads to innovation in small firms. A sample of 147 firms was used. They found out that organizational creativity lead to innovation but only innovation practices. Also encouraging employees for innovative behaviour in a stimulating work environment, allocating resources and providing idea time played a crucial role in stimulating creativity and supporting innovation practices. Another finding was that high levels of freedom were found to be acting against innovation practices. There was no relationship between organizational creativity and process innovation

Ljiljana and Durdana (2015) investigated enabling innovation practices and creativity in market-oriented firms. They based their study on seven case studies. Findings revealed that creativity and product innovativeness suffered due to a dominance of customer requirements and competitors' ideas and creative solutions. Firms get involved in generating and gathering information in order to use it for various purposes including innovation practices development. When innovation practices relied very little on the firms' findings about customers and competitors, the firm still exercised market orientation principles; market orientation principles were acknowledged for their contribution to innovation practices; the contribution to market success and commercialization of innovation practices was largely recognized. This study helped business practitioners interested in fostering innovation in their firms by implementing market orientation as the findings suggested that they had to carefully consider how to design those activities since there was more than one way that lead to success.

2.4.2 Organizational Structure

In Malaysia, Aizzat, Muhammad and Nur (2012) undertook a study to investigate country of origin effect on organizational innovation in Malaysia: the mediating role of structure. It looked at the country of origin as the independent variable. The organizational structure was a mediating variable. A sample of 80 multinational corporations and 43 locally-owned joint ventures was used. They found out that an organizational structure had an impact on organizational innovation, specifically formalization and centralization. Another finding was that formalization and centralization did not have any impact on technological, process as well as innovation practices. They also found out that both levels of technological and process innovations, as well as administrative innovation were high among American multinationals.

Asieh (2015) investigated the relationship between an organizational structure and job innovation in employees of an industrial company. The purpose of the study was to investigate the relationship between dimensions of organizational structure with innovation. A sample of 313 employees of an industrial company in Iran was

selected. The findings revealed a negative relationship between centralization and innovation. High levels of centralization caused protest and disruptive approaches and inhibited the development of new ideas. Also there was a negative correlation between complexity and innovation. He also found out that there was a negative correlation between recognition and innovation. Another finding was that organizational structures were significant predictor of innovation.

2.4.3 Research and Development

Andrea and Marco (2013) studied: Succeeding in innovation: Key insights on the role of R & D and technological acquisition drawn from company data in Italy. A sample of 3000 Italian manufacturing companies was selected. The findings revealed that R & D played a significant role only in determining the probability of introducing innovation practices while Technology acquisition increased the probability of realizing process innovation. All the four R & D coefficients: large firms, small firms, high-tech and low-tech sectors were statistically significant and had a greater effect on innovation practices than process innovation. Technology acquisition had no effect on innovation practices.

Pang and Chich (2012) studied R & D management on new product development performance in Taiwan's Hi-Tech industries. They used a sample of 210 industries in Taiwan's industrial sector. The research objective for the study was to analyse and evaluate the influences of R &D management on new product development performance. The research findings suggested that R & D management ability had significant influences on new product development performance. Also new product development performance was more significant when R & D management ability was stronger. They also found out that the scale of business operations was not a key to success factor for new product development performance. Also both large and small business enterprises had strength and there was no significant difference in their new product development performance. Another finding was that the benefit of R & D management influenced new product development performance and had a close relationship with the core technologies in hi-tech industry development in Taiwan.

2.4.4 Commercialization

Joung, Jin and Woo (2015) studied the effects of commercialization capability in small and medium sized businesses performance. The research investigated the relationship between factors in the process of commercializing transferred technology and a firm's financial and innovation performances. It looked at acquisition/ internalization technological exploitation and market exploitation. A sample of 200 firms in Korea was used. The findings revealed that acquisition/internalization affected greatly the firm's financial and innovation performance. Also technological exploitation had positive effects on their financial and innovation performance. They also found out that market exploitation influenced strongly financial and innovative performances.

Dalta, Reed and Jessup (2013) undertook a study on commercialization of innovations an overarching framework and research agenda. A sample of 194 articles was selected to constitute the sample from 62 journals in the fields of Management, Strategy, Entrepreneurship, Economics and Marketing. They found out that commercialization of innovations was a critical entrepreneurial activity that lead to economic development and growth. Also commercialization of innovation required research expertise from a multitude of disciplines including Management, Strategy, Entrepreneurship, Economics and Marketing.

2.4.5 SMMEs performance

Masood, Sadia, Muhammad and Sarman (2013) studied effects of innovation types on firm performance in Pakistan. The main purpose of the study was to explore the effects of innovation types including product, process, marketing and organizational innovation on different aspects of firm performance such as innovative, production, marketing and financial performance in Pakistan manufacturing companies. Data was collected from 150 respondents mainly from production, R & D and marketing departments of manufacturing companies. The study found out that higher firm performance was achieved better from increased innovativeness in manufacturing firms. Also the effect of organizational innovativeness on process innovation was stronger than other innovation types. Another finding was that marketing orientation

lead to innovation practices. These results were consistent with Gunday et al (2014) who also found organizational innovativeness to be the strongest driver of innovative performance.

2.5 Critique of the existing literature

The study by Ozge and Mette (2011) on whether organizing creativity really lead to innovation in Germany used a small sample size from a relatively homogenous population that was experiencing severe economic conditions. If more data were collected in a less severe economic situation statistical analysis may have yielded more enlightening results. The study used CEO's or innovation managers of the firms as the respondents thereby only capturing the senior management perceptions of the firms rather than those of employees which did not match the real conditions in the firm. The study was done in a particular region in Denmark and hence the results could not be generalized. The managers allowed high levels of freedom that acted against innovation practices. The managers did not exercise freedom cautiously to ensure that operations were carried out effectively in order to achieve innovation practices.

The study by Ljiljana and Durdana (2015) examined enabling innovation practices and creativity in market oriented firms. The findings depicted perspective and views of innovation managers that were not necessarily shared by the rest of the employees. Although the findings were based on successful cases, they did not imply that market-oriented firms always innovated successfully, regardless of other circumstances and variables. Although the general principles were applicable for many cases, characteristics of firms, market and innovation practicess were not considered as important for using market orientation for enabling creativity. The use of single informants had a great potential to affect findings on inter-functional coordination and therefore this component should have been studied separately.

The study by Aizzat, Muhammad and Nur (2012) on the country of origin effect on organizational innovation in Malaysia utilized a single respondent to capture level data instead of multiple respondents per organization. Also the investigation made use of only survey method and failed to conduct personal interviews with the

respondents in order to enhance the quality of the findings. The study was also limited in scope in terms of the number of variables explored. The study only focused in one country and hence the results could not be generalized. The use of an online instrument for data collection meant that only persons with valid e-mail addresses could be recruited for the study, thus affecting the generalizability of the findings.

The study by Asieh (2015) on the relationship between organizational structure and job innovation in employees of an industrial company in Iran found out that the amount of direct control of employees on their own affairs in Iran organizations was lower than similar organizations in other countries and therefore the centralization factor in Iran organizations was a barrier to progress and innovation. There was also lack of communication and flow of ideas from the bottom to the top, insufficient communication from top to bottom and inadequate relationship with the external environment. High levels of centralization caused protest and disruptive approaches and this inhibited the development of new ideas.

The study by Andrea and Marco (2013) on: Succeeding innovations used the Community Innovation Survey data that was subject to sample selection, endogeneity and simultaneity challenges. The study used a very large sample of 3000 firms that was only relevant to innovation practices but insignificant to process innovation. The interaction term between R & D and technology acquisition did not indicate additional effect due to the joint effect of the two types of expenditures. The innovative intensity equation included innovative expenditures other than R & D and technology acquisition as additional repressors. The impact of research and development over innovative turnover turned out to be smaller and insignificant in the small and medium companies sub-sample.

Pang and Chih (2012) study on R & D management on new product development performance in Taiwan's Hi-Tech industries discovered that business enterprises placed different emphasis on each of the five R & D facets. Business enterprises with different industry backgrounds and corporate status applied different technology R & D management and hence their focuses on each of the five facets for R & D management ability naturally varied. The study focused on the relationship between

research and development management and performance of new products in Taiwan's Hi- tech industries and thus ignored the multi-dimensionality of innovation practices processes. The study was done in one country and hence the results could not be generalized.

The study by Joung, Jin and Woo (2015) on the effects of commercializing capability in small and medium-sized businesses on business performance lacked sufficient theories from previous studies and the existing research which led to limitations in adopting and measuring influence factors. The study did not analyse company information using objective indicators of the company although the survey questions required specialized knowledge of the respondents and hence the results were not reliable. Business performance was not accurately evaluated as the study only focused on total sales, speed of technology commercialization and the number of new products developments to assess financial and innovation performance instead of using various items influencing performance.

Dalta *et al.* (2013) study on commercialization of innovations used as an assumption that the fields of Management, Strategy, Entrepreneurship, Economics and Marketing were sufficient to capture all the themes associated with entrepreneurial activities surrounding commercialization of innovation was not valid. The frame work used in the study was not validated which meant that the assumptions and boundary conditions associated with framework needed to be tested and confirmed as being realistic before the study was done. The study did not highlight the key elements of the commercialization-innovation pathway.

Masood *et al.* (2013) study on the effect of innovation types on firm performance in Pakistan failed to point out that innovation and innovative firm performance in organizations vary with sector to sector (Vega-Jurado *et al*., 2008). The findings did not factor in the aspect that organizational innovation not only varies with sector but also with the size of the firm (Evangelista *et al.*, 1997). There was a significant role of environment on the innovation adoption which was not considered in this study (Olovamita & Friedmann, 2008). There was also need for future research to consider cross cultural differences.

2.6 Summary of Literature

This chapter reviewed the theories explaining the variables to the study. Componential theory of creativity proposed production of new ideas or outcomes that were both novel and appropriate to some goal. This theory was important to this study as recent evidence showed that some product or process innovation was taking place at every instant in time (Ljiljana & Durdana, 2015). This theory explained the first hypothesis. The second hypothesis was explained by Teleological change theory which holds that in order to construct the desired state; an organization should be purposeful and adaptive by itself or in interaction with others (Van de Ven & Poole, 1995). Changes in organizational structure and overall flexibility of the firm, which was said to be one of the most vital factors in a firm's development and success (Tuminas, 2013) were crucial to its existence, because at initial state departments' and job responsibilities, work content and processes, rules and regulations, communication and co-ordination and distribution of power, were all in a nascent state (Xiuli & Juan, 2011).

Organizational Learning theory explained the third hypothesis. Organizational Learning theory was used to explain the skill sharing motive in R & D in firms (Odagiri, 2011). Learning, be it related to technology transfer, acquiring skills, or improving learning capability was a critical consideration for firms (Iyer, 2012). The ability of firms to acquire knowledge and to transfer it into competitive weapon had long been a part of the research agenda. The Rival theory explained the fourth hypothesis. The theory proposed that a firm's absorptive capacity and ambidexterity and internal and external networks influenced its ability to bring an innovation to the market and reach the mainstream market (Datta, 2011). All the three concepts in the commercialization of innovation framework affected the firm's ability to launch a new innovation practices (Frattini *et al.*, 2012).

The empirical review emphasized the view of the componential theory of creativity that creativity was an important factor for a firm to move towards innovation practices (Ljiljana & Durdana, 2015). A study by Aizzat, Muhammad and Nur (2012) had the view that an organizational structure had a positive impact on innovation

practices. The critique of the empirical review revealed various shortcomings of the studies. The study by Ozge and Mette (2011) in Germany used a small sample from a relatively homogenous population that was experiencing severe economic conditions. Aizzat *et al.* (2012) study used a single respondent to capture level data instead of multiple respondents per organization, while Datta *et al.* (2013) assumption that the fields of Management, Strategy, Entrepreneurship, Economics and Marketing were sufficient to capture all the themes associated with entrepreneurial activities surrounding commercialization of innovation was not valid. Pang and Chih (2012) research study linked innovation practices to firm performance.

2.7 Research Gaps

A number of studies have been done on area of innovation practices mostly in the United States of America, Europe, Asia and Africa. Pang and Chich (2012) studied Research and development management on new product development in Taiwan's Hi-Tech Industries but the study did not indicate the sizes of the firms in the sample. A study by Asieh (2015) on the relationship between an organizational structure and job innovation in Malaysia focused on only one industrial company but failed to factor in SMES in that country. In the study by Ozge and Mette (2011) on: Does organizational creativity really lead to Innovation? In Denmark, SMEs were not factored in the study. Dalta, Reed and Jessup (2013) undertook a study on Commercialization of innovation an overarching framework and research agenda in the US but the study did not indicate the sizes of the firms in the sample. A study by Andrea and Marco (2013) on: Succeeding in innovation: Key insights on the role of research and development and technological acquisition drawn from a company in Italy did not indicate the type of innovation pursued by the study and only focused in one company.

Out of the many studies that have been done, only a few studies have been carried out in Kenya including Gichana, Ongwae and Romanus (2013) in their study on innovation activity and firm growth across key sectors of the Kenyan economy but did not indicate the firm sizes and the sectors involved; Mbogo and Ashika (2013) who studied the factors influencing innovation practices in micro finance institutions,

focused on the service sector but did not study the manufacturing SMEs. Mwangi and Namusonge (2014) who investigated the influence of innovation on small and medium enterprise (SME) growth did not study the influence of innovation practices on manufacturing SMEs. These studies showed that limited attention had been paid to the influence of innovation practices-SMMEs performance relationship model in Kenya. This study therefore filled on this existing knowledge gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design and the methodology that was used in this study. The content include research design, population, sampling size and sampling technique, data collection instruments, data collection procedure, pilot study, measurement and scaling technique, data analysis and processing, and statistical model and hypothesis testing.

3.2 Research Design

A research design is a framework for data collection and analysis to answer a study's research questions (Bryman & Bell, 2011). Orodho (2008) asserted that decisions regarding what, where, how much, by what means concerning an inquiry or research study constitutes a research design. Cooper and Schindler (2011) and Kothari (2010) suggested that a research design constitutes the blue print for collection, measurement and analysis of the data. A research design enables the researcher in allocation of limited resources by posing crucial choices in methodology (Cooper & Schindler, 2011). This study adopted mixed methods research guided by cross-sectional survey design. Onwueghbuzie and Turner (2007) and Creswell and Clark (2011) referred to the integration of qualitative and quantitative research methods as mixed-methods research. Mixed methods research combines elements of qualitative and quantitative research approaches for the purposes of the breadth and depth of understanding and corroboration (Johnson, Onwuegbuzie & Turner, 2007).

The use of mixed-methods research allowed the researcher to compensate for the weakness of one single approach with the strengths of the other to achieve the best results (Johnson & Onwueghbuzie, 2004; Creswell & Cark, 2011). Mixed methods enabled the researcher to provide generalization of data derived from a quantitative approach and at the same time facilitated the researcher's generation of thick and rich data from qualitative methods (Teddlie & Tashakkori, 2009). Kusumawardhani

(2013) used mixed methods in her study on the role of entrepreneurial orientation in firm performance in Indonesian SMEs in the furniture industry in central Java. This study adopted cross-sectional survey design, which helped with hypothesis formulation and testing the analysis of the relationship between variables. A cross-sectional survey design enabled the researcher to capture information based on data gathered for a specific point in time (Cooper & Schindler, 2011). Masood, Sadia, Muhammad and Saman (2013) used cross-sectional survey design in their study on the effects of innovation types on firm performance.

3.2.1 Research Philosophy

This study was guided by an epistemological research philosophy which related to the development of knowledge and nature of that knowledge (Saunders, Lewis & Thornhill 2009). There are three epistemological positions: realism, interpretive and positivism (Saunders, Lewis & Thornhill, 2009). This study adopted posivitivist research philosophy. Positivist is characterized by a belief in theory before research and statistical justification of conclusion from empirically testable hypotheses, the core of tenets of social sciences (Cooper & Schindler, 2011).

A study by Trochim (2006) stated that positivism's position is that the goal of knowledge is to describe the phenomenon under study by sticking to what is observable and measurable. Bryman (2012) stated that the question of what is, or should be regarded as acceptable knowledge as discipline is the main focus of epistemology. Epistemology focuses on the study of how knowledge develops. Ndung'u (2014) in his study on the moderating role of entrepreneurial orientation on the relationship between information security management and firm performance used positivist research philosophy.

3.3 Population of the study

Population refers to the entire collection of all subjects from where a sample is drawn (Zikmund, Babin, Carr & Griffin, 2012). The target population is a group of individual objects or items from which a sample is taken for a specific study (Kombo & Tromp, 2009). The target population for this study was SMME's registered with

the Kenya Association of Manufacturers (KAM, 2015). There were seven hundred and fifty-two (752) manufacturing firms registered with KAM as at June 2015 as shown in Table 3.1.

Table 3.1: Kenya's Manufacturing Firms registered with KAM as at June 2015

Sector	Population
Chemical & Allied	79
Energy, Electricals & Electronics	45
Fresh Produce	11
Food & Beverages	187
Leather & Footwear	9
Metal & Allied	83
Motor Vehicle & Accessories	51
Paper & Board	74
Pharmaceutical & Medical Equipment	24
Plastics & Rubber	77
Textile & Apparels	64
Timber, Wood & Furniture	19
Building, Construction & Mining	29
Total	**752**

(Source: KAM, 2015)

3.4 Sampling Design

Gall and Borg (2012) defined a sample as a carefully selected sub-group that represents the whole population in terms of characteristics. The sample size depends on what one wants to know, the purpose of inquiry, what is at stake, what was useful, what will have credibility and what can be done with available resources and time (Oso & Onen, 2011). Sampling is the selection of a portion of the population that represents the said population. Sampling involved selection of units from the population of interest, which constituted the sample (Trochim, 2006). A sampling frame is a list of elements from which the sample is actually drawn (Cooper & Schindler, 2011). The sample frame for this study was KAM directory 2015 for SMMEs registered with Kenya Association of Manufacturers. Saunders, Lewis and Thornhill (2007) stated that a good sample has three characteristics: the sample

should be representative, result in a small sampling error and the results of the study can be in general be applied for the universe with a reasonable level of confidence.

Kothari (2011) posited that the sample size should neither be too big nor too small but optimum which achieves efficiency, flexibility, reliability and representativeness. A small sample size is unreliable while a large sample size is reliable and precise but too expensive in terms of resources. Statistically, for the central limit theorem to hold, a sample of greater than thirty is needed for normal theory approximations for measures such as standard error of the mean (Kasiulevicius, Sapoka & Filipavicurte, 2006). Kothari (2011) posited that the sample size increases with the degree of statistical confidence and the precision required. Most studies adopt a confidence level at 95% and a precision of +/-5% (Gupta, 2012). This study adopted a confidence level at 95%.

The Kenya Association of Manufacturers did not differentiate the firms in terms of size. KIPPRA (2013) posited that the SME sector constituted 70% of all the manufacturing firms in Kenya. The Micro and Small Enterprises Act 2012 defined the MSE sector as those Firms with an annual turnover not exceeding KES 5,000,000 and not more than 50 employees. This sector included the manufacturing sector where investment in machinery and plant did not exceed KES 50,000,000 (RoK, 2013). Small and medium manufacturing enterprises in Kenya's manufacturing sector are firms with up to 100 fulltime employees and annual sales turnover not exceeding KES 150 million (Wanjau, Gakure & Kahiri, 2012). Guitard (2007) pointed out that there was no common definition of an SME in Kenya. In the report on SME Trade Finance, reviewing of facilities available in Kenya, the report adopted the SME solution Center's definition of a formally registered entity of 5 to 150 employees and a turnover of below US dollars 5 million (Maina, Kiragu, Butoyi, Scholastica, Michira & Nkatha, 2010). This study adopted Maina et al (2010) definition of SME.

Stratified random sampling with a proportional allocation of each stratum was used to obtain a representative sample in this study. In random sampling, each item in the population has a probability of selection same as any other item in the population. Stratified random sampling is used for data which is heterogeneous. The population is

divided into sub-groups with common characteristics and the representatives from each sub-group are to be part of the sample (Kothari, 2010)

Mugenda and Mugenda (2012) posited that at least 30% of the population is adequate to form the sample size. Hill (2012) suggested that at least 10% sample size of the population is adequate for a research study, while for a small population, 20% constitute a sample. The sample for this study was determined using the sample table developed by Krejcie and Morgan in 1970 as shown in appendix two (Research Advisors, 2006). The population for this study was between 700 and 800 and therefore the sample size at 95% confidence level was (248+260)/2=254 representing 34% of the population which was based on the following formula by Krejcie and Morgan.

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

$\underline{3.841x752x0.5x0.5}$

6.05 x0.05 x 751 + 3.841 x 0.5 x 0.5

$=\underline{722.108}$

2.83775

= 254

Where,

s=Sample Size

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

N= Population Size

P= the population proportion (assumed to be 0.5 since this would provide the maximum sample size).

d= degree of accuracy expressed as a proportion (0.05).

This sample formed preliminary research to identify the final sample since SMEs in each sector are not rightly identified by KAM directory. Ngugi (2012) used preliminary research to determine the sample of small and medium family enterprises in Kenya from a large sample of Small and Medium Manufacturing Enterprises. Questionnaires were administered only to those managers or owner managers who had registered manufacturing firms with 5 to 150 employees and sales turnover not exceeding US dollar 5 million. The simple random stratified sampling was represented in the Table 3.2

Table 3. 2: The Sample Size

Sector	Population	Sample Size (Unit of Analysis, 34% of population)	Managers or Entrepreneur Owners (Unit of Observation)
Chemical & Allied	79	27	27
Energy, Electricals & Electronics	45	15	15
Fresh Produce	11	4	4
Food & Beverages	187	63	63
Leather & Footwear	9	3	3
Metal & Allied	83	28	28
Motor Vehicle & Accessories	51	17	17
Paper & Board	74	25	25
Pharmaceuticals & Medical Equipment	24	8	8
Plastics & Rubber	77	26	26
Textile & Apparels	64	22	22
Timber, Wood & Furniture	19	6	6
Building, Construction & Mining	29	10	10
Total	752	254	254

3.5 Data Collection and Instrumentation

Kombo and Tromp (2011) defined data collection as the gathering of information to serve or prove some facts. The researcher collected both primary and secondary data. The primary data was obtained by administering a questionnaire to the respondents while the secondary data was collected from published sources such as the internet, library and research done by other scholars. After data collection, the researcher used various methods of estimating non- response. There are three methods that are commonly used: comparison with known values for the population, subjective estimates and extrapolation

Kothari (2011) stated that data collection instruments are means by which primary data is collected in social research. The means adopted by the researcher were influenced by factors such as costs, time and other resources at the disposal of the researcher (Orodho, 2008). The most commonly used means include observations, personal interviews, questionnaires, mailed questionnaires and telephone interviews. This study used an interview schedule and a self-administered, semi-structured questionnaire to collect primary data. Questionnaires consisted of a series of specific, short questions that were asked verbally by the interviewer or answered by the respondents on their own (Cooper & Schindler, 2011). The number of closed-ended questions in any survey should exceed the number of open-ended questions (Bryman, 2012). Babu, Krishna and Swathi (2013) in their study on the role creativity and innovation in Entrepreneurship used a semi-structured questionnaire to collect primary data.

3.6 Pilot study

Before a survey was carried out, all aspects of the questionnaire as a survey instrument underwent a pilot test (Malhotra *et al*, 2010). Cooper and Schindler (2011) explained that a pilot test is conducted to detect weakness in design, instrumentation and to provide proxy data for selection of probability sample. Pilot test also enables the researcher to identify and eliminate any problems that may exist in a questionnaire design (Malhotra *et al*, 2010) and examine the reliability and validity of measures used in the questionnaire (Sekaran, 2003). The number in the pilot study

was 10% of the sample size (Bryman, 2012), and therefore the study used 25 respondents for the pilot study.

3.6.1 Reliability of data collection instruments

Reliability in qualitative research depends on the quality of recording and documenting data, and the ability of the researcher to interpret it (Flick, 2006). One of the methods used to increase the reliability of interviews was by conducting training for the interviewers (Bryman & Bell, 2011). This study adopted the internal consistency method. Reliability is consistency of measurement (Bollen, 2012) or stability of measurement over a variety of conditions in which basically the same results are obtained. Reliability is the extent to which a given measuring instrument produces the same result each time it is used (Abbot & McKinney, 2013). The typical methods used to estimate test reliability in behavioural research are: alternative firms, test-retest reliability, inter-rater reliability and internal consistency (Drost, 2011). This study adopted internal consistency method as it was more stable than the other methods (Bryman, 2012; Cooper & Schindler, 2011). Internal consistency was tested using the Cranach's alpha statistic. Cronbach's alpha was computed as follows:

$$a = K/(K-1)\,[1-(1-(\sum \sigma_k^2/\sigma_{total}^2)] \quad \text{Equation (2)}$$

Where; K is the number of items, $\sum\sigma k\ 2$ is the sum of the k item score variances and $\sigma total^2$ is the variance of scores on the total measurement (Cronbach, 2004). Pallant (2010) advised that where Cronbach's alpha coefficient is used for reliability test, the value should be above 0.7.

3.6.2 Validity of data collection instruments

Validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study (Mugenda, 2008). A measuring instrument is valid if it measures what it precepts to measure (Bryman, 2012; Mugenda; 2008). Validity was therefore concerned with the meaningfulness of research components. This study adopted construct validity. There are four types of validity; internal validity, statistical conclusion validity, constructs validity and external validity

(Drost, 2011). Construct validity referred to how well the results obtained from the use of the measures fit the theories around which the test was designed (Trochim, 2006).

Content validity was also adopted in this study. Content validity relates to a direct use in scientific generalization which is the extent to which one can generalize from a particular collection of items to all possible items that would be representative of a specified domain of items (Drost, 2011). A study by Drost (2011) stated that there are two ways of assessing content validity, through asking a number of questions about the instruments or test and asking the opinion of expert judges in the field.

3.7 Data Analysis

Zikmund *et al.* (2012) stated that data analysis is the application of reasoning to understand the data that have been gathered with the aim of determining consistent patterns and summarizing the relevant details revealed in the investigation. Data processing entailed editing, classification and tabulation of data collected so that they were subjected to analysis (Kothari, 2010). Data entry converted information gathered by secondary and primary methods to a medium for viewing and manipulation. This study collected both qualitative and quantitative data.

As Kothari (2011) pointed after questionnaires were received back the raw data was edited for any errors or omissions and correction made where possible. This was done to ensure data's accuracy and consistency with other gathered facts. Coding and classification was done for efficient analysis of the data. This study used both descriptive and inferential statistics to analyse the data. Descriptive statistics described and summarized the data in a meaningful way using charts, tables and bars while inferential statistics drew conclusions on the analysed data thus helping in generalization. Therefore bars and histograms formed part of the analysis for presentation of results. Predictions based on the results of the analysis were made and the results generalized on the population of study given that the test sample was part of the population.

The data collected was tested for the assumptions of various analytical models upon which the most appropriate was selected, for example the diagnostic for the use of multiple linear regression were that the data was normally distributed.

The function specification for the study was:

$$FP= f (CR, OSTR, R\&D, COMM, \varepsilon)$$

Where;

FP– Firm Performance

β_0 - Constant term

β_1 β_2 β_3 and β_4 – Constants regression coefficients

CR – Creativity

OSTR – Organizational structure

R & D – Research and Development

COMM – Commercialization

ε – Error term

3.7.1 Statistical Modelling

To draw conclusions on the objectives of the study and test hypotheses, statistical models were fitted for the specification function showing the influence of innovation practices on financial performance of SMMEs in Kenya.

3.7.1.1 Regression models

Regression models were fitted to determine the relationship between each independent variable and performance of SMMEs. Regression models considered the relationship between two variables at a time without considering the combined joint

relationships. The study used the following models to determine the influences of each independent variable on SMMEs performance.

$$FP = \beta_0 + \beta_1 X_1 + \varepsilon$$

$$FP = \beta_0 + \beta_2 X_2 + \varepsilon$$

$$FP = \beta_0 + \beta_3 X_3 + \varepsilon$$

$$FP = \beta_0 + \beta_4 X_4 + \varepsilon$$

3.7.1.2 Multivariate models

To test the combined effect of innovation practices (creativity, organisational structure, research and development and commercialisation) on the dependent variable, a multiple regression model was fitted. The model estimated the joint influence of the independent variable on performance. The multiple regression model was given by the equation below;

$$\mathbf{FP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$…….. Equation 3. 1

Where: $\beta_1, \beta_2, \beta_3$ and β_4 were the regression coefficients of the predictors in the model

FP – Firm performance

β_0 – The intercept of the equation (Constant term)

X_1 – Creativity

X_2 – Organisational structure

X_3 – Research and development

X_4 – Commercialization

ε – The error term

To test whether entrepreneurial orientation moderates the relationship between innovation practices and SMMEs performance, Moderated Multiple Regression (MMR) statistical tool was used (Zikmund, Babin & Griffin, 2010). Moderated Multiple Regression (MMR) enabled the slope of one or more of the independent variables to vary across values of the moderator variable, thereby facilitating the investigation of an extensive range of relationships and function forms (Goode & Harris, 2007). Aguinis and Gottfredson, (2010) posted that estimating interaction effects using moderated multiple regression usually consisted of creating an Ordinary Least Squares (OLS) model and a Moderated Multiple Regression (MMR) model equations involving scores for a continuous predictor variable Y, scores for a predictor variable X, and scores for a second predictor variable Z hypothesized to be a moderator. To determine the presence of moderating effect, the OLS model was then compared with the MMR model. Andreas, Torsten and Rene (2013) used Moderated Multiple Regression in their study on determinants of radical innovation practices.

The first equation showed the Ordinary Least Squares (OLS) regression equation model predicting Y scores from the first-order effects of X and Z observed scores.

$$\mathbf{FP} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 X_1} + \boldsymbol{\beta_2 X_2} + \boldsymbol{\beta_3 X_3} + \boldsymbol{\beta_4 X_4} + \boldsymbol{\beta_5 Z} + \boldsymbol{\varepsilon} \quad \text{……...……Equation 3. 2}$$

Where: $\beta_1, \beta_2, \beta_3, \beta_4 \text{and } \beta_5$ were the regression coefficients of the predictors in the model

FP – Firm performance

β_0 – The intercept of the equation (Constant term)

X_1 – Creativity

X_2 – Organisational structure

X_3 – Research and development

X_4 – Commercialization

Z – Entrepreneurial Orientation

ε – The error term

The second equation, the Moderated Multiple Regression (MMR) model was formed by creating a new set of scores for the two predictors (i.e. X, Z), and including it as a third term in the equation, which yielded the following model:

$$\mathbf{FP} = \boldsymbol{\beta_0} + \boldsymbol{\beta_1 X_1} + \boldsymbol{\beta_2 X_2} + \boldsymbol{\beta_3 X_3} + \boldsymbol{\beta_4 X_4} + \boldsymbol{\beta_5 Z} + \boldsymbol{\beta_6 X_1 * Z} + \boldsymbol{\beta_7 X_1 * Z} + \boldsymbol{\beta_8 X_1 * Z} + \boldsymbol{\beta_9 X_4 * Z} + \boldsymbol{\varepsilon}$$

……..…….Equation 3

Where: β_1 to β_9 were the regression coefficients of the predicts in the model

FP – Firm performance

β_0 – The intercept of the equation (Constant term)

X_1 – Creativity

X_2 – Organisational structure

X_3 – Research and development

X_4 – Commercialization

Z – Entrepreneurial Orientation (Moderating variable)

$X_i * Z$ Are the interaction terms between the independent variables and the moderator ($for\ i = 1\ to\ 4$)

ε – The error term

3.7.1.3 Model Diagnosis

The study adopted Ordinary Least Squares (OLS) estimation to fit the statistical models specified for drawing conclusions on the study objectives. OLS is a maximum likelihood estimation technique that is subject to the classical assumptions of statistical model estimation. The study therefore carried out diagnoses on fitted OLS models to ensure that they did not violate the assumptions and conditions. The assumptions diagnosed and tested were the assumption of normality of the residuals, non-autocorrelation of the residuals, non-multicollinearity of the independent variables and homoscedasticity of the residual terms. Koong, Merhi and Sun (2013) tested for the classical assumptions on models in their analyses in their study on Push and Pull Effects of Homeland Information Security Incentives.

The study tested for normality, autocorrelation, homoscedasticity and multicollinearity. Normality was important in knowing the shape of the distribution and helped to predict dependent variables scores (Paul & Zhang, 2009). The study used Shapiro-Wilk test for normality. A p-value of greater than 0.05 confirmed that the residuals for the fitted multiple regression model was normally distributed. Freel and Robson (2012) tested for normality in their study on Small Firms Innovation growth and performance, evidence from Scotland and Northern England. Auto-correlation referred to the correlation of a time series with its own past and future values (Box & Jenkins, 1976). Auto-correlation function was used to detect non-randomness in data and identified an appropriate time series model if the data were not random. Auto-correlation was a correlation coefficient but instead of correlation being between two different variables, the correlation was between two values of the same variable at times $X_i + X_{i+k}$. The study used Durbin Watson statistic to test for autocorrelation. Mohd, Zuhriah and Norsiah (2014) tested for auto-correlation in their

study on the influence of innovation performance towards manufacturing sustainability performance.

Homoscedasticity is a situation where the residual terms have a constant variance. Adoption of OLS model required the residual model to be homoscedastic (Park, 2011). A Breuch-pagan test was done on the residual terms of the overall model to test the existence of either heteroscedasticity or homoscedasticity. Hans, Mariann, Isabelle and Rutger (2012) tested for homoscedasticity in their study on innovation practices process in small firms. Multicollinearity is exhibited if one or more independent variables were expressed in terms of the other independent variables (Mart, 2013). Variance Inflation Factor (VIF) was used to test for multicollinearity. Where no two independent variables were correlated, all the VIFs were 1. If the VIF for one of the variables was around or greater than 5, then there was multicollinearity associated with that variable and in this case one of the variables is removed from the regression model (Cohen, Cohen, West & Aiken, 2013). Alvaro and Calvo (2011) tested for multicollinearity in their study on the factors that influence innovation activities of Spanish Big firms.

3.7.2 Operationalization of study variables

Cresswell (2004) defined operationalization as the process of developing indicators or items for measuring the research constructs. The literature reviewed identified various variables for this study. The independent variables consisted of four elements namely; creativity, organizational structure, Research and Development and commercialization (Table 3.3). The dependent variable was the SMMEs performance which was composed of sales turnover, profitability and return on investment.

Table 3.3: Operationalization of Study Variables

Type of Variable	Variable Name	Operationalization
Independent variables	Creativity	Technological expertise Team work Motivation
	Organizational Structure	Centralization Formalization Professionalization
	Research & Development	Customer participation Top management involvement Venture capital
	Commercialization	Internationalization Technological exploitation Market exploitation
Moderating Variable	Entrepreneurial Orientation	Pro-activeness Risk taking Innovation
Dependent Variable	SMMEs Performance	Sales turnover Profitability Return on investment

3.7.3 Test of significance

To draw conclusions on the objectives, the study tested hypotheses based on statistics from the results and findings of statistical modelling. The study fitted various OLS models for and tested for significance at 0.05. On correlation analyses, the correlation coefficients estimates were tested and concluded to be significant if the p-values were less than 0.05. Regression models were tested for goodness of fit by computing the R-square statistics that showed the explanatory power of the models. A large R-square was associated with high explanatory power implying good fitness. The moderating effect was tested by computing the R-square, change in its corresponding F-change p-

value where a significant moderating effect was associated with a p-value of less than 0.05. Every regression model fitted was tested for general significance by carrying out ANOVA and calculating the F-statistic, the regression models with p-values of less than 0.05 were considered significant. Study hypotheses were tested from the student's t-test of the multiple regression coefficients of the variables. Variables with p-values of less than 0.05 of the t-statistics were concluded to have significant influence on SMMEs performance.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The study adopted different statistical approaches to investigate the influence of innovation practices on performance of Small and Medium Manufacturing Enterprises (SMMEs). All constructs were adopted from pre-existing scales of the literature review. Descriptive statistics, reliability of the variables that comprise this study were measured using Cronbach alpha coefficient generated by Statistical Packages for Social Science (SPSS). Cronbach's Alpha is a measure of consistency and checks if the questions in the questionnaire were understood and if the data are minimally reliable. The findings of the study were presented based on the study specific objectives and their respective hypotheses tested.

4.2 Response Rate

The researcher collected data from firms registered with Kenya Association of manufacturers (KAM) as at June 2015. The study had a sample of 254 firms out of the 752 registered with KAM. The target sample was 254 owner/ senior managers out of which 215 responses were received accounting for 85% response rate. Sekaran (2004) argues that any response rate above 75% is classified as best and appropriate for any study. Mugenda and Mugenda (2012) aver that a response rate of 50% is adequate, 60% and above good and above 70% very good. The response rate of 85% found in this study was therefore quite adequate. This was in line with Orodho (2009) that a response rate above 50% contributes towards gathering of sufficient data that could be generalized to represent the opinions of respondents about the study problem in the target population. Table 4.1 shows the response rate in the study.

Table 4.1: Response Rate

Sector	Population	Sample Size	Response	Response rate
Chemical & Allied	79	27	23	85%
Energy, Electricals & Electronics	45	15	13	87%
Fresh Produce	11	4	3	75%
Food & Beverages	187	63	53	84%
Leather & Footwear	9	3	3	100%
Metal & Allied	83	28	24	86%
Motor Vehicle & Accessories	51	17	14	82%
Paper & Board	74	25	21	84%
Pharmaceutical & Medical Equipment	24	8	7	88%
Plastics & Rubber	77	26	22	85%
Textile & Apparels	64	22	19	86%
Timber, Wood & Furniture	19	6	5	83%
Building, Construction & Mining	29	10	8	80%
Total	752	254	215	85%

4.3 Results for the Pilot Study

A pilot test was conducted for testing the reliability and validity of the questionnaire. According to Blumberg, Cooper and Schindler (2011), a pilot test is aimed to show the duration it will take to complete the questionnaire, confirm clarity and logical flow of format, confirm if questions are clear and short and test the questionnaire credibility. The number in the pilot study should be small, about 1% to 10% of the target population (Mugenda & Mugenda, 2012). In this study the questionnaire was tested on 10% of the entire sample size, which translated to 25 respondents. Atalay (2013) used pilot study in his study on the relationship between innovation and firm performance: An empirical evidence from Turkish automotive supplier industry.

4.3.1 Test for construct validity

A study by Field (2011) defines factor analysis as an exploratory tool used to help the researcher make decisions on whether the variables under investigation explain the dependent variable. Mugenda and Mugenda (2012) define factor validity as the degree of which results obtained from the analysis of the data actually represent the phenomenon under study. In this study, validity was concerned with whether the findings will explain the influence of innovation practices on performance of SMMEs in Kenya.

To determine the influence of innovation practices on performance of SMMEs in Kenya, factor analysis was conducted for the variables and the results had factor loadings of 0.7 and above. Ala, Schaufeli and Hakanen (2010) used factor analysis which has been widely accepted as reliable in many research studies. A loading factor of 0.7 and above was considered acceptable and has been used by other researchers such as Chih (2011). This study showed that all the retained factors related to creativity, organisation structure, research and development, commercialisation and entrepreneurial orientation had factor loadings of above 0.7 and were therefore used for subsequent analysis. They were found to be within the cut-off value of 0.7 and above as recommended by Hair *at el* (2012) in their study. This study has therefore met the requirements of convergent validity. Hans (2014) used a factor loading of 0.7 in his study on innovation practices process and the trade-off between innovation practices performance and business performance.

4.3.1.1 Convergent validity

The study tested for convergent validity to find out if constructs that were expected to be related were actually related. To test for convergent validity, the researcher computed the Average Extracted Variance (AVE) within each construct (John & Veronica, 2010). Convergent validity is said to be implied if the AVEs are all above 0.5. The results on the Average Variance Extracted for this pilot study showed that from the retained factors, all the constructs had an Average Variance Extracted of above 0.5 implying convergent validity (Kane 2013). This was shown in Table 4.2.

Table 4. 2: Average Variance Extracted

Construct	AVE
Creativity	0.50296
Organizational Structure	0.50309
Research and Development	0.5019
Commercialization	0.50072
Entrepreneurial Orientation	0.51106
Performance	0.50296

4.3.1.2 Discriminant validity

The study tested for discriminant validity to confirm that constructs that were expected not to be related were actually not related. To measure discriminant validity, a comparison of the Average Variance Extracted for each construct and the squared correlations were computed and tabulated. Table 4.3 below showed the comparison with the AVEs on the diagonal and highlighted. On comparison, all the AVEs were greater than the squared correlations between the constructs implying that the instrument exhibited discriminant validity. A higher AVE than the squared correlations between constructs implied discriminant validity (Koufteris, 2015). Table 4.3 shows the correlation matrix of the latent constructs.

Correlation among the independent variable was illustrated by correlation matrix (table 4.3). Correlation explores the relationship among a group of variables (Pallant 2010) in turn helping to test for multicollinearity. The correlation values should not be close to 1 or -1 as this may be an indication that the factors are different measures of separate variables (Farndale, Hope-Hailey & Kelliher, 2010). Absence of multicollinearity allows the study to utilize all the independent variables. Table 4.3 shows that the lowest correlation in this study was between innovation practices and organizational structure ($r= 0.037$, $.p<0.1$). The highest correlation was between innovation practices and commercialization ($r= 0.095$, $p<0.1$). A correlation of 0.9 and above was an indicator that the variables may be measuring the same thing

(Tabachnick & Fidell, 2013). In this study all the correlations were less than 0.90, indicating that all the factors were sufficiently, different measures of separate variables and therefore the study utilized all the variables.

Table 4.3: Correlations

	Creativity	Organizational Structure	Research and Development	Commercialization	Entrepreneurial Orientation	Performance
Creativity	1	0.073	0.068	0.089	0.05	0.568
Organizational Structure	0.073	1	0.037	0.064	0.091	0.612
Research and Development	0.068	0.037	1	0.049	0.088	0.512
Commercialization	0.089	0.064	0.049	1	0.095	0.555
Entrepreneurial Orientation	0.05	0.091	0.088	0.095	1	0.549
Performance	0.568	0.612	0.512	0.555	0.549	1

Comparison between the AVEs and the squared correlations

Table 4.4: Squared correlations and AVE

	Creativity	**Organizational Structure**	**Research and Development**	**Commercialization**	**Entrepreneurial Orientation**	**Performance**
Creativity	0.503	0.005	0.005	0.008	0.003	0.323
Organizational Structure	0.005	0.503	0.001	0.004	0.008	0.375
Research and Development	0.005	0.001	0.502	0.002	0.008	0.262
Commercialization	0.008	0.004	0.002	0.501	0.009	0.308
Entrepreneurial Orientation	0.003	0.008	0.008	0.009	0.511	0.301
Performance	0.323	0.375	0.262	0.308	0.301	0.535

4.3.1.3 KMO and Bartlett's test

The Kaiser-Meyer-Olkin (KMO) is a measure of sampling adequacy (KMO) and Bartlett's test of sphericity are tests of sampling adequacy. The KMO measures the variance proportion in variables in relation to the underlying factors. The KMO value ranges from zero to one where a high KMO value is desired. A value of zero indicates that the sum of partial correlation is large relative to the sum of correlations indicating diffusions in the patterns of correlations, and hence, factor analysis is likely to be inappropriate (Costello & Osborne, 2011). From the Pilot study, the KMO value was 0.841 which tends to 1 indicating that the patterns of correlations were relatively compact and so factor analysis should yield distinct and reliable factors.

The Bartlett's test was used to confirm that the relationships between factors were significant. The p-value of the chi-square statistic of the test was less than 0.05 implying that the relationship between factors was significant and therefore factor analysis would be useful from the data collected for pilot. Hans (2014) tested for KMO and Bartlett's test of sphericity in his study on innovation practices processes and the trade-off between innovation practices performance and business performance. Table 4.5 shows the values of KMO and Bartlett's test of Sphericity in the study.

Table 4.5: KMO and Bartlett's Test of Sphericity

Test	**Value**	
Kaiser-Meyer-Olkin measure of sampling adequacy.		0.841
Bartlett's test of sphericity	Approx. Chi-square	3950
	Df	3750
	sig.	0.011

4.3.2 Reliability

Reliability is a consistency of measurements (Bollen, 2012) or stability of measurements over a variety of conditions in which basically the same results are obtained. Abbot and Mc Kinney (2013) define reliability as the extent to which a given measuring instrument produces the same results each time it is used. To assess the construct reliability, that is the extent of measurement error in a measurement, this study used Cronbach alpha (Neuman, 2010). This study test of reliability was based on Cronbach alpha of 0.70 which was generated by Statistical Package for Social Sciences (SPSS). Zikmund *et al.* (2010) stated that the coefficient alpha is an appropriate measure of variance attributed to subjects and variance attributed to the interaction between subjects and items. The values in Table 4.6 showed the reliability statistics for creativity as $\alpha = 0.751$, organisation structure as $\alpha = 0.851$, research and development as $\alpha = 0.795$, commercialisation as $\alpha = 0.744$, entrepreneurial orientation as $\alpha = 0.856$ and performance as $\alpha = 0.964$. These were sufficient confirmation of the reliability of the data collection tool for all the variables. A Cronbach alpha of 0.7 is a minimum level of acceptance (Zikmund *et al.*, 2010).

Table 4.6: Reliability

Variable	Number of Items retained	Cronbach's Alpha	Comment
Creativity	12	0.751	Accepted
Organizational Structure	9	0.851	Accepted
Research and Development	8	0.795	Accepted
Commercialization	9	0.744	Accepted
Entrepreneurial Orientation	9	0.856	Accepted
Performance	7	0.964	Accepted

4.4 Demographic Profile of Respondents.

4.4.1 Gender Distribution

The gender of the respondents was sought. The study found out that majority (60%) of the respondents were male (129) while the rest (40%) were female (86). As shown in the Table 4.7 the findings imply that majority of the SMMEs managers in the KAM firms were male. However the distribution represented a fair gender balancing, an indication of successful efforts of various gender mainstreaming campaigns. The study results may be attributed to the strong male domineering culture in Kenya where until recently women were relegated to domestic chores. This culture is dying off and a large population of women population is now strongly competing with their male counterparts in most jobs (RoK, 2008; 2010).

Table 4.7: Gender

Gender	Number	Percentage
Male	129	60%
Female	86	40%
Total	215	100.0%

4.4.2 Length of Continuous Service with the Firm

The length of continuous service in the firm was sought to ensure collection of credible data. In Table 4.8, Majority (50.7%) of the respondents from the firms had worked with the firms for 2 to 4 years. 3.5% of the respondents had worked for less than 2 years while 30.2% had worked for 5 to 7 years. There was 12.6% of the respondents who had worked for up to over 7 years. This showed that the personnel who availed the information for the firms had served long enough to acquire knowledge that enabled them to give credible information. The results indicate that Majority of the managers of SMMEs in Kenya had served for a considerate period of time to warrant them to avail credible information. These findings were in line with

Braxton (2008) that respondents with a high working experience assist in providing reliable data on the study problem since they have technical experience on the problem being investigated by the study. This indicates that 50% of the respondents had worked in the firms for a long time and thus understood technical issues on innovation practices and performance of SMMEs in Kenya.

Table 4.8: Length of Continuous Service in the Firm

Period	Number	Parentage
Less than 2 years	14	6.5%
2-4 years	109	50.7%
5-7 years	65	30.2%
over 7 years	27	12.6%
Total	215	100.0%

4.4.3 Level of Education

The researcher also sought to find the level of education of the respondents from the firms. Table 4.9 below shows that majority (79.6%) of the respondents from the firms had at least obtained an undergraduates degree, 16.1% were postgraduate holders and only 4.3% of the firms had diploma holders responding to the questionnaires. This was highly expected considering that the respondents selected to respond were at senior management level where skills, knowledge and competencies was supposed to be high. These findings implied that most of the respondents were qualified to understand the nature of the study problem. This concurs with Joppe (2010) that during research process, respondents with technical knowledge on the study problem assist in gathering reliable and accurate data on the problem under investigation. This demonstrated that most of the organization employees were qualified professionals with technical knowledge and skills on the study problem and thus provided the study with reliable information on innovation practices and performance of SMMEs in Kenya

Table 4.9: Level of Education

Level	Percentage
Diploma	4.3%
Undergraduate	79.6%
Post graduate	16.1%
Total	100.0%

4.4.4 Sector Distribution of the Respondents.

The distribution of respondents per sector as shown in Table 4.10 was an appropriate representation of all the sectors represented by firms registered with the KAM as at June 2015. This was an indication that proper stratification of the sector was done. This demonstrated that all the respondents were directly involved in the execution of innovation practices and this helped in gathering reliable data on factors affecting the innovation practices and performance of SMMEs in Kenya. This suggests that the respondents had wide experience in the work place and consequently they were in a position to understand most of the innovation practices concepts.

Table 4.10: Distribution of respondents by Sector

Sector	Sample Size	Response	Response rate
Chemical & Allied	27	23	85%
Energy, Electricals & Electronics	15	13	87%
Fresh Produce	4	3	75%
Food & Beverages	63	53	84%
Leather & Footwear	3	3	100%
Metal & Allied	28	24	86%
Motor Vehicle & Accessories	17	14	82%
Paper & Board	25	21	84%
Pharmaceutical & Medical Equipment	8	7	88%
Plastics & Rubber	26	22	85%
Textile & Apparels	22	19	86%
Timber, Wood & Furniture	6	5	83%
Building, Construction & Mining	10	8	80%
Total	254	215	85%

4.4.5 Relationship with the Firm

Respondent's relationship with the firm was sought to find out how the managers were relating with the firms. The unit of observation for the study was senior managers in the firms registered with the KAM as indicated in the methodology. The question thus sought to establish the commitment of the respondents in the firm. A majority (60%) of the respondents were owner managers while 40% of the respondents were employee managers as indicated in Table 4.11. Aronoff and Ward (2011) noted that family firms have long been the backbone of worldwide enterprises and range between 65% and 80% of worldwide businesses. Therefore, the findings of this study were representative and it can be inferred that, of all small and medium enterprises in Kenya, approximately 65% belong to the entrepreneurs (owners). This suggests that the respondents had a wide experience in their business and consequently they were in a position to understand most of the innovation practices concepts.

Table 4.11: Relationship with the Firm

Respondent	Number	Percentage
Owner manager	129	60%
Employee manager	86	40%
Total	215	100%

4.5 Descriptive analysis

The descriptive analysis involved individual analysis of the indicators of each variables of the study based on the scales of measure. The indicators of the independent variables and the moderating variable were measured on an ordinal categorical scale thus the descriptive statistics used the mode as the measure of central tendency. The dependent variable had different indicators measured either on a continuous scale or ordinal categorical scale. The categorical indicators of the dependent variable were analysed with the mode and frequency tables while those measured continuously analysed with the mean as an average and the standard deviation as a measure of dispersion.

4.5.1 Creativity

Technological Expertise

According to Table 4.12 the variables considered for technological expertise in the study were the use of internet in the firms operations, new applications for products, new products developments and whether the firms equipped employees with skills for their jobs. The questions required the respondents to choose the following responses; others, not at all, rarely, often, and very often. The results indicated that 35% of the respondents were of the view that the firms often found new applications for products, 32% not at all, 27% rarely and 7% very often. The study sought opinion on the use of the internet, 38% were of the opinion rarely, 31% often, 16% very often and another 16 % not at all. As to whether the management equips the employees with skills for their jobs 31% responded often, 29% rarely, 21% not at all and 19% very often. The respondent's opinion summary is shown in Table 4.12.

The study result agrees with the finding of Li and Tang (2010) that creativity factors include technological expertise, teamwork and motivation. Amabile (2012) also outlines technological expertise, teamwork and motivation as drivers of creativity. In view of the above results, it can be concluded that SMMEs are involved in enhancing new applications of their products, equipping their employees with skills for their jobs and the use of network in their operations. This confirms that most SMMEs in Kenya have embraced technological expertise in their operations which in turn enhance creativity in their operations.

Team work

From the study results in Table 4.12 teamwork variables considered in this study were brainstorming to stimulate new ideas among employees, development of teams, employee involvement in decision making and managers' involvement in asking opinions from employees about how to improve the customer services in the firms. The results of the finding indicated that 35% of the respondents were rarely involved in decision making, 31% often, 20% not at all and 14% very often. As to whether brainstorming was used to stimulate new ideas among employees, 33% responded

often, 32% rarely, 28% not at all and 5% very often. As to whether managers seek opinion from employees 37% had the opinion of often, 27% rarely, 22% very often and 13% not at all.

The results are in agreement with Li and Tang (2010) who concluded that creativity factors include technological expertise, teamwork and motivation. A study by Rick *et al* (2015) asserts that creativity is the driver of innovative activities in business and that the management of any business enterprise should invest in creative activities if they have to realize their objectives of improved performance. The findings confirm that the creation and development of creative ideas and their manifestations as new products are the core elements of an innovation strategy as creativity enhances the generations of new ideas.

Motivation

In regard to motivation the study sought to investigate, the rewarding of employees who were involved in generating new ideas, participation in outdoor activities, recognition of one's performance and rewarding of employees for general performance. Majority of the respondents, (38%) were of the view that the firms often participated in outdoor activities, 30% rarely, 17% not at all, and 15% very often. Opinion on whether the firm rewarded employees who generate new product ideas, 35% responded rarely 30% often, 31% not at all and 3% very often. Regarding recognition of one's performance, 34% responded rarely, 29% often, 23% not at all and 14% very often. As to rewarding of employees for general performance, 33% rarely agreed, 32% were for often, 19% very often and 17% not at all. This was illustrated in Table 4.12.

The results collaborate the findings by Hong et al (2013) that motivation enhances the morale of employees in an organization. The results also concur with the findings by Amabile (2012) who assert that intrinsic motivation arises from the individual's positive reaction to the qualities of the task itself such as interest, involvements, curiosity and satisfaction while extrinsic motivation arises from sources outside the task itself such as promised reward, meeting a deadline or winning a competition. The results confirm that motivation enhances creativity. SMEs should embrace

creativity to empower them have the ability to develop new products, new ideas and discover new ways of identifying new business opportunities (Hans, 2014).

Motivation can be intrinsic or extrinsic in nature. Intrinsic motivation arises from the individual's positive reaction to the qualities of the task itself such as interest, involvement curiosity and satisfaction while extrinsic motivation arises from sources outside the task itself such as a promised reward, meeting a deadline or winning a competition (Amabile, 2012). The social environment dynamics emphasizes creation of teams. Teamwork is an important element in organizational settings as it facilitates effectiveness and efficiency in an organization (Dul, Celyon & Jaspers, 2011). Amabile (2012) in her study on "The Impact of information Technology Resources on SMEs innovation performance found out that creativity truly enhanced innovation practices when senior management provided sufficient resources. Resource-Advantage (R-A) theory of creativity views the firm as an integrator of resources that include the firms' knowledge base and technological expertise that play a crucial role in gaining competitive advantage and achieving superior levels of performance (Hunt, 2010). The descriptive results for creativity were represented in Table 4.12.

Table 4.12: Creativity Indicators

Indicator	Other (1)	Not at all (2)	rarely (3)	often (4)	Very often (5)	Modal Class
How often does the firm find new application for products	0%	32%	27%	35%	7%	4
How often if the firm involved in product development capability	0%	23%	28%	37%	12%	4
How often does equip employees with skills for their jobs	0%	21%	29%	31%	19%	4
How often does the firm use internet in its operations	0%	16%	38%	31%	16%	3
How often the firm is involved in brainstorming to stimulate new ideas among employees	1%	28%	32%	33%	5%	4
How often is the firm involved Developing teams?	0%	19%	32%	36%	13%	4
How often are employees involved if a decision is to be made	0%	20%	35%	31%	14%	3
How often does the manager ask opinions from employees about how to improve customer service in the firm	1%	13%	27%	37%	22%	4
How often does the firm Reward employees who generate new product ideas?	0%	31%	35%	30%	3%	3
How often does the firm Participate in outdoor activities	0%	17%	30%	38%	15%	4
Do you think the recognition of one's performance motivates work performance of employees	0%	23%	34%	29%	14%	3
Does the firm reward employees for best performance	0%	17%	33%	32%	19%	3

4.5.2 Organizational Structure

Centralization

The variables considered for centralization in this study were encouraging employees to make their own decisions, employees' involvement in key innovation decisions, and supervisor's approval on decision made by employees and whether management get direct information from lower levels of employees. The result as shown in Table 4.13 indicated that majority (36%) were of the view that most decisions made by employees rarely had supervisor's approval, 29% often, 18% very often and 16% not at all. On the opinion whether the employees were included in key innovation decisions, 34% responded rarely, 28% often, 23% very often and 14 % not at all. Further on the opinion of management getting direct information from lower levels employees, 32% responded often, 31% rarely, 25% not at all and 12% very often.

The result agree with the findings of veisi, veisi and Hasan's (2012) who concluded that less centralization encourages openness and flexibility in roles which is a pre requisite for new ideas. Shaemi *et al.* (2013) argue that firms with less centralized but managerially intensive organization structures are more responsive to innovation. A study by powley and Nissen (2012) highlighted centralization as one of the main structural elements that may impact on innovation. The study confirms that an organizational structure has an impact on organizational innovation specifically centralization.

Formalization

On formalization the study sought to investigate management assignment of duties to employees, whether written job description were formulated, whether rules and procedures occupy a central place in the organization and the time taken for management approval on decisions. The results are indicated in Table 4.13. Majority of the respondent (36%) were of the view that written job descriptions were rarely formulated at various level, 35% often 18% and 11% not at all. Regarding rules and procedures occupying a central place in the organization 34% responded often, 32% rarely, 18% not at all and 16% very often. Opinion on management reassigning duties

to employees had 33% of the view often, 32% rarely, 30% not at all, 4% very often and 2% for other opinions.

The results are in agreement with Latiti and Shooshhtarian (2014) who discovered that firms with organic structures that entail low formalization are more inclined to innovate. A study by Powley and Missen (2012) reported that flexible organization structures characterized by low levels of formalization best promote innovation within firms. Lendel and Varmus (2012) suggest that it is necessary to employ low formalization during innovation initiation phases because at this stage information gathering and processing is critical for success. A study by Lewis (2011) confirms that where the degree of formalization is low, jobs behaviours are usually not programmed and employees have greater freedom and discretion to exercise in their work, and new ideas are likely to be generated.

Professionalism

In relation to professionalization the study sought to investigate how often the firms used professionals as a source of creativity and innovation, Professionals incorporation in firm's activities, professional education levels and their specialization and professionals experience in different firm activities. The results are illustrated in Table 4.13. The results indicate that 38% of professionals are often incorporated in firms activities, 30% rarely, 18% very often and 13% not at all. Regarding the use of professionals as a source of creativity and innovation 34% were of the view rarely, 28% not at all, and 5% very often. As for education levels and specialization 33% responded often 31% rarely, 20% very often and 16% not at all.

The results concur with the findings by Meitzer and Kamprath (2013) who acknowledge that the knowledge of the worker and their ability to create and share new knowledge promotes products innovation in a firm. Muzio *et al* (2013) point out that, the first way in which professionals restructure institutions is by opening up new spaces for their expertise such as creation of new products. Several studies (Shaemi et al 2013) argue that successful firms with less formalized and certified but more professionalized and managerially intensive organization structures is therefore a major factor of innovation practices. In their study on the effects of organizational

structure on organizational Trust and effectiveness Latifi and Shooshtarian (2014) also concur that firms with organic structure that entails low formalization are more inclined to innovate. This is also consistent with a study by Tran and Tian (2013) who found out that flexible organizational structures characterized by low levels of formalization and centralization best promoted innovation and better performance within firms.

The professionals must be seen as champions of efficiency and effectiveness and must acknowledge the challenges and their various forms, and their sources. The requirements to educate professionals and equip them with new and higher-level skills have consequently become urgent (Raymond, 2013). A skill is the ability either to perform some specific behavioral task or the ability to perform some specific cognitive process that is related to some particular task (Wanyama, 2013). However, Obanda, (2010) report that finding, hiring and retaining dedicated, energetic, and ethical employees with special skills is always hard. While we understand that professionalism is a key mechanisms for, and primary targets of institutional change, the precise role of professions and professional service firms in processes of institutional change remain under-theorized (Lisa, 2010). Table 4.13 shows the variables that were considered for organizational structure.

Table 4.13: Organizational Culture

Indicator	Other (1)	Not at all (2)	rarely (3)	often (4)	Very often (5)	Modal Class
How often does management get direct information from lower levels of employees	0%	25%	31%	32%	12%	4
How often are employees included in key innovation decisions	0%	14%	34%	28%	23%	3
Do most decisions made by employees in the firm have to have their supervisors' approval	0%	16%	36%	29%	18%	3
How often does management reassign duties to employees	2%	30%	32%	33%	4%	4
How often are employees expected to await for management decision before undertaking an operation	0%	20%	33%	32%	15%	3
How often are written job descriptions formulated at various levels	0%	11%	36%	35%	18%	3
How often do rules and procedures occupy a central place in the org	0%	18%	32%	34%	16%	4
How often does the firm use professionals as a source of creativity and innovation	0%	28%	33%	34%	5%	4
How often are professionals incorporated in the firm's activities	0%	13%	30%	38%	18%	4
How often do top managers and technical stuff possess high education levels and specialised training	0%	16%	31%	33%	20%	4
Do top managers and technical stuff have professional	0%	17%	30%	32%	21%	4

4.5.3 Research and Development

Customer participation

In relation to Customer participation the study sought to investigate customers involvement in generating new products ideas, whether customer concern were addressed by the firms, customers input in firms' decisions and modifications of products/ services by the firms. The results were illustrated in Table 4.14. On customer involvement in generating new product ideas 38% of respondents were of the opinion rarely, 29% not at all, 27% often, 5% very often and 2% had other responses. Opinion on addressing customer concerns had 35% responding often, 33% rarely, 18% not at all and 13% very often. Regarding modification of products 35% were of the opinion rarely, 30% not at all, 26% often and 8% very often.

The results supports the findings by Parasuraman, Hoefirinagels and Kabadayii (2012) who concluded that customer participation in new products development can assist Research and Development division in solving customer demands effectively. A study by Peled and Dvir (2012) revealed that customer involvement is heavily dependent on how involvement is managed. This study confirms that customer participation in new product development may help create products that mirror latent needs, decrease costs associated with new product development activities and develop products that are less easily imitable by competitors (Ali, Jing & Ahmed, 2015).

Top Management

The top management variables sought in the study were management reward for new products initiatives, apportion of budget for innovative programs, offering of training programs and training of employees. The results were shown in the Table 4.14. Majority of the respondents (36%) agreed that the management often award new products initiatives 27% rarely, 23% not at all and 15% very often. Regarding the apportioning budget for initiative programs, 35% were for rarely, 34% often, 19% very often and 12% not at all. As for offering training programs to

employees.34%were of the opinion rarely, 27% often, 22% not at all and 16 very often. On training employees to handle introduction of new products, 30% were for often, another 30% rarely, 25% not at all and 16% very often

The findings were in line with a study by Evansschitzky et al (2012) who asserted that one factor that is critical to the success of major innovation is top management. Andreas, Marina and Klaus (2015) point out that top management involvement in innovation practices can speed up Research and Development progress. The results of the study concur with findings by Kleinchmidt, Schultz, Salomo and De Brentani (2013) who concluded that top management knowledge is helpful for acquiring resources which in turn have an impact on the accumulation of knowledge and skills which enhance innovation practices. Top management was therefore one of the major factors of innovation practices.

Venture capital

In relation to venture capital the study sought to examine sourcing of capital from entrepreneurs, the use of capital sourced from entrepreneurs, financial of innovating firms and how faster venture based firms avail products in the market. Majority of the respondents (35%) were of the view that innovating firms are financed by venture capitalists, 32% often, 18% not at all, 13% very often and 1% other responses. As to whether the firms source for capital from entrepreneurs, 35% responded often, 31% rarely, 25% not at all and 8% very often. Regarding whether capital sourced from entrepreneurs was used to develop new products 33% were of the opinion rarely, 30% often, 21% very often and 16% not at all. The results were summarized in Table 4.14.

The results concur with the findings by Kandel and Harry (2011) who indicated that venture capital finance had a positive effect on innovation. Several studies (Vries, 2012; Krishnan, 2011 and Kevin et al, 2014) asserted that venture capitalists provide not only finance but also advice to the entrepreneur on management matters such as financing policies which help firms to adopt more professional management systems. Venture capitalists thus enhance innovation practices through financing of various operations within SMMEs. A study by Wadhwa, Anu and Sandip (2013) concur that

successful entrepreneurs should become venture capitalists in order to invest in the next generation of entrepreneurs. The respondents' opinion on research and development responses was represented in Table 4.14.

Table 4.14: Research and Development

Indicator	Other (1)	Not at all (2)	rarely (3)	often (4)	Very often (5)	Modal Class
How often customers are involved in generating new product ideas	2%	29%	38%	27%	5%	3
Whether customers are concerns often addressed by the firm	0%	18%	33%	35%	13%	4
How often customers input directly influence the firms decision	1%	12%	33%	36%	18%	4
How often the firm modify a product when it finds that the customers would like the firm to do so	0%	30%	35%	26%	8%	3
How often management reward new product initiatives	0%	23%	27%	36%	15%	4
Whether management apportion part of the budget for innovative programs	0%	12%	35%	34%	19%	3
How often management offer training programs to prepare employees to offer high quality customer service	0%	22%	34%	27%	16%	3
How often employees are trained to handle the introduction of new products and services	0%	25%	30%	30%	16%	3
How often the firm source capital from entrepreneurs	0%	25%	31%	35%	8%	4
whether capital is sourced from entrepreneurs used to develop new products	0%	16%	33%	30%	21%	3
How often innovating firms are likely to be financed by venture capitalists	1%	18%	36%	32%	13%	3
How often venture based firms are faster in bringing their products to the market	0%	19%	30%	34%	17%	4

4.5.4 Commercialization

Internationalization

In relation to internalization the study sought to investigate the firms' involvement in export trade, the equipping of in-house technical teams, embracing of e-commerce and entry into new markets. Majority of respondents (37%) were of the view that the firms rarely equipped in-house technical teams, 33% often, 26% not at all, 4% very often and 1% other responses. Regarding embracing of e-commerce, 35% responded rarely, 33% often, 20% not at all and 10% very often. As to whether firms were involved in export trade, 34% were of the view not at all, 29% rarely 27% often, 6% other responses and 3% very often. As regarding new market entry, 35% responded rarely, 32% often, 22% not at all, and 11% very often. The results were summarized in Table 4.15.

The results of the findings agree with a study by Chih (2011) who asserted that internationalization helps firms to develop and acquire new resources which enhance innovation practices. The results also concur with the findings of a study by Joung, Jin and Woo (2015) who found that internationalization affected greatly the firm's financial and innovation performance. The modal class is three indicating that most internationalization responses were rarely. This implies that a small proportion of SMMEs operate outside their national boundaries. The management of SMMEs should enhance internationalization to enable them rip maximum benefits of export trade.

Technological Exploitation

On technological exploitation the study sought to investigate acquiring of external knowledge, utilization of new ways of marketing such as digital and social media, use of websites to promote products and the use of electronic data interchanged based solution. Majority of the respondents (37%) agreed that the firms often used websites to promote their products, 33% rarely, 19% not at all and 11% very often. Regarding utilization of new ways of marketing such as digital and social media, 35% responded

often, 34% rarely, 20% not at all and 10% very often. As for acquiring external knowledge 34% were of the view often, 31% rarely, 26% not at all, 8% very often and 1% other responses. As for using electronic data interchanged based solution, 33% were for often, another 33% rarely, 20% not at all, 12% very often and 2% other responses.

The findings are in agreement with a study by Li, Smith, Maggitti and Katila (2013) who asserted that technological exploitation linkages offer new products to a firm. Li et al (2013) agreed that the skills, knowledge and experience acquired and accumulated mainly through technological exploitation enhance innovation practices which then influence firm performance. The study confirms that technological exploitation activities influenced positively both innovation practices and firm performance. This study confirmed that technological innovation activities influenced the sales positively ultimately impacting on performance positively.

Market exploitation

Regarding market exploitation the study sought to investigate how often the firms develop new sales and distribution channels, adoption of new ways of connecting to customers and building of relationship, the specific product the firm markets and the involvement of marketing personnel in customers' future needs. Majority of the respondents (36%) agreed that the product the firm markets often depend on real market needs, 32% were for rarely, 17% not at all and 15% very often. As regards the firms adopting new ways of connecting to customers and building connections 35% responded often, 32% rarely, 18% not at all and 14% very often. Opinions regarding developing new sales and distribution channels had the responses, 33% often, 33% rarely, 28% not at all and 5% very often. As to whether marketing personnel spent time discussing customers future needs, 33% were of the view rarely, 27% often, 20% very often and another 20% not at all.

The results agreed with the findings by Jaakko (2013) who argued that market exploitation was an important element of marketing strategy that was among the most relevant success factors in introducing new products. Norazlina, Izaidin, Hasfarizal, Shahrina and Lai (2013) asserted that product development and market-related

exploitive capabilities were viewed as the value creating mechanisms through which entrepreneurial orientation affected performance. The findings were also in line with Libos, Skarmeas and Lages (2013) who stated that market exploitation involved the development of new knowledge about the firm's existing markets, products and abilities based on intensive search and experimentation along an existing knowledge dimension. This study confirmed that market exploitation may help a firm create a competitive edge through improved performance.

Market exploitation was an important element of marketing strategy that was arguably among the most relevant success factors in introducing new products (Jaakko, 2013). A study by Lisboa, Skarmeas and Lages (2013) stated that market exploitation involved the development of new knowledge about the firm's existing markets, products and abilities based on intensive search and experimentation along an existing knowledge dimension. Simultaneous investments in the exploitation of existing innovation practices capabilities of new products may help create a competitive edge. Chih (2011) suggested that market exploitation has two district phases: use and development of things that are already known. He defined development as the expansion of the firm's current stock of knowledge while the term use as the appropriation of economic returns of the current stock of knowledge. Product development and market-related exploitative capabilities were viewed as the value creating mechanisms through which entrepreneurial orientation affected performance (Norazlina, Izaidin, Hasfarizal, Shahrina & Lai, 2013). The results were shown in table 4.15.

Table 4.15: Commercialization

Indicator	Other (1)	Not at all (2)	rarely (3)	often (4)	Very often (5)	Modal Class
How often the firm is involved in export trade?	6%	34%	29%	27%	3%	2
How often the firm equips In-house technical teams?	1%	26%	37%	33%	4%	3
How often the firm embraces e-commerce?	0%	20%	35%	33%	10%	3
How often the firm enters new markets or increase current market shares?	0%	22%	35%	32%	11%	3
How often the firm acquires external knowledge?	1%	26%	31%	34%	8%	4
How often the firm utilizes new ways of marketing like digital and social media?	0%	20%	34%	35%	10%	4
How often the firm uses a website to promote its product	0%	19%	33%	37%	11%	4
Whether the firm use electronic data interchanged based solution	2%	20%	33%	33%	12%	3
How often the firm Develops new sales and distribution channels?	0%	28%	33%	33%	5%	3
How often the firm adopts new ways of connecting to customers and building relationships?	0%	18%	32%	35%	14%	4
The product the firm markets depend on real market needs	0%	17%	32%	36%	15%	4
The marketing personnel in the firm spend time discussing customers future needs with other functional department	0%	20%	33%	27%	20%	3

4.5.5 Entrepreneurial orientation

Innovativeness

Under innovativeness the study sought to investigate, the introduction of new product lines, production of new products designed to provide value to new and existing customers and business processes in the past five years. The results are in Table 4.16. Majority (36%) agreed that the firms had often introduced new product lines since their inception, 31% were of the view rarely, 28% very often and 5% not at all. Regarding evolution of business processes in the past five years, 35% responded often, 31% rarely, 21% very often and 13% not all. As for production of new products designed to provide value to new and existing customers 33% responded rarely, 30% often, 27% very often and 9% not at all.

The results supported the findings by Weibo, Weiwei, Bo and Check-Tech (2015) who concluded that innovativeness has the ability to support creativity, new ideas and experimentation which may result in new products/services. This study therefore confirmed that innovativeness can enhance performance of small and medium manufacturing enterprises in Kenya. Entrepreneurial orientation is a precursor of innovation practices and thus management of firms should be encouraged to adopt entrepreneurial orientation in order to develop innovative capabilities (Rosli, 2015).

Pro-activeness

As for pro-activeness the study sought to investigate ability to identify new opportunities, introduction of new products before competitors, ability to beat competitors to enter new markets and improvement of the equality or the number of features of a product/service before competitors. Majority of the respondents (42%) agreed that the firms rarely introduced new products before competitors, 29% were of the view often, 17% not at all and 12% very often. On the opinion whether the firms improve the quality or the number of features of its products/services before its competitors 39% were for rarely, 31% often, 15% very often and 15% not at all. As regards the ability to identify new opportunities, 36% responded often, 32% rarely,

26% not at all and 7% very often. Further opinion on the ability of the firm to beat competitors to enter new markets had 34% often, 30% rarely, 20% not at all and 15% very often. The results supported the findings by Eggers, Krans, Hughes, Susan and Sean (2013) who argued that pro-activeness is the pursuit of opportunities and competitive rivalry in anticipation of future demand to create change and shape the business environment. This study therefore confirmed that pro-activeness is an important dimension that should be pursued by any enterprise aspiring to improve its performance.

Risk Management

The risk variables sought in this study were whether mistakes were treated as a normal part of trying something new, how often the firms take informed risks, whether risk was encouraged in the firms and whether the firms took the risk of missing an opportunity with the same weight as that of risk failure. Majority of respondents (38%) agreed that firms often take informed risks, 33% responded rarely, 18% very often and 11% not at all. As to whether mistakes are treated as a normal part of trying something new, 36% responded rarely, 33% often, 20% not at all and 12% very often. Regarding how often risk taking was encouraged in the firm, 33% of the respondents were of the view often, 31% rarely, 20% very often, 15% not at all and 1% other responses. As to whether the firm take the risk of missing an opportunity with the same weight as that of risk failure 33% were of the view rarely, 30% often, 20% not at all and 16% very often. The results collaborate with the findings by Simiyu (2013) who argued that risk taking is the firm knowingly devote resources to projects with a chance of high returns but may also entail a possibility of high failure. This study confirmed that risk taking, innovativeness and pro-activeness were essential elements of entrepreneurial orientation for firms aspiring to grow and improve on their performance as shown in Table 4.16 below.

Table 4.16: Entrepreneurial orientation

Indicator	Other (1)	Not at all (2)	rarely (3)	often (4)	Very often (5)	Modal Class
How often has your firm introduced new product lines since its inception?	0%	5%	31%	36%	28%	4
Does the firm produce new products that are designed to provide value to new and existing customers?	0%	9%	33%	30%	27%	3
How often has your business processes gone through changes in the last 5 years	0%	13%	31%	35%	21%	4
How often is your firm able to identify new opportunities?	0%	26%	32%	36%	7%	4
Is your firm able to introduce new products before competitors?	0%	17%	42%	29%	12%	3
Does your firm beat competitors to enter new markets	0%	20%	30%	34%	15%	4
Does your firm improve the quality or the number of features of its products or services before its competitors	0%	15%	39%	31%	15%	3
Are mistakes treated as a normal part of trying something new?	0%	20%	36%	33%	12%	3
How often does your firm take informed risks?	0%	11%	33%	38%	18%	4
How often is risk taking encouraged in the firm	1%	15%	31%	33%	20%	4
Does your firm take the risk of missing an opportunity with the same weight as the risk of failure	0%	20%	33%	30%	16%	3

4.5.6 SMMEs Performance

Respondents' opinion on sales turnover had the following results, 60% were of the view that the firms rarely had a trend of increasing sales from the previous years, 39% were of the view often and 1% not at all. Regarding selling products online, 59% responded rarely and 41% often. As for the profitability of the firms, 59% of the respondents agreed that the firms rarely meet their projections, 39% were of the view often and 2% not at all. As to whether the price per unit has been increasing for the past five years, 57% were of the opinion, rarely, 42% often and 1% not at all. For responses relating to return on investments, 60% were of the view that the firms rarely use ROI as a measure of firms performance, 40% were of the view often and 1% not at all. As to whether ROI contributes to firm performance for the past five years 58% responded rarely, 41% often and 1% not at all. You and Liu (2010) concur that to capture different aspects of firm performance, multiple measures, that is, financial and non-financial should be employed. The results were summarized in Table 4.17.

Table 4.17: Performance of SMMEs

Indicator	Other (1)	Not at all (2)	rarely (3)	often (4)	Very often (5)	Modal Class
Does your firm have a trend of increasing sales from the previous years	0%	1%	60%	39%	0%	3
Does your firm sell its products online	0%	0%	59%	41%	0%	3
How often does your firm meet its profits projections	0%	2%	59%	39%	0%	3
Has the price per unit been increasing in the last five years	0%	1%	57%	42%	0%	3
How often does the firm use ROI as a measure of the firms performance	0%	1%	60%	40%	0%	3
Do you regard ROI as a high contributor to your forms performance in the last five years	0%	1%	58%	41%	0%	3

The other indicators used to measure performance which were on a continuous scale were net profits, net assets, return on investments and sales turnover. Due to their measures, they were analysed with the mean as their measures of central tendency and the standard deviation as a measure of dispersion. The mean net profit, net assets, return on investment (ROI) and sales turnover were found to be 31.26, 29.9, 70.6 and 1256.6 million respectively with standard deviations 14.6, 5.5, 7.5 and 30.5 across the 5 years. The standard deviation measures the deviation from the mean that shows the variability of the measure. A high standard deviation implies a high risk of a firm having a measure different from the mean. This implied that there was a declining performance of SSMEs for the last five years in terms of net profits, net assets, return on investments and sales turnover.

The study findings were in tandem with a study by Tarus and Ng'ang'a (2013) who revealed that small and medium manufacturing enterprises in Kenya have been facing critical challenges of low performance, declining trend in innovative activities and a high level of attrition. This is despite the fact that they are an important factor in the attainment of the Kenya vision 2030, which stipulates that the manufacturing sector should account for 20% of the GDP (RoK, 2007). Although Small and Medium Manufacturing Enterprises (SMMEs) accounted for 70% of Kenya's manufacturing sector (KIPPRA, 2014), their performance dropped from 5.6% in 2013 to 3.4% in 2014 (RoK, 2015). This infers that performance of SMMEs was on the decline trend thus they need to adopt innovation practices to boost their performance as shown in Table 4.18.

Table 4.18: Financial Performance of SMMEs

		2011	2012	2013	2014	2015	Mean	Std.	Min.	Max.
	N	‘000,000	000, 000’	‘000,000	000 ,000’	‘000, 000	‘000, 000	000, 000	‘000, 000	‘000, 000
Net Profit	215	40.3	35.2	30.4	27.3	23.1	31.26	14.6	23.1	40.3
Net Assets	215	20.7	34.5	24.8	16.5	16.8	29.9	5.5	16.5	34.5
Return on Investment (ROI)	215	122.2	80.4	65.6	55.4	29.8	70.6	7.5	29.8	122.2
Sales Turnover	215	1120	1520	1308	1234	1101	1256.6	30.5	1101	1520.

4.6 Statistical Modelling

At the inferential stage of analysis, the researcher sought to explore the nature of relationship between innovation practices and the performance of Small and Medium Manufacturing Enterprises in Kenya. Statistical techniques were adopted to determine the relationship between the independent variables and the dependent variable and further determined the levels of influence that creativity, organizational structure, research and development and commercialization had on the performance of Small and Medium Manufacturing Enterprises in Kenya. The analysis adopted for inferential analysis involved parametric estimations that required the variables used to be measured on a continuous scale. The indicators were measured on an ordinal categorical scale and the descriptive analysis used non-parametric techniques to measure central tendency. The latent variables which were for the study variable that resulted from the computation of total scores from factor analysis were resulting continuous measures of the constructs and therefore were used for parametric estimation.

4.6.1 Linear regression for Creativity and performance of SMMEs

The study assessed the influence of creativity on performance of Small and medium manufacturing enterprises in Kenya as stated in the first objective. Figure 4.1 shows the scatter plot of creativity and performance. The figure presented that all the plots

appeared in the first quadrate and the line of best of fit indicated an estimate line that was increasingly positively upwards. This implied that there was a positive linear relationship between creativity and performance of SMMEs. The study findings conformed by Asieh (2015) who investigated the relationship between creativity and job innovation in employees of an industrial company. The purpose of the study was to investigate the relationship between dimensions of creativity with performance.

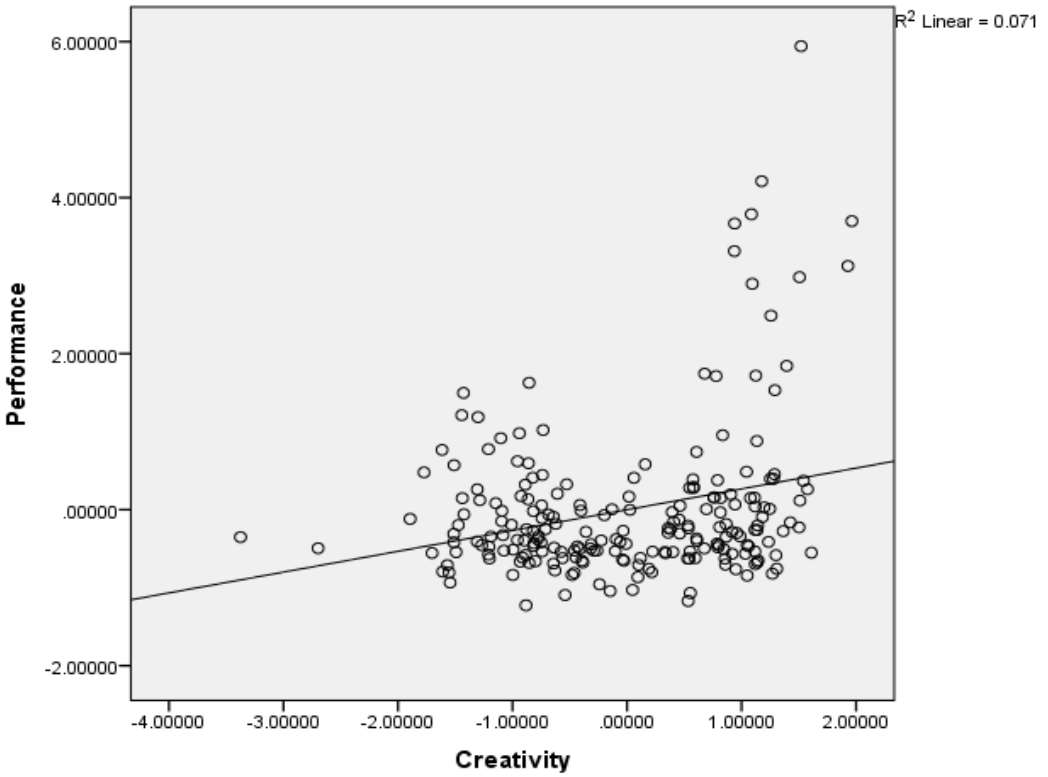

Figure 4.1: Scatter plot for Creativity and Performance

From the study results in Table 4.19 the researcher presented the results of the relationship and explanatory power of the regression model for the influence of creativity on performance of SMMEs. The R value of 0.267 showed a positive linear relationship between creativity and performance. The R^2 is the coefficient of determination which indicates that explanatory power of the independent variables was 0.071. This meant that 7.1% of the variation in performance was explained by the variation of creativity in the model. The remaining 92.9% of the variation in the

dependent variable was unexplained by this one predictor model but by other factors not included in the model

The ANOVA results showed that the influence of creativity on performance of SMMEs in Kenya was significant. The p-value of the F-statistic as shown in the ANOVA results was 0.000 which was less than 0.05 implying general significance of the one parameter model thus implying that creativity significantly influenced performance of SMMEs in Kenya. This is in line with the componential theory of creativity that is grounded in a definition of creativity as the production of new ideas or outcomes that are both novel and appropriate to some goal such as improving the overall performance of a firm (Amabile, 2012).

The study results revealed a statistically significant positive linear relationship between creativity and performance of SMMEs ($\beta = 0.267$, $t = 4.037$ and p-value = 0.000). The relationship was statistically significant because the p-value was less than 0.05. The model showed that every unit increase in the levels of Creativity lead to a 0.267 increase in performance of SMMEs in Kenya. This implied that organisations that promote elements of creativity such as technological expertise, teamwork and motivation tend to realise better performance. The resulting regression model that predicted the level of performance of SMMEs for a given level of Creativity was given by the equation below:

$Y = 0.000 + 0.267X$

Where

X is the independent variable, creativity

Y is the dependent variable, Performance of SMMEs

Several other studies also confirmed these results. (Lowely, 2011; Rick et al 2015, Hong et al, 2013) also agreed that creativity ascertain SMEs of their survival and improved performance. This is in line with a study by Celynon and Jasper (2011) who indicated that creativity facilitated effectiveness and efficiency in an

organization which enhanced better performance. In their study on Does creativity really lead to innovation? Ozge and Mette (2011) also identified creativity as one of the most important influential factors of innovation practices ultimately leading to firm performance. Their findings showed a positive relationship between creativity and firm performance.

Table 4.19: Regression results for creativity

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change statistics			
					R square change	df1	df2	sig. F. change
1	0.267a	0.071	0.067	0.966	0.071	1	213	0.000

a. Predictors: (constant), creativity

ANOVA[a]

Model	sum of squares	df	Mean square	F	sig. F. change
Regression	15.211	1	15.211	16.299	0.000b
Residual	198.789	213	0.933	0.000	
Total	214.000	214.000			

a. Dependent variable: Performance

b. Predictors: (constant), creativity

Coefficients

Model	Unstandardized coefficients		Standardized coefficients	t	sig. F. change
	B	Std. Error	Beta		
(Constant)	0.228	0.066		0	
Creativity	0.51	0.066	0.267	4.037	0.000a

a. Dependent variable: Performance

4.6.2 Linear regression for Organizational Structure and Performance of SMMEs

The second objective required the researcher to determine the effect of an organizational structure on performance of SMMEs in Kenya. Figure 4.2 presented that all the plots were in the first quadrate and the line of best of fit indicated an estimate line that was increasingly positively upwards. This implied that there was a positive linear relationship between organizational structure and performance of

SMMEs, since the relationship was a possible linear with a positive slope. The study findings were in agreement with the findings by Asieh (2015) who investigated the relationship between an organizational structure and performance of SMEs and established that there was a positive correlation between organizational structure and performance of SMEs.

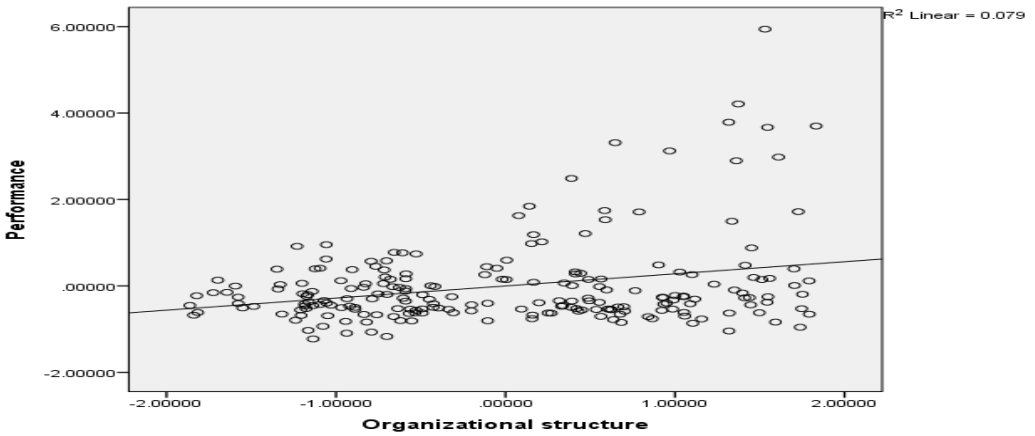

Figure 4.2: Scatter Plot for Organizational Structure and Performance

Table 4.20 shows that there was a positive linear relationship between organizational structure and performance. The R value of 0.280 showed the positive linear relationship between Organizational structure and performance. The R^2 was the coefficient of determination which indicated that the explanatory power of the independent variables was 0.079. This meant that 7.9% of the variation in performance was explained by the variation of organizational structure in the model. The remaining 92.1% of the variation in the dependent variable was unexplained by this one predictor model but by other factors not included in the model. This is in line with a study by Tran and Tian (2013) who found out that flexible organizational structure characterized by low levels of formalization and centralization best promoted innovation and improved performance of firms.

The ANOVA results showed that the influence of organizational structure on performance of SMMEs in Kenya was significant. The p-value of the F-statistic as shown in the ANOVA results was 0.000 which was less the 0.05 implying general

significance of the one parameter model thus implying that an organizational structure significantly influences performance of SMMEs. This is in consistent with a study by Tran and Tian (2013) who found out that a flexible organizational structure characterized by low levels of formalization and centralization best promoted innovation and better performance of firms.

The regression results showed that organizational structure had a significant positive influence on the performance of SMMEs in Kenya ($\beta = 0.28$, $t = 4.262$ and p-value = 0). From the regression results, the p-value< 0.05 implied significance of the coefficient of organizational structure in the model. The model showed that with every unit increase in the levels of organizational structure there was a 0.28 increase in the levels of performance of SMMEs in Kenya. A further implication is that a firm with low levels of organisation structures, a firm that focuses on centralisation and formalisation rather than professionalism would possibly experience low performance. The equation below shows the resulting regression model that predicts the level of performance of SMMEs for a given level of Organizational structure:

$Y = 0.000 + 0.280X_2$Where; X is the independent variable, Organizational structure, Y is the dependent variable, Performance of SMMEs

The teleological change theory proposes that changes in organizational structure and the overall flexibility of the firm is one of the most vital factors in a firm's development and success. The contingency theory of organizational structure articulates that an organization in fit enjoys higher performance as a result of generating surplus resources which lead to growth in innovation, sales and size (Hamilton & Shergill, 2010). A study by Palmer and Wright (2010) on innovation practices in small firms also found out that an organization structure was a significant predictor of innovation with less centralized and less formalized firms innovating with somewhat greater frequency than firms with more rigid structures. Flexible organizational structures facilitates effectiveness of firms through emphasizing, absorbing professionals with skills that allow the employees to better serve the company by solving problems and interacting with customers and workers as indicated by Latif (2014).

Table 4.20: Regression results for organizational structure

Model summary								
					Change statistics			
model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R square change	df1	df2	sig. F. change
1	0.28a	0.079	0.074	0.962	0.079	1	213	0.000

a. Predictors: (constant), organizational structure

ANOVA[a]

model	sum of squares	df	Mean square	F	sig. F. change
Regression	16.816	1	16.816	18.165	.000b
Residual	197.184	213	0.926	0.000	
Total	214	214			

a. Dependent variable: Performance

b. Predictors: (constant), organizational structure

Coefficients

model	Unstandardized coefficients		Standardized coefficients	t	sig. F. change
	B	Std. Error	Beta		
(Constant)	2.246	0.066		0	
Creativity	0.498	0.066	0.28	4.262	0.000a

a. Dependent variable: Performance

4.6.3 Linear regression for Research and Development and Performance of SMMEs

The study also fitted a regression model to determine the significance of the influence of Research and Development on performance of SMMEs in Kenya. Figure 4.3 shows the scatter plot of Research and Development and performance. The study findings showed that all the plots are in the first quadrate and the line of best of fit indicated an estimate line that was increasingly positively upwards. This implies that there was a positive linear relationship between research and development and performance of SMMEs since the relationship was a possible linear with a positive slope. Pang and Chich (2012) studied R & D management on new product development performance in Taiwan's Hi-Tech industries and found out that R & D management ability had significant influences on new product development performance.

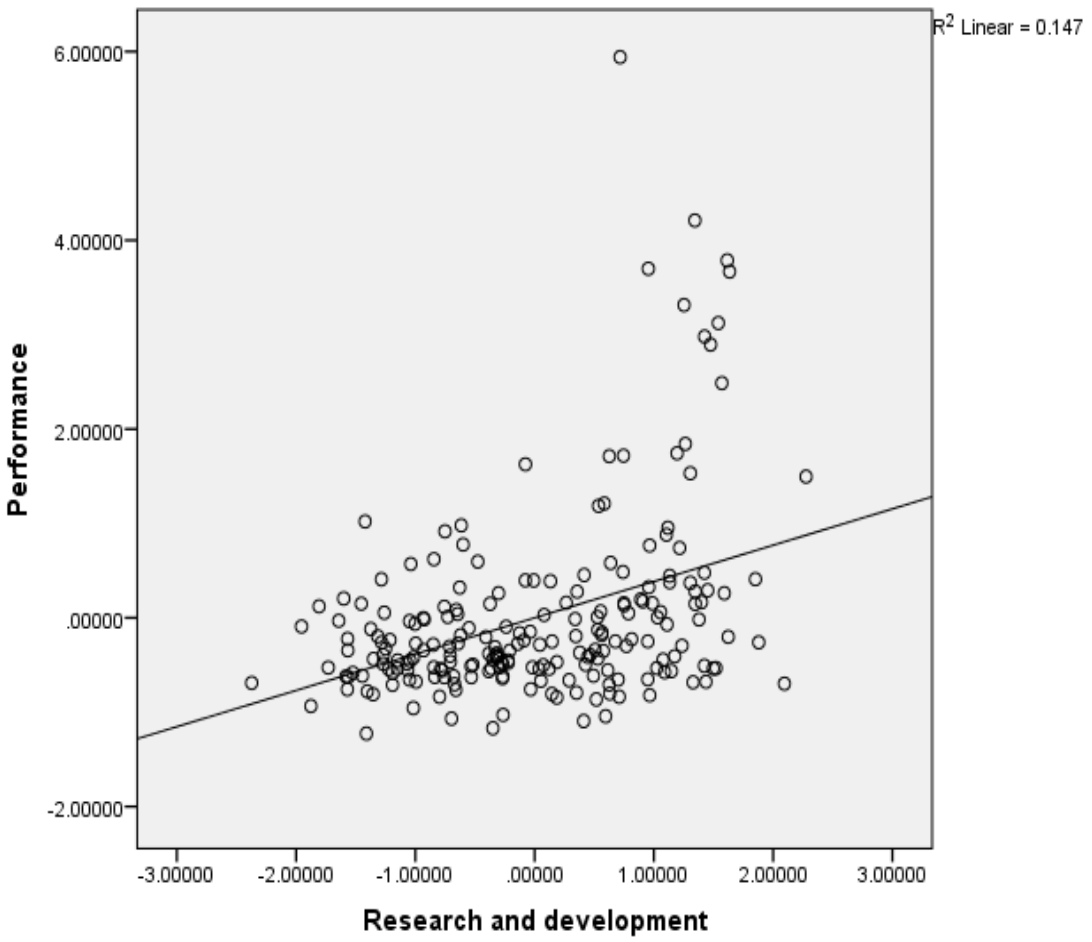

Figure 4.3: Scatter plot for Research and Development and performance

In Table 4.21 the researcher presents the results of the relationship and explanatory power of the regression model for the influence of Research and Development and performance. The R value of 0.384 showed a positive linear relationship between Research and Development and performance. The R^2 is the coefficient of determination which indicates that explanatory power of the independent variable was 0.147. This means that 14.7% of the variation in performance was explained by the variation of research and development in the model. The remaining 85.3% of the variation in the dependent variable was unexplained by this one predictor model but by other factors not included in the model. The study findings were in agreement with findings by Pang and Chich (2012) results on R & D management on new product development performance who established that R &D management influenced new product development and firm performance.

The ANOVA results showed that the influence of Research and Development on performance of SMMEs in Kenya was significant. The p-value of the F-statistic as shown by ANOVA results was 0.000 which was less than 0.05 implying general significance of the one parameter model thus implying that Research and Development significantly influenced performance of SMMEs. Organizational learning theory explains the skill sharing motives on Research and Development in SMEs. The theory proposes that the ability of firms to acquire knowledge and transfer it into a competitive weapon has long been part of the research agenda for SMEs improved performance (Hamel, 2011)

The regression results in Table 4.21 revealed that research and development had a significant positive influence on performance of SMMEs in Kenya ($\beta = 0.385$, $t = 6.052$ and p-value = 0) the p-value of the coefficient for research and development was less than 0.05. The model showed that every unit increase in the levels of Research and development lead to a 0.385 increase in performance of SMMEs in Kenya. This was an implication that a firm that improves on research and development by engaging its customers and involves top management and one that tend to source for venture capital had higher possibility of realising better performance. The resulting regression model that predicted the level of performance of SMMEs for a given level of Research and Development was given by the equation: $Y = 0.000 + 0.385X_3$

Where; X is the independent variable, research and development, Y is the dependent variable, Performance of SMMEs

The resource based view theory suggests that a firm that invests in valuable resources like Research and Development and capabilities which are not possible to imitate have an added advantage over other firms in terms of improved performance (Chao-Hung, 2011). Vries (2012) agree that venture capital had a positive relationship with innovation and improved performance of a firm. A study by Wang *et al* (2013) ascertained that enterprise's top managers are capable of improving performance by customer involvement in innovation practices. Andrea and Marco (2012) study on succeeding in innovation, key insights on the role of Research and Development and

Technological acquisition drawn from company data found out that Research and Development significantly increased overall company innovation performance from sales generated from innovative products. A study by Andreas *et al* (2015) concur that highly educated and more experienced owners or managers were more successful in opportunity recognition, thereby directly controlling ideas and insights to the firm's innovative performance.

Table 4.21: Regression results for research and development

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change statistics: R square change	df1	df2	sig. F. change
1	0.384a	0.147	0.143	0.928	0.147	1	213	0.000

a. Predictors: (constant), research and development

ANOVA[a]

Model	sum of squares	df	Mean square	F	sig. F. change
Regression	31.523	1	31.523	36.624	.000b
Residual	182.473	213	0.861		
Total	214	214			

a. Dependent variable: Performance

b. Predictors: (constant), research and development

Coefficients

Model	Unstandardized coefficients		Standardized coefficients	t	sig. F. change
	B	Std. Error	Beta		
(Constant)	3.763	0.063		0.004	0.996
Creativity	0.563	0.064	0.385	6.052	0.000a

a. Dependent variable: research and development

4.6.4. Linear regression for Commercialization and Performance of SMMEs

In order to be able to assess the influence that commercialization had on performance of SMMEs in Kenya, the study fitted a regression model to determine the significance of the influence. The scatter plot on Figure 4.4 shows the relationship between

commercialization and performance. The line of best fit of the plot showed that the relationship was a possible linear with a positive slope. The study findings showed that all the plots were in the first quadrate and the line of best of fit indicated an estimate line that was increasingly positively upwards. This implied that there was a positive linear relationship between research and development and performance of SMMEs since the relationship was a possible linear with a positive slope.

The study findings corroborate with findings by Joung, Jin and Woo (2015) who studied the effects of commercialization capability in small and medium sized businesses performance. The research established a positive relationship between factors in the process of commercializing and a firm's financial and innovation performances. The small and medium-sized firms seek to overcome the drawbacks coming from geographic and proximity by means of open innovation during the process of commercializing the goods with their transferred techniques to increase their performance.

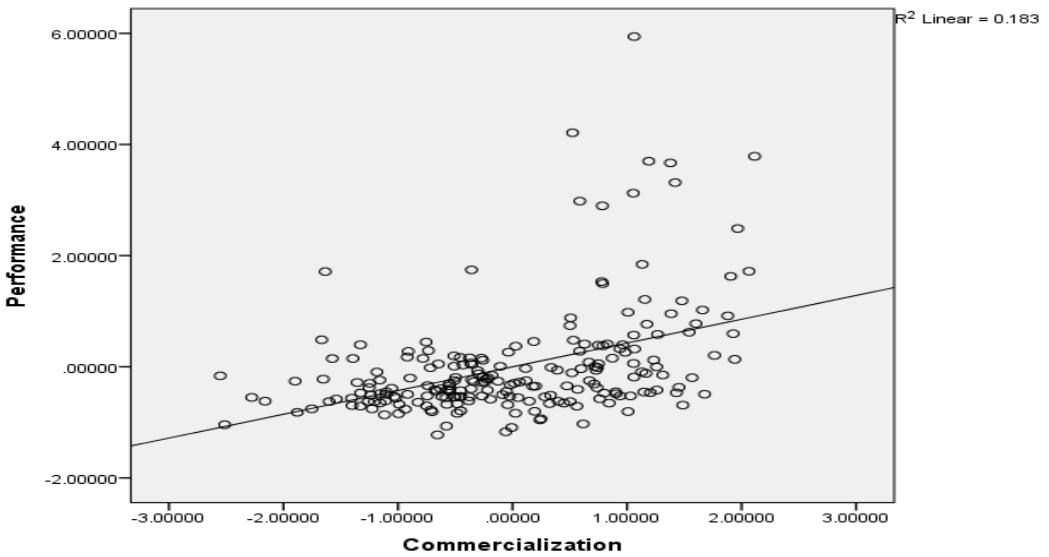

Figure 4.4: Scatter plot for commercialization and performance

Table 4.22 shows a summary of regression model fitness. On the table, the study shows the relationship and explanatory power of the regression model for the

influence of commercialization and performance. The R value of 0.428 showed a positive linear relationship between commercialization and performance. The R^2 is the coefficient of determination which indicated that explanatory power of the independent variable was 0.183. This means that 18.3% of the variation in performance was explained by the variation of commercialization in the model. The remaining 81.7% of the variation in the dependent variable was unexplained by this one predictor model but by other factors not included in the model. The results are in agreement with the study findings by Madsen and Smith (2011) who found out that commercialization was essential for the overall performance of firms.

The ANOVA results showed that the influence of commercialization on performance of SMMEs in Kenya was significant. The p-value of the F-statistic as shown in the ANOVA table was 0.000 which was less than 0.05 implying general significance of the one parameter model thus implying that commercialization significantly influenced performance of SMMEs. The results are in line with a study by Madsen and Smith (2011) who found out that commercialization was essential for the overall performance of firms. The rival theory sought to identify why some organizations were better than others in bringing new innovations to the market that further influence their performance (Datta, 2011)

The regression results revealed that commercialization had a significant positive influence on performance of SMMEs in Kenya (β= 0.428, t = 6.904 and p-value = 0) the p-value of the coefficient of commercialization was less than 0.05. The estimated model showed that with every unit increase in the levels of Commercialization there was a 0.428 increase in performance of SMMEs in Kenya. This shows that improving levels of commercialisation by engaging in foreign trade and exploitation of modern technology and new markets lead to a firm's improved performance. To predict the level of performance of SMMEs for a given level of Commercialization, the equation below was generated from the model results.

$Y = 0.000 + 0.428X_4$; Where; X is the independent variable, commercialization, Y is the dependent variable, Performance of SMMEs. The Real Options Theory provides that commercialization of innovation earns a return on the investment in innovation

which contributes to overall firm performance (Hamel, 2011). Joung, Jin and Woo (2015) study on "The effects of commercialization capability in SMEs business on business performance" found out that internationalization affected greatly the firm's financial performance and innovation performance.

Table 4. 22: Regression results for commercialization

Model summary								
					Change statistics			
	R	R Square	Adjusted R Square	Std. Error of the Estimate	R square change	df1	df2	sig. F. change
1	0.428a	0.183	0.179	0.906	0.183	1	213	0.000

a. Predictors: (constant), commercialization

ANOVA[a]					
Model	sum of squares	df	Mean square	F	sig. F. change
Regression	39.133	1	39.133	47.667	.000b
Residual	174.867	213	0.821		
Total	214	214			

a. Dependent variable: Performance
b. Predictors: (constant), commercialization

Coefficients					
Model	Unstandardized coefficients		Standardized coefficients	t	sig. F. change
	B	Std. Error	Beta		
(Constant)	4.150	0.062		0	1
Creativity	0.553	0.062	0.428	6.904	0.000a

a. Dependent variable: commercialization

4.6.5 Entrepreneurial Orientation (Moderation Effect Test)

The study sought to investigate the moderating effect of Entrepreneurial orientation on the relationship between innovation practices and performance of SMMEs. To draw conclusions on the objective regarding the moderating effect of Entrepreneurial orientation on the relationship between innovation practices and performance of Small and Medium Manufacturing Enterprises in Kenya, the Moderated Multiple Regression (MMR) model was adopted. This model involved generating a

transformation variable as an interaction variable between Entrepreneurial orientation and the innovation practices. The effect of a moderating variable was characterized statistically as an interaction that affects the direction and/or strength of the relationship between dependent and independent variables (Fakhrul & Selvamalar, 2011). The interaction variables were generated as intersections between the independent variables and entrepreneurial orientation. The interaction variables were then used in the hierarchical moderated multiple regressions.

Table 4.23 presents the analysis of the moderating effects from the moderated multiple regression analysis of innovation practices and performance of SMMEs. Hierarchical regression was used as a stepwise regression analysis that produced and tested three models. Model one only constituted innovation practices without considering the moderating variable. Model two was fitted including the moderating variable Entrepreneurial orientation and model 3 included the interaction variables between the innovation practices and the moderator Entrepreneurial orientation. The fitness of all the three models were tested using, R^2 and ANOVA (F) and the coefficients of the models tested using T-statistics. Model 1 results produced an R-square of 0.563 implying that the variation in the independent variable in the model explained 56.3% of the variation in performance of SMMEs in Kenya.

The second model was found to have an R-square of 0.565. This shows that the variance of performance explained in the 2nd model was 56.5%, with an R-square change of 0.002. The R-square change in the second step was however insignificant as shown by the change in F that had a p-value of 0.298 which is greater than 0.05. the P-value of the change in F being greater than 0.05 implied that the direct inclusion of the moderating variable Entrepreneurial orientation had no significant change in the R-square and no significant improvement on the model from model one to model 2.

The third model was fitted adding the interaction variables of the moderator and other independent variables. The third step of the MMR modelling had an R-square of 0.588 implying that the variation in performance explained in the 3rd model was 58.8%. Model three was an improvement of the first two models with a significant

positive change in the R-square. The change in R-square for model three was 0.023 which was significant as shown by the P-value of the F-change which was found to be less than 0.05. The p-value of the F-change was 0.001. This implies that inclusion of the interaction variables significantly improved the model. This further implies that the moderating variable entrepreneurial orientation had a moderating influence on the relationship between innovation practices and performance of SMMEs.

The study by Arshad, Rasli, Afiza and Zain (2013) on the impact of entrepreneurial orientation on business performance: A study of technology based SMEs in Malaysia was represented by five dimensions of entrepreneurial orientation; innovativeness, pro-activeness, risk taking, competitive aggressiveness and autonomy. The findings revealed that only four dimensions of entrepreneurial orientation had influence towards business performance; Innovativeness, pro-activeness, risk taking and competitive aggressiveness. While no correlation were found on autonomy in the context technological based SMEs in Malaysia.

Model 1 results showed that all the innovation practices had a significant influence on performance of SMMEs. The coefficients also showed a positive relationship between all the variables and performance of SMMEs. This is according to the significance values and the coefficients obtained against each variable. The result of the model generated an equation given as:

$$Y = -0.002 + 0.300X_1 + 0.367X_2 + 0.335X_3 + 0.589X_4$$

Model 2 results showed that addition of the moderating variable to the initial model did not improve the model. It however found that in the joint model with the innovation practices, the moderating variable Entrepreneurial orientation also had insignificant direct influence on performance of SMMEs. The p-value of the t-statistic for the variable Entrepreneurial orientation was found to be 0.298 which was greater than 0.05. The result of the 2nd model generated an equation given as:

$$Y = -0.002 + 0.286X_1 + 0.359X_2 + 0.329X_3 + 0.596X_4 + 0.053Z$$

The results for model 3 showed that addition of the interaction variables significantly improved the model on the influence of the determinants on performance of SMMEs. The change statistics showed a p-value of 0.000 which was less than 0.05 which implied an improvement on the explanatory power by the moderating effect. The individual interaction variables were also found to all have significant influence on performance. The interaction variables between creativity and organisation structure and Entrepreneurial orientation were found to have p-values of 0.007 and 0.031 which were both less than 0.05 implying significance at 0.05 level of significance. The final model generated an equation given by;

$$Y = -0.069 + 0.280X_1 + 0.340X_2 + 0.317X_3 + 0.565X_4 + 0.054Z + 0.142X_1 * Z + 0.108X_2 * Z + 0.034X_3 * Z + 0.058X_4 * Z$$

Avlonitis and Salavou (2011) in their research study found out that firms labelled as active entrepreneurs were more active in innovation practices introduction and more efficient in asset exploration. Pro-active and risk-seeking orientation of active entrepreneurs was demonstrated by innovation practices featuring more unique characteristics of the market leading to higher performance. These findings concur with Boso and Cadogan (2012) who posited that the impact of innovation practices on performance depends on firm's entrepreneurial orientation. They further stated that entrepreneurial orientation when used as a moderator strengthens the relationship between innovation practices and firm performance. The findings are also in line with the existing evidence that delivering a differentiated product with unique customer benefits and superior value for the user is one of the most critical success factors. Alegre and Chiva (2014) in their study on entrepreneurial orientation, innovation and firm performance found out that entrepreneurial orientation with risk taking, pro-activeness and innovation leads to higher performance.

These findings were in agreement with the contentions by Boso and Cadogan (2012) that the impact of innovation practices on performance depends on firm's entrepreneurial orientation. They established that entrepreneurial orientation and market orientation are drivers of innovation practices and that entrepreneurial

orientation with risk taking and innovativeness enhances firm growth but autonomy does not. Abebe (2014) in his study on electronic commerce adoption, entrepreneurial orientation and small medium-sized enterprise (SME) performance found out that entrepreneurial orientation with risk taking, innovation and proactiveness promotes firm growth. In this study entrepreneurial orientation with risk taking, pro-activeness and innovativeness were the key dimensions which moderated the relationship between innovation practices and SMMEs performance.

Table 4.23: Moderating Effect Model Estimation

	Model 1			Model 2			Model 3		
	Beta	T	P-value	Beta	T	P-value	Beta	T	P-value
Independent variable									
(Constant)	-0.002	-0.048	0.962	-0.002	-0.047	0.963	-0.069	-1.426	0.156
Creativity	0.300	5.931	0.000	0.286	5.484	0.000	0.280	5.522	0.000
Organizational structure	0.367	7.582	0.000	0.359	7.336	0.000	0.340	7.093	0.000
Research and development	0.335	7.102	0.000	0.329	6.915	0.000	0.317	6.640	0.000
Commercialization	0.589	12.025	0.000	0.596	12.050	0.000	0.565	11.231	0.000
Entrepreneurial orientation				0.053	1.043	0.298	0.054	1.108	0.029
Interaction Effect									
Creativity intersection Entrepreneurial orientation							0.142	2.745	0.007
Organizational structure intersection Entrepreneurial orientation							0.108	2.175	0.031
Research and development intersection Entrepreneurial orientation							0.034	0.707	0.480
Commercialization intersection Entrepreneurial orientation							0.058	1.156	0.249
Model fitness									
R	0.750			0.752			0.767		
R Square	0.563			0.565			0.588		
Adjusted R Square	0.554			0.555			0.576		
ANOVA F	67.242		0.000	54.033		0.000	49.261		0.000
R Square Change	0.563			0.002			0.023		
Change in F	67.242		0.000	1.087		0.298	11.613		0.001

4.7. Hypotheses Testing

The study hypotheses were tested based on the results from the regression results between the independent variables and dependent variable. The rejection criteria for insignificant variables were to reject a null hypothesis if the p-value of the t-statistic of the independent variable was less than 0.05 level of significance.

$H_{01:}$ Commercialization does not influence the performance of SMMEs

From the study results in Table 4.22, the p-value of the t-statistic for this independent variable was found to be 0.000. Since the p-value 0.000 was less than 0.05, the null hypothesis was rejected and the alternative hypothesis was taken to conclude that commercialization significantly influenced the performance of SMMEs.

H_{02}: An organizational structure does not influence the performance of SMMEs

According to the study results in Table 4.20, the p-value of the t-statistic for this independent variable was found to be 0.000. Since the p-value 0.000 was below 0.05, the null hypothesis was rejected and the alternative hypothesis was taken to conclude that organizational structure significantly influenced the performance of SMMEs.

H_{03}: Research and Development does not influence the performance of SMMEs

From the study results in Table 4.21, the p-value of the t-statistic for this independent variable was found to be 0.000. Since the p-value 0.000 was below 0.05, the null hypothesis was rejected and the alternative hypothesis was taken to conclude that research and development significantly influenced the performance of SMMEs.

H_{04}: Creativity does not influence the performance of SMMEs

Table 4.19 shows that the p-value of the t-statistic for this variable was found to be 0.000. Since the p-value 0.000 was below 0.05, the null hypothesis was rejected and the alternative hypothesis was taken to conclude that creativity significantly influenced the performance of SMMEs.

$H_{05:}$ Entrepreneurial orientation does not moderate the relationship between innovation practices and performance of SMMEs.

Table 4.23 shows that the P-value of the change in R^2 for model 3 was less than 0.05, and therefore the null hypothesis was rejected and the conclusion was that Entrepreneurial orientation moderated the relationship between innovation practices and performance of SMMEs. Addition of the moderating effects of entrepreneurial orientation to the model improved the explanatory power. This conclusion concurs with Boso and Cadogan (2012) who studied entrepreneurial orientation and organizational structure as drivers of innovation practices success and found out that entrepreneurial orientation with risk taking and innovativeness enhances firm growth but autonomy does not. The conclusion from the fitted model showed that the moderating variable entrepreneurial orientation had a positive moderating effect on the relationship between creativity and performance. Increasing the levels of entrepreneurial orientation would increase the rate of influence that creativity had on performance. A graphical presentation from the model is shown in Figure 4.5. It shows that with high entrepreneurial orientation, increases in creativity resulted into higher and faster influence on performance than in cases of low entrepreneurial orientation.

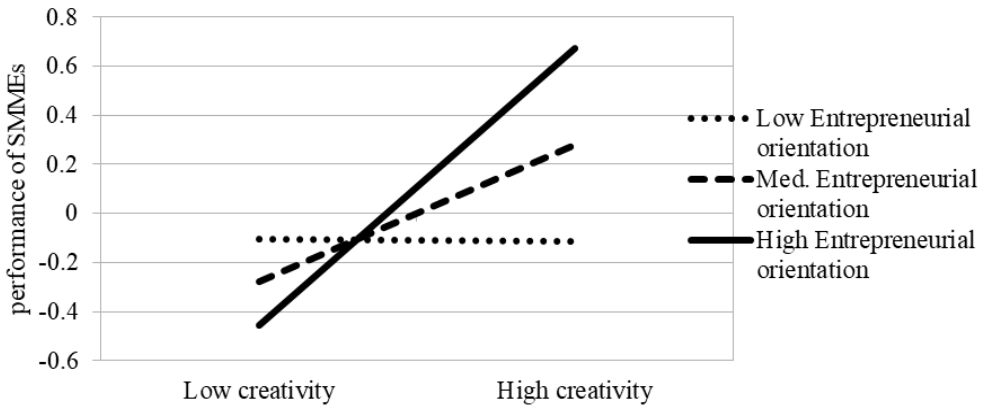

Figure 4.5: Moderating effect of EO on the Relationship between Creativity and Performance.

In their study Parkman, Holloway and Sebastiao (2012) on Creative industries: Aligning entrepreneurial orientation and innovation capacity, they concluded that firms in the creative industries must align their entrepreneurial management and creative capabilities to successfully recognise and exploit market place opportunities. Im and Workman (2011) in their study on creativity and new product performance in high-technology firms found out that creativity was a necessary determinant of innovation and that it influenced performance of high technology firms to a great extent.

The conclusion also showed that the moderating variable entrepreneurial orientation had a positive moderating effect on the relationship between organisational structure and performance. Increasing the levels of entrepreneurial orientation would also increase the rate of influence that organisational structure had on performance. A graphical presentation from the model is shown in Figure 4.6 which shows that with high entrepreneurial orientation, increases in organisational structure resulted into higher and faster influence on performance than in cases of low entrepreneurial orientation.

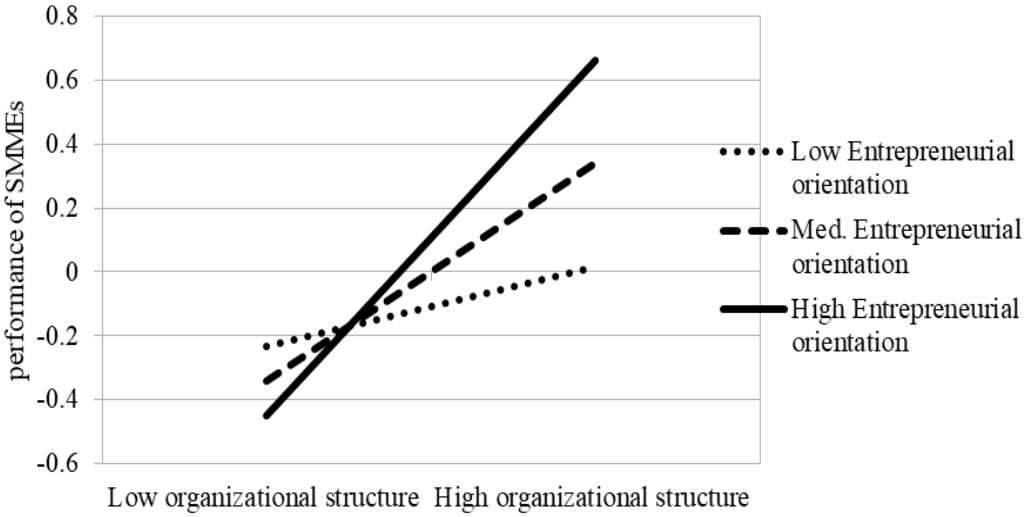

Figure 4.6: Moderating Effect of EO on the relationship between Organisational Structure and Performance.

In the province of Udine, Mason, Floreani, Miani, Beltrame and Cappellte (2015) in their research study concluded that there was a positive and significant impact of innovativeness, risk and aggressiveness in explaining performance. The study provided an insight that entrepreneurial orientation dimensions played a significant role in driving performance. The study embraces the suggestion of some authors (Koe, 2013; Fatoki, 2012) to consider the moderating role of different variables on the entrepreneurial orientation-performance link in a multi-dimensional conceptualisation of entrepreneurial orientation. The organisational structure is one of the factors that play a decisive role in the organizational entrepreneurship performance. Lack of complexity of the organisational structure and the consistency of the structure with the organisational criteria will lead to the improvement of organisational entrepreneurship (Shoghi, 2013).

Lumpkin *et al*. (2010) stated that autonomy had a direct relationship with centralisation and was the most effective dimension of the entrepreneurial orientation that lead to the improvement of organisational performance. The managers of metal industries should reduce the scale of formalisation and complexity of the organisational structure on one hand and make the employees participate in the decision of the organisation on the other hand to make them ready to nurture their entrepreneurial orientation and improve their performance. Given the retention of all the variables in the initial model, the optimal model included all the variables studied in the model. Firm performance was influenced by all the studied innovation practices factors (commercialization, organizational structure, Research and Development and creativity). Entrepreneurial orientation also had a moderating effect on the relationship between the innovation practices and performance of Small and Medium Manufacturing Enterprises in Kenya.

Table 4.24: Summary of Hypotheses Testing

Hypothesis	Coefficient P-Values	Conclusion
H_{01}: Creativity does not influence the performance of SMMEs.	P=0.000<0.05	Reject H_0 Accept H_a
H_{02}:An organizational structure does not influence the performance of SMMEs	P=0.000<0.05	Reject H_0 Accept H_a
H_{03}: Research and Development does not influence the performance of SMMEs	P=0.000<0.05	Reject H_0 Accept H_a
H_{04}:Commercialization does not influence the performance of SMMEs	P=0.000<0.05	Reject H_0 Accept H_a
H_{05}:Entrepreneurial orientation does not moderate the relationship between innovation practices and performance of SMMEs	P=0.029<0.05	Reject H_0 Accept H_a

4.8. Multiple Regression (Combined Effect Model)

In Table 4.25 the researcher presents the results of the relationship and explanatory power of the regression results for the influence of innovation practices and performance of SMMEs. The R value of 0.750 showed a positive linear relationship between innovation practices and performance. The R^2 is the coefficient of determination which indicates that explanatory power of the independent variables was 0.563. This means that 56.3% of the variation in performance was explained by the variation of the predictors in the model. The remaining 43.7% of the variation in the dependent variable was unexplained by this one predictor model but by other factors not included in the model. This shows that the model had a good fit since the value was above 50%.This concurs with Graham (2002) that R-squared is always between 0 and 100%: 0% indicates that the model explains none of the variability of

the response data around its mean and 100% indicates that the model explains the variability of the response data around its mean. In general, the higher the R-squared, the better the model fits the data. The adjusted R square was slightly lower than the R square which implied that the regression model may be over fitted by including too many independent variables. Dropping one independent variable will reduce the R square to the value of the adjusted R square.

The study further used Analysis of Variance (ANOVA) in order to test the significance of the overall regression model. Green and Salkind (2003) posited that Analysis of Variance helps in determining the significance of relationship between the research variables. The results of Analysis of Variance (ANOVA) for regression coefficients in Table 4.25 revealed that the significance of the F statistics was 0.000 which was less than 0.05 and the value of F (67.578) being significant at 0.000 confidence level. The value of F was large enough to conclude that the set coefficients of the independent variables were not jointly equal to zero. This implies that at least one of the independent variables had an effect on the dependent variable.

Table 4.25 presents the beta coefficients of all independent variables versus performance of SMMEs. As can be observed from Table 4.25, commercialization (X_1) had a coefficient of 0.589 which was greater than zero. The t-statistic was 12.025 which had a p-value of 0.000 which was less than 0.05 implying that the coefficient of X_1 was significant at 0.05. This shows that commercialization had a significant positive influence on performance of SMMEs.

The coefficient of organizational structure (X_2) was 0.367 which was greater than zero. The t-statistic of this coefficient was 7.582 with a p value of 0.000 which was less than 0.05. This implied that the coefficient 0.367 was significant. Since the coefficient of X_2 was significant, it shows that organizational structure had a significant effect on performance of SMMEs

Table 4.25 also shows that research and development (X_3) had a coefficient of 0.335 which was greater than zero. The t-statistic was 7.102 which had a p-value of 0.000 which was less than 0.05 implying that the coefficient of X_3 was significant at 0.05.

This shows that research and development had a significant positive influence on performance of SMMEs.

Table 4.25 further shows that creativity (X_4) had a coefficient of 0.300 with a t-statistic of 5.931 which had a p-value of 0.000 which was less than 0.05. This implies that the coefficient of X_4 was significant at 0.05. This shows that creativity had a significant positive influence on performance of SMMEs.

Finally, the constant term was -0.002. The constant term is the value of the dependent variable when all the independent variables are equal to zero. The constant term had a p- value of 0.120 which was greater than 0.05. This implies that the constant term was insignificant. The multiple regression for performance of SMMEs was therefore an equation through the origin. If all the independent variables take on the values of zero, there would be zero performance of SMMEs.

The results of this study were consistent with the findings from other studies that have emphasized the significant role of creativity and organizational structure on performance of SMEs. The conclusion was similar with the studies of Noruzy, Dalfard, Azhdari, Nazai and Rezazadeh (2013); Samad (2012); Koech and Namusonge (2012). However, the conclusions showed partial similarities with the studies of Obiwiere (2011); Ojokuku, Odetayo and Sajuyigbe (2012).

Table 4.25 presents the coefficients of the model. The regression results revealed that innovation practices had significant positive influence on performance of SMMEs in Kenya. All the four factors of innovation practices had estimated coefficients that had positive influence. The estimated coefficients of creativity, organizational structure, research and development and commercialization were found to be 0.300, 0.367, 0.335 and 0.589 respectively with p-values all equal to 0.000. Since the p-values were less than 0.05, it implies that all the variables had significant joint influence on performance of SMMEs in Kenya. The equation formed from the estimated model was given by:

$$Y = -0.002 + 0.589X_4 + 0.367X_2 + 0.335X_3 + 0.300X_1$$

A study by Sumo (2010) on corporate Entrepreneurship: An organizational structure elements, found out that not all dimensions of organizational structure influence entrepreneurial orientation of an established organization. The organizational structure elements that have a high impact on entrepreneurship within an established organisation are formalization, span of control and centralisation. Organisations pursuing innovation should ascertain that they have low to moderate levels of centralisation, a moderate level of formalisation and the span of control should vary both moderate wide to a wide span of control. Shoghi and Safuepoor (2015) in their research study on the effects of organizational structure on entrepreneurial orientation of the employees showed that organic structures of the organisations lead to the increase of creative activities of the employees considerably. The findings are consistent with Palmer (2010) in his study on Innovation practices in small firms: An empirical study, who also found out that managers of SMEs should reduce the scale of the formalisation and complexity of the organisational structure on one hand, and make the employees participate in the decisions of the organisation on the other hand to make them ready to nurture their creativity.

Table 4.25: Multiple Regression

Model Summary, Multiple Regression

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.750	0.563	0.554	0.669

ANOVA, Multiple Regression

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	120.422	4	30.106	67.578	0.000
Residual	93.574	210	0.4455		
Total	213.996	214			

Coefficients, Multiple Regression

Variable	β coefficient	Std. Error	T	P-value.
(Constant)	-0.002	0.046	-0.048	0.120
Commercialization	0.589	0.049	12.025	0.000
Organizational structure	0.367	0.048	7.582	0.000
Research and development	0.335	0.047	7.102	0.000
Creativity	0.300	0.051	5.931	0.000

4.9 Diagnostic Tests of Variables

To assess the effect of innovation practices on Performance of SMMEs in Kenya, the study used a statistical model that was based on Ordinary Least Squares regression (OLS). OLS model fittings were based on assumptions of normality of the residuals, non-autocorrelation of the residuals, homoscedasticity of the residuals and non-multicollinearity of the predictors. The fitted model was therefore tested to ensure it met the assumptions of OLS estimation.

4.9.1 Normality

The model fitted assumed that the residuals follow a normal distribution. The study thus had to confirm that the assumption applied for the data collected. A classical assumption when fitting a maximum likelihood estimate model is that the residuals are normally distributed and the residuals are likely to be normally distributed if the dependent variable itself also follows a normal distribution (Shenoy & Madan 1994). A histogram of the residuals was plotted as shown in Figure 4.7. The histogram showed a virtual indication of a normal distribution curve which was not skewed and had a mean of 0.000 and a standard deviation of 0.991

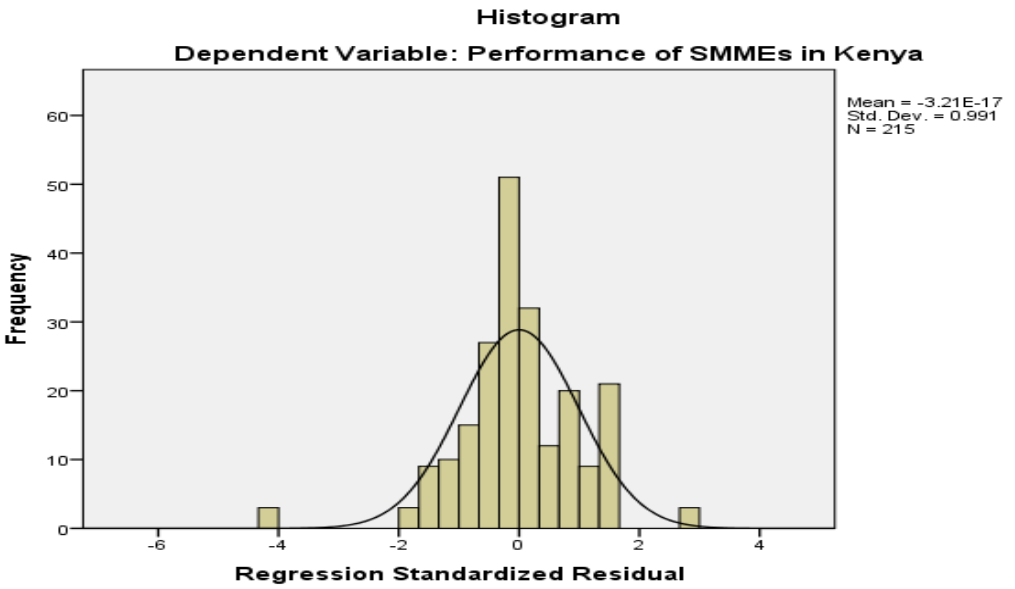

Figure 4.7: Histogram

For confirmation of normality of the residuals, a statistical test for normality was conducted by the researcher as shown in Table 4.34. The Shapiro-Wilk test was thus carried out which tested the null hypothesis that the data is not normally distributed as follows;

H_0: The data is not normally distributed

H_a: The data is normally distributed

The criterion was to reject the null hypothesis if the p-value of the Shapiro-Wilk statistic was greater than 0.05. From the Shapiro-Wilk test for normality, the p-value of the Shapiro-Wilk statistics was found to be 0.107 which was greater than 0.05 confirming that the residuals for the fitted multiple regression model were normally distributed.

Table 4.26: Normality Test

	Shapiro-Wilk Statistic	Df	Sig.
Standardized Residual	0.972	215	0.107

4.9.2 Autocorrelation

The fitted OLS multiple regression model also assumes that the residuals are not auto-correlated. A violation of the assumption of non-autocorrelation would imply that even though the predictors may be significant there was an under estimation of the standard errors of the predictors. Montgomery, Peck and Vining (2015), stated that the hypothesis and rejection criteria for testing serial correlation using Durbin Watson statistic was as follows; H_0: $\rho=0$, The data does not exhibit autocorrelation; H_a: $\rho=0$, The data exhibit autocorrelation. Reject H_0 if the computed D-W statistic is less than the lower limit of the tabulated D-W. The computed Durbin Watson value from the model fitted was 1.908, while the upper limit for the five predictors including the constant was 1.81628 and the lower limit was 1.74229. Since the computed value was greater than the upper limit, we conclude that the residuals were not auto-correlated.

Table 4.27: Autocorrelation

Durbin-Watson statistic	Tabulated lower limit	Tabulated Upper limit
1.908	1.74229	1.81628

4.9.3 Homoscedasticity

A variable with a non-constant variance is termed heteroscedastic. Fitting an OLS model also assumes that the residual terms have a constant variance and are therefore referred to as homoscedastic (Razitis & Kalantzi, 2012). Adoption of the OLS model requires the residual terms not to be heteroscedastic but be homoscedastic. A virtual indication of the distribution of the residuals was shown in the scatter plott of the residuals against the predicted values in Figure 4.8. The indication on the scatter plot did not show a pattern of an increasing or decreasing function. This was a virtual implication that the residuals were homoscedastic.

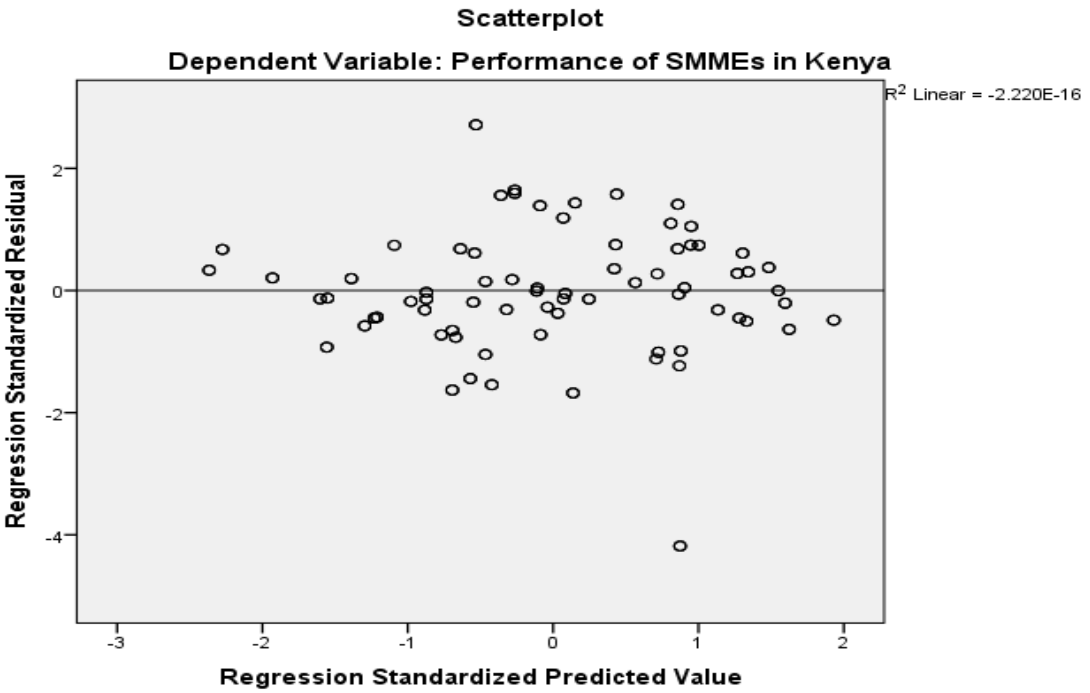

Figure 4.8: Scatter plot of Residual Term

Heteroscedasticity in a study usually occurs when the variance of the errors varies across observation (Long & Ervin, 2008). Breusch-Pagan and Koenker was used to test the null hypothesis that the error variances were all equal versus the alternative that the error variances were a multiplicative function of one or more variables. Rotich, Wanjau and Namusonge (2015) used the Breusch-Pagan statistic to test for homoscedasticity in their study. Breusch-Pagan and Koenker tested the null

hypothesis that heteroscedasticity was not present (homoscedasticity) if the significant-value was less than 0.05, reject the null hypothesis. A large chi-square value that was greater than 9.22 would indicate the presence of heteroscedasticity (Sazali, Hashida, Jegak & Raduan, 2009; Wanjau & Mwangi, 2014). In this study, the chi-square value was 8.325 indicating that heteroscedasticity was not a concern as shown in Table 4.36

Ho: Constant variance

Variables: Creativity (C), Organizational Structure (OS), Research and Development (R&D) and Commercialization (Comm.)

Table 4.28: H_0: The Residuals Exhibit Homoscedasticity

H_o	Variables	$Chi^2(1)$	$Prob>Chi^2$
Constant Variance	C,OS, R & D, Comm.	8.325	0.110

4.9.4 Mulitcollinearity

Multicollinearity is exhibited if one or more independent variables can be expressed in terms of the other independent variables. That would imply that the predictors are not truly independent of each other as assumed by fitting the OLS model. The fitted OLS model assumed that the independent variables did not exhibit multicollinearity. Mugenda and Mugenda (2012), posit that multicollinearity can occur in multiple regression models in which some of the independent variables are significantly correlated among themselves. Multicollinearity is a situation that occurs when the independent variables are highly correlated (Martz, 2013). In their study, Mutunga, Minja and Gachanja (2014) tested for multicollinearity using the Variance Inflation Factors (VIFs) and tolerance. The fitted model was tested for multicollinearity as shown in Table 4.29. If a predictor has a tolerance of less than 0.2, it implies that the predictor shares more than 80% of its variance with another predictor in the model.

To confirm that there was non-multicollinearity in the model, all the independent variables were shown to have tolerances of values above 0.2 and VIFs of below 5.0.

Table 4.29: Multicollinearity

	Tolerance	VIF
Creativity	0.826	1.211
Organizational structure	0.898	1.113
Research and development	0.944	1.059
Commercialization	0.873	1.145

4.10 Optimal Model

A model optimization was conducted based on the results in table 4.23. The model optimization guided the derivation of the revised conceptual framework. The results were arrived at after running a multiple regression analysis. All the variables were retained as all the variables were found to be significant. The variables were arranged in order of their significance with commercialization (0.589), organizational structure (0.367), Research and Development (0.335) and creativity (0.300). The derived equation was;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

$$Y = - 0.002 + 0.589X_1 + 0.367X_2 + 0.335X_3 + 0.300X_4 + \varepsilon$$

Where

Y= Firm Performance

B_0 = Constant

X_1 = Commercialization

X_2 = Organizational Structure

X_3 = Research and Development

X_4 = Creativity

ε = error term

Model 2 shows the beta coefficients after moderation with slopes of Commercialization (0.596), Organizational Structure (0.359), Research and Development (0.329), Creativity (0.286) and the moderator Entrepreneurial Orientation (0.053). The overall moderated regression equation for the effect was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \varepsilon$$

$$Y = -0.002 + 0.596 X_1 + 0.359 X_2 + 0.329 X_3 + 0.286 X_4 + 0.053 Z + \varepsilon$$

Where;

Y= Firm performance

β_0 = Constant

X_1 = Commercialization

X_2 = Organizational Structure

X_3 = Research and Development

X_4 = Creativity

Z = Moderator Entrepreneurial Orientation

ε = error term

Thus the Study optimal model (Revised Conceptual Framework) was given by figure 4.9

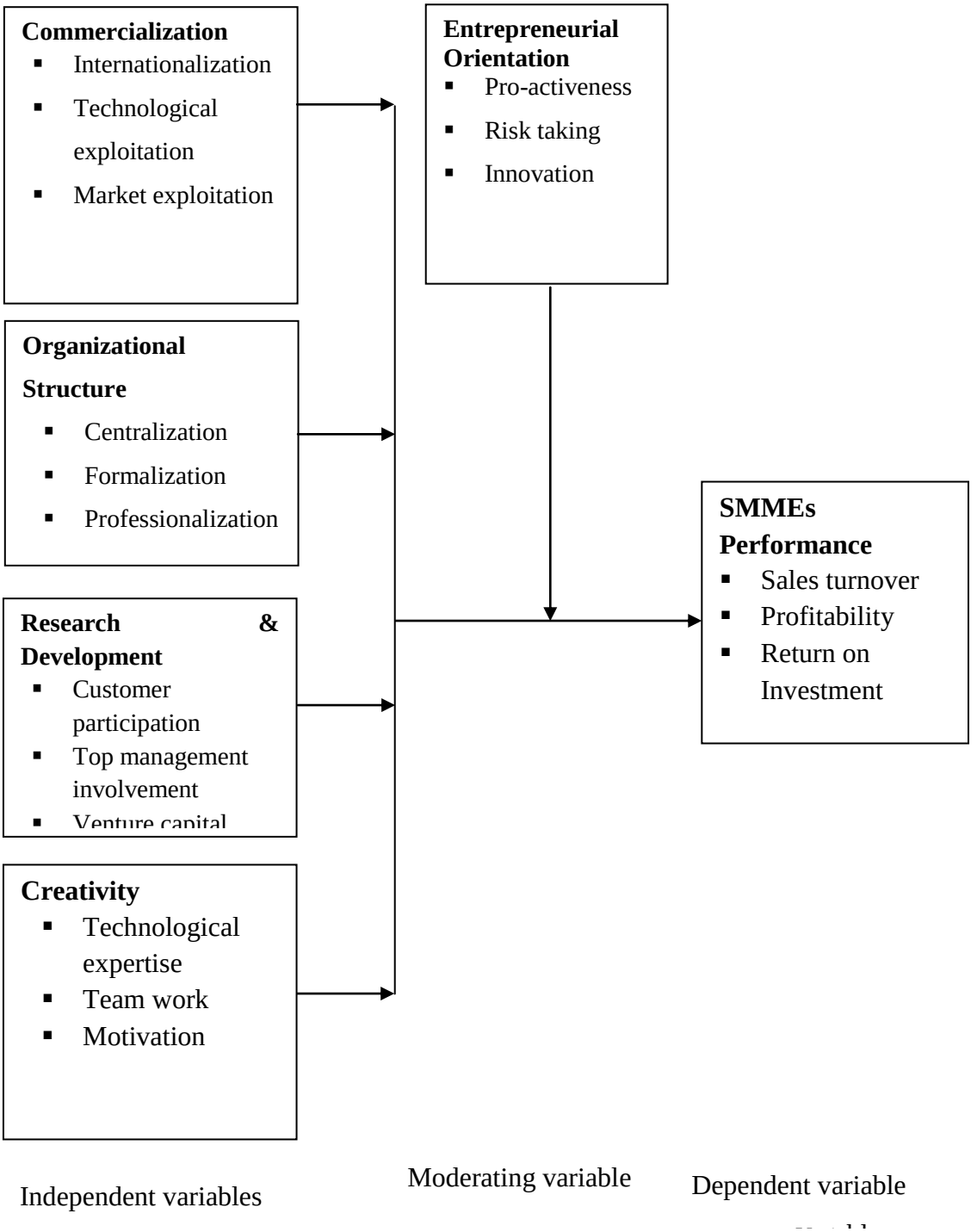

Figure 4.9: Revised conceptual framework

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presented the summary of major findings of the study, relevant discussions, conclusion and the necessary recommendations. The chapter also sets out the relevant conclusion and made recommendations and suggestions for further research based on the findings of the study. The conclusion of the study related to the specific objectives and recommendations on the conclusion of each specific objective. The study established the influence of innovation practices (creativity, organizational structure, Research and Development, and commercialization) on performance of small and medium manufacturing enterprises in Kenya.

5.2 Summary of the Study Findings

Quantitative data from factor analysis were used for statistical modelling to test the influence of innovation practices (creativity, organizational structure, Research and Development and commercialization) on SMMES performance. The data was also used to test the moderating effect of entrepreneurial orientation on the relationship between innovation practices and SMMEs performance. Correlation analysis between innovation practices and SMMEs performance showed that there was positive relationship between innovation practices and SMMEs performance. The correlation coefficients were found to be all positive for commercialization, Research and Development, organizational structure and creativity respectively. A multiple regression was carried out to determine the joint influence of innovation practices and SMMEs performance. The multiple regression results had a positive coefficient of determination implying that innovation practices explained the variation in SMMEs performance in the model. The coefficients of the multiple regression results were also found to be positive for commercialization, organizational structure, Research and Development and creativity respectively.

5.2.1 The influence of commercialization on performance of SMMEs in Kenya

The most influential innovation practices variable according to the findings was commercialization. In the study commercialization was measured considering fifteen indicators. At the pilot stage, factor analysis was used to determine validity of the measurements where six items were dropped retaining nine. The nine retained indicators were found to be reliable measures of commercialization with a Cronbach's alpha coefficient within the accepted limits. The correlation analysis between commercialization and performance was found to be significant. The coefficient showed a strong positive relationship between commercialization and SMMEs performance. The regression analysis with commercialization as the predictor produced the best results among the four variables in the study. From the multiple regression results for determining the joint influence of innovation practices and SMMEs performance, the coefficient of commercialization was found to be the highest of all the predictors.

5.2.2 The effect of an organizational structure on performance of SMMEs in Kenya

Another objective of the study was to determine the influence of organisational structure on SMMEs performance. Organisational structure was measured using fifteen quantitative indicators after which factor analysis at the pilot stage expunged six items retaining nine. The remaining nine indicators were found to be reliable to measure Organisational structure as confirmed by the Cronbach alpha reliability coefficient. Correlation analysis and regression analysis between organisation structures were carried out to explore the relationship between the two. The correlation coefficient showed a weak but significant positive relationship. The regression model with organizational structure as the predictor was estimated with a coefficient implying positive influence on SMMEs performance. On the multiple regression for the joint influence of innovation practices on SMMEs performance, an organisation structure had a significant positive influence.

5.2.3 The influence of Research and Development on performance of SMMEs

From the findings, research and development was the third most influential innovative practice on performance. This independent variable was measured considering fifteen quantitative indicators. After factor analysis, seven items were expunged retaining eight. The remaining eight indicators were found to be reliable to measure performance as confirmed by the Cronbach alpha reliability coefficient. The correlation coefficient results for determining the relationship between research and development and SMMEs performance also showed a moderate positive relationship. The regression model with research and development as the predictor yielded results which showed a positive significance on the influence of research and development on the SMMEs performance. The combined effect model that was carried out from the multiple regression to determine the joint influence showed that research and development had a positive linear influence on SMMEs performance.

5.2.4 The influence of creativity on performance of SMMEs in Kenya

The first objective was to establish the influence of creativity on performance of SMMEs in Kenya. The independent variable creativity was measured using sixteen quantitative indicators after which factor analysis at the pilot stage expunged four items retaining twelve. The remaining twelve indicators were found to be reliable to measure creativity as confirmed by the Cronbach alpha reliability coefficient. The correlation and regression analyses showed a positive linear relationship between creativity and SMMEs performance. The relationship was found to be weak but significant. The regression model yielded an R-square that implied that the model explained the variation in SMMEs performance. The model was however found to be significant from the ANOVA results that yielded an F-statistic value implying significance. The joint multiple regression results of innovation practices factors also found creativity as a significant predictor of SMMEs performance. The regression coefficient found creativity to be the least influential factor of the significant predictors included in the study. The coefficient of creativity in the model was found to be positive implying that creativity had a positive influence on SMMEs performance.

5.2.5 Moderating effect of entrepreneurial orientation on the relationship between innovation practices and performance of SMMEs in Kenya.

The last objective of the study was to determine how entrepreneurial orientation moderated the relationship between innovation practices and performance of SMMEs in Kenya. For this objective the study performed a stepwise model with the final step having the inclusion of the interaction variables between the moderating variable EO and other independent variables. In the first step, the study fitted a multivariate model that considered the combined effect of all the independent variables of innovation practices. This measured and tested if there was a joint influence of the independent variables on the performance of SMMEs in Kenya. The estimation of the multiple regression model yielded results with the estimated coefficients of commercialization, organizational structure, research and development and creativity all found to be positive.

The second and third steps involved the introduction of the moderating variable and the interaction variables between the moderator and the independent variables. The model with the interaction variables showed a significant improvement on the explanatory power with a positive change in coefficient of determination that was significant. The coefficients of the interaction variable between creativity and entrepreneurial orientation and organisation structure and entrepreneurial orientation were found to be significant with a positive coefficient that was found to be significant.

5.3 Conclusion

The study found out that commercialization had the greatest influence on the performance of SMMEs in Kenya. The value of the multiple regression analysis results as produced by SPSS was 0.589 before moderation. This was the highest among the variables under study. The SPSS multiple regression analysis result after moderation was 0.596. The results before and after moderation showed that commercialization influenced the performance of SMMEs positively. The SMEs in the manufacturing sector should therefore embrace commercialization tips such as technological exploitation, market exploitation and internationalization as they offer

new products, develop new knowledge about firm's existing markets and assist firms to enter the export market.

The multiple regression analysis results for Organizational Structure before moderation was 0.367 and 0.359 after moderation. This implied that organizational structure had positive influence on SMMEs performance. The management of SMMEs should therefore embrace flexible structures with low centralization and low formalization in order to realize better performance. They should also empower their professionals to enable them increase the budget for innovative activities. Innovation concepts should be included in the vision and mission statements of SMMEs in Kenya.

Research and Development had multiple regression analysis results of 0.335 before moderation and 0.329 after moderation. This implied that Research and Development influenced the performance of SMMEs positively. This confirmed that firms that engage their customers in creating products that mirror latent needs, involve top management in acquiring resources for innovation activities and consider venture capital as a form of equity financing to boost their sales and profits promptly. The multiple regression analysis results for creativity before and after moderation were 0.300 and 0.286 respectively. Creativity had a positive influence on the performance of SMMEs in Kenya. This implied that organizations that promote elements of creativity such as technological expertise, teamwork and motivation tend to realise better performance in terms of sales turnover, return on investment and profitability.

The study found out that all the four independent variables commercialization, organizational structure, research and development and creativity influenced SMMES performance positively. The moderator entrepreneurial orientation moderated the relationship between innovation practices and SMMEs performance. The findings of this study suggested that innovation practices were most significant factors for SMMEs in Kenya, if they have to achieve superior performance. The findings of this research supported the findings of previous researchers. It can be concluded that effective innovation practices must put more emphasis on commercialization, organizational structure, research and development and creativity if SMMEs have to

improve performance. The model used in this study can be embraced by the management of various enterprises to improve their performance.

5.4 Recommendations

The study derived various recommendations from the results, findings and conclusion. Internationalization will enable SMMEs to enter the export market through introducing novel and significantly improved products in the international market, thus increasing their sales and the overall profitability. The findings will equip managers with modern technology methods such as e-commerce, digital and social media which will boost the sales turnover and the profitability of the firms thus enhancing the SMMEs performance. The management will also use the results to develop new sales and distribution channels and this will enhance their connection to new and already established customers. The management should embrace commercialization, as without prior commercialization preparation during the innovation process, new products or services may fail.

The study findings will be used by the management of SMMEs in Kenya to adopt flexible Organizational structures with less centralized and less formalized structures. The structures will enable them to innovate with somewhat greater frequency than firms with rigid structures thus promoting better performance. Low formalization encourages openness and flexibility in roles which is a prerequisite for new ideas. Low centralization will promote innovation within SMMEs. The professionals who are the engine of innovation will be empowered as innovation originates in the creativity and innovation capability of its professionals. The management should also emphasize innovation concepts such as skills, teams and motivation through incorporating them in their vision and mission statements.

Research and development will increase the stock of knowledge within SMMEs which will be used to devise new applications such as new and significantly improved products. The information obtained from customers will assist in solving customer demands thus boosting the firms' sales turnover and profitability. The top management will use the findings to adjust positively the budget for innovative programs. Venture capital will be incorporated as one of the major sources of finance

for SMMEs, as it not only provides finance but also advice to the management of SMEs on matters pertaining to strategies. SMMEs managers should emphasize on research and development as it improves the overall performance from sales generated from innovative products.

The results will facilitate the development of new ideas, new products and discover new ways of looking at problems and opportunities. Employees will be equipped with skills that are relevant for their job description in the firms. The management will use the findings to constitute effective work groups (teams) that will reflect on diversity of skills and be able to challenge each other's ideas in constructive ways in order to facilitate the performance of SMMEs. Intrinsic and extrinsic motivation should be incorporated in the firms to enable employees to fully dedicate themselves to the operations of the firms. The management of SMEs in the manufacturing sector should promote elements of creativity such as technological expertise, teamwork and motivation in order to realize better performance.

5.5 Contribution of the study to the Body of Knowledge Theory and Practice

The study contributed to the body of knowledge by establishing that performance of SMMEs in Kenya can be realized if SMMEs adopt innovation practices. Researchers /scholars can therefore be able to understand the relationship between innovation practices and SMMEs performance. Lack of innovation practices leads to poor performance among SMMEs. This study is therefore of scholarly importance as it has introduced other factors that influence innovation practices. However recent studies have not investigated the influence of entrepreneurial orientation-innovation practices and SMMEs performance relationship model. This study identified commercialization, organizational structure, Research and Development and creativity as the main drivers of SMMEs performance in Kenya. The study also established that performance of SMMEs is affected by entrepreneurial orientation.

5.5.1 Implication of the study to practice

The findings and the results of this study suggested that the management of SMMEs in Kenya needs to enhance commercialization, organizational structure, Research and development and creativity in order to facilitate the realization of SMMEs objectives through better performance. However commercialization had the greatest influence on the performance of SMMEs. The findings showed that entrepreneurial orientation moderated the relationship between innovation practices and SMMEs performance and therefore ways to inspire entrepreneurial orientation behaviours and support of such behaviours needed to be formulated. It is only when SMMEs managers are able and willing to be innovative, take proactive actions and assume risks will the SMMEs be able to realize superior performance and sustainable competitive advantage. Factors associated with innovation practices therefore need to be enhanced by including them in the mission and vision statements of SMMEs and also making them to be part of their code of conduct. In addition SMMEs should also embrace entrepreneurial orientation concept.

5.5.2 Theoretical implications of the study to the body of knowledge

This study made key important contributions to innovation practices and SMMEs performance. The study confirmed the existing literature in terms of positive influence of innovation practices on SMMEs performance. Scholarly research examined the link between innovation practices and firm performance such as a study by Atalay (2013) on the relationship between innovation and firm performance in Turkey. Although the findings revealed a positive relationship between innovation and firm performance, his findings did not specify the size of the firms under study and therefore the results could not be generalized. In addition Atlay did not use a moderator in his research.

Ndalira (2013) did a study on the effects of the types of innovation on the growth of SMEs in Kenya. The study failed to specifically focus on the influence of innovation practices on SMEs performance. This study showed the influence of innovation practices on SMMEs performance and further showed the moderating effect of entrepreneurial orientation on innovation practices and SMMEs performance. This

research helped to gain insights into the predictors of innovation practices. The finding confirmed all the predictors of current model of innovation practices in a firm.

5.6 Areas for Further Research

Despite the contributions made by this study it only focused on SMEs in the manufacturing sector. A large sample size for both SMEs and large enterprises in the manufacturing sector could be used to validate these results as it may provide more information about innovation practices. The study focused on four factors of innovation practices which included commercialization, organizational structure, research and development and creativity. There is need to establish other factors of innovation practices which influence SMMEs performance. A study can also be done on the influence of market innovation, process innovation and technological innovation on SMMEs performance. The moderating variable on the other hand incorporated only three dimensions of entrepreneurial orientation. A comprehensive research can be conducted incorporating all the five dimensions of entrepreneurial orientation. A study can also be done on the moderating effect of entrepreneurial orientation on research and development and commercialization on SMMEs performance. This study relied on cross-sectional data survey where respondents were asked to assess viewpoints on each item in the instrument. However some superior performance factors of innovation practices are known to be strategic and dynamic in nature. Therefore a longitudinal study would be more preferable as it could provide better perspective to the effect of innovation practices on SMMEs performance in Kenya. The sample study also confined itself to the SMEs in the manufacturing sector. Future studies could consider industries beyond the manufacturing sector. The study was only limited to the Kenyan context and hence similar studies could be conducted in other developing countries as well.

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APPENDICES

Appendix I: Questionnaire

Please fill in as honestly as possible. All information was treated with utmost confidentially. There is no right or wrong answer that the researcher is looking for.

SECTION A: Personal information

1. Gender Male [ ] Female [ ]
2. Age 20 years & Below [ ] 21-30 [ ] 31-40 [ ]
   41-50 [ ]51-60 [ ] 60 & above [ ]
3. Length of continuous service in the firm:

   Less than 2 years [ ] 2-4 years [ ]

   5-7 years [ ] over 7 years [ ]

4. Level of education:

   Diploma [ ] undergraduate [ ]

   Postgraduate [ ] others specify……..

5. Type of manufacturing business…….
6. Relationship with the enterprise

   Owner manager [ ]

   Employee manager [ ]

7. Number of years the enterprise has been in existence……..

SECTION B: Study Questions

Please tick (√) where appropriate

8. Creativity

(a) How many new products has your firm introduced in the last five years?

None [ ] 1 [ ] 2 [ ] 3 [ ] 4 and above [ ]

If none, please explain……..

(b) In your opinion what percentage would you assign the level of creativity in promoting performance of your firm?

1-25% [ ] 26-50% [ ] 51-75% [..] 76-100% [ ]

(c) What percentage of your budget is earmarked for creativity?

None [ ] 1-10% [ ] 11-20% [ ] 21-30% [ ]31% and above [ ]

If none please explain……

Please tick (√) where appropriate

9.	How often does the firm find new application for products	Not at all	rarely	often	Very often	Others specify
10	How often if the firm involved in product development capability	Not at all	rarely	often	Very often	Others specify
11	How often does equip employees with skills for their jobs	Not at all	rarely	often	Very often	Others specify
12	How often is the firm involved in brainstorming to stimulate new ideas among employees?	Not at all	rarely	often	Very often	Others specify
13	How often is the firm involved Developing teams?	Not at all	rarely	often	Very often	Others specify
14	How often does the firm Reward employees who generate new product ideas?	Not at all	rarely	often	Very often	Others specify
15	How often does the firm Participate in outdoor activities	Not at all	rarely	often	Very often	Others specify

16. Organizational Structure

a) How can you characterize your organizational structure?

Functional [ ] Matrix [ ] Divisional [ ] any other [ ]

b) How does decision making within unit/ department take place?

Centralized [ ] Empowerment [ ]

Please tick (√) where appropriate

17.	Please specify the levels of structures that the firm has	1	2	3	4	Others Specify
18.	How often does management get direct information from lower levels of employees	Not at all	rarely	often	Very often	Others specify
19.	How often are employees included in key production decisions	Not at all	rarely	often	Very often	Others specify
20.	How often does management reassign duties to employees	Not at all	rarely	often	Very often	Others specify
21.	How often are employees expected to await for management decision before undertaking an operation.	Not at all	rarely	often	Very often	Others specify
22.	How often does the firm use professionals as a source of creativity and innovation	Not at all	rarely	often	Very often	Others specify
23.	How often are professionals incorporated in the firm's activities	Not at all	rarely	often	Very often	Others specify

24. Research and development

a) New opportunities in the firm are as a result of

i) Research [ ]

ii) Copying the competitor [ ]

b) What percentage (%) of your budget is assigned to R& D

1-10% [ ] 11-20% [ ] 21-30% [ ] Above 30% [ ]

Please tick (√) where appropriate

25.	How often are customers involved in generating new product ideas?	Not at all	Rarely	often	Very often	Others specify
26.	Are customers concerns often addressed by the firm?	Not at all	Rarely	often	Very often	Others specify
27.	How often does management reward new product initiatives?	Not at all	Rarely	often	Very often	Others specify
28.	Does management apportion part of the budget for innovative programs?	Not at all	Rarely	often	Very often	Others specify
29.	How often does the firm source capital from entrepreneurs?	Not at all	Rarely	often	Very often	Others specify
30.	Is capital sourced from entrepreneurs used to develop new products?	Not at all	Rarely	often	Very often	Others specify

31. Commercialization

a) What percentage (%) of your firm's annual revenue is earmarked for innovation?

Zero [ ] 2-10% [ ] 11-20% [ ] 21-30% [ ] above 30% [ ]

b) In which geographical markets did your enterprise sell products during the last five years (2011 – 2015)?

Local [ ] National [ ] other countries [ ]

Please tick (√) where appropriate

	Statement	**Not at all**	**Rarely**	**Often**	**Very often**	**Others specify**
32.	How often is your Involved in export trade?					
33.	How often does your firm equip in-house technical teams?					
34.	How often does your firm embrace e-commerce?					
35.	How often does your firm acquire external knowledge?					
36.	How often does your firm utilize new ways of marketing like digital and social media?					
37.	How often does your firm Develop new sales and distribution channels?					
38.	How often does your firm adopt new ways of connecting to customers and building relationships					

39. Entrepreneurial Orientation

a) As a manager please indicate the level of your risk taking

i) Calculated risk [ ]
ii) Moderate risk [ ]
iii) High risk [ ]
iv) Risk averse [ ]

Please tick (√) where appropriate

40.	How many products has the firm produced that are; i) Not produced by other firms ii) Closely related to those of other firms	0	1	2	3	4 and above
41.	How often has your firm introduced new product lines since its inception?	Not at all	rarely	often	Very often	Others specify
42.	Does the firm produce new products that are designed to provide value to new and existing customers?	Not at all	rarely	often	Very often	Others specify
43.	How often is your firm able to identify new opportunities?	Not at all	rarely	often	Very often	Others specify
44.	Is your firm able to introduce new products before competitors?	Not at all	rarely	often	Very often	Others specify
45.	Are mistakes treated as a normal part of trying something new?	Not at all	rarely	often	Very often	Others specify
46.	How often does your firm take informed risks?	Not at all	rarely	often	Very often	Others specify

47. SMMEs Performance

This section has questions regarding the performance of your firm. Please respond as appropriate.

Indicator	Not at all (2)	rarely (3)	often (4)	Very often (5)
Does your firm have a trend of increasing sales from the previous years				
Does your firm sell its products online				
How often does your firm meet its profits projections				
Has the price per unit been increasing in the last five years				
How often does the firm use ROI as a measure of the firms performance				
Do you regard ROI as a high contributor to your forms performance in the last five years				

Kindly indicate the value of the following indicators of the firm, from 2011 to 2015 in Kes. '000,000'.

Indicators	2011	2012	2013	2014	2015
Net Profit					
Net Assets					
Return on Investment (ROI)					
Sales Turnover					

Appendix II: Interview Schedule

Instructions

The information required herein will be treated with confidentiality and will only be used for the purpose of this study only. You are therefore, requested to respond to the questions more honestly and without any fear or favour.

Section I: General Information

1. Tell me more about yourself in regards to the position you hold in the firm (*let the interviewee explain him/herself on firm responsibilities*)

Section II: Creativity

2. Are there creativity requirements by the employees that you feel have implications on SMMEs performance in terms of their technological expertise, team work and motivation requirements? If yes please identify these requirements and their implications on SMMEs performance? (*let the interviewee give you creativity challenges*)
3. What is the manger/owner doing to address these challenges and ensure an all creativity inclusions exercise(*let the interviewee give you ongoing creativity measures*)

Section II: Organizational Structure

4. Do you think that the firm management has put in place organization structure measures that have bad implications to SMMEs performance? If yes which are they? (*probe so that the interviewee can give more of these organizational structure issues and the challenges they have posed to the SMMEs performance; some of these include centralization, formalization, professionalization*)
5. What are the measures which have been put in place by the management to address the organizational structure challenges witnessed?

Section III: Research & Development

6. Do you think that the firm management has put in place research and development measures that have bad implications to SMMEs performance? If yes which are they? (*probe so that the interviewee can give more of these research and development issues and the challenges they have posed to the SMMEs performance; some of these include customer participation, top management involvement and venture capital*)
7. What are the measures which have been put in place by the firm management to address the R & D challenges identified?(*are there ongoing measures redress of the challenge*)

Section IV: Commercialization

8. From previous experiences have you heard other firms complain on lack of commercialization as a cause of the poor SMMEs performance? (*let the interviewee cite a story on an incident that happened*)
9. Are there measures which have been put in place by these firms to address the challenges witnessed? If yes to what extent have the measures increased uptake of available commercialization opportunities by the firms?

Section V: Entrepreneurial Orientation

1. Are there challenges encountered by your firm in terms of lack of pro-activeness, risk-taking and innovation that affect the SMMEs performance?
2. Do you think the management is doing enough to support firms to give them advantage edge in performance? If yes which are the ongoing policies to address these challenges?

Thank you for your time and Cooperation

Appendix III Sample Size Calculation Table

Required Sample Size†

Population Size	Confidence = 95% Margin of Error				Confidence = 99% Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

Appendix IV: Factor loadings matrix

Indicator	Components						Status
	1	2	3	4	5	6	
How many new products has your firm introduced in the last five years?	0.306						Expunged
The firm has a recent new product idea in which it is working on	0.097						Expunged
In your opinion what percentage would you assign the level of creativity in promoting performance of your firm?	8.925						Retained
What percentage of your budget is earmarked for creativity?	7.676						Retained
How often does the firm find new application for products	0.214						Expunged
How often if the firm involved in product development capability	8.724						Retained
How often does equip employees with skills for their jobs	8.367						Retained
How often does the firm use internet in its operations	8.985						Retained
How often is the firm involved in	7.883						Retained

brainstorming to stimulate new ideas among employees?			
How often is the firm involved Developing teams?	8.178		Retained
How often are employees involved if a decision is to be made	7.320		Retained
How often does the manager ask opinions from employees about how to improve customer service in the firm	7.744		Retained
How often does the firm Reward employees who generate new product ideas?	0.298		Expunged
How often does the firm Participate in outdoor activities	7.564		Retained
Do you think the recognition of one's performance motivates work performance of employees	8.123		Retained
Does the firm reward employees for best performance	8.704		Retained
How can you characterize your organizational structure?		7.012	Retained
How does decision making within unit/ department take place?		7.218	Retained

Employees are always expected to abide by laid down procedures	0.053	Expunged
Do you encourage an employee who wants to make his/her own decisions in the firm	0.185	Expunged
How often does management get direct information from lower levels of employees	8.995	Retained
How often are employees included in key innovation decisions	8.522	Retained
Do most decisions made by employees in the firm have to have their supervisors' approval	7.700	Retained
How often does management reassign duties to employees	0.236	Expunged
How often are employees expected to await for management decision before undertaking an operation	8.099	Retained
How often are written job descriptions formulated at various levels	8.598	Retained
How often do rules and procedures occupy a central place in the organization	8.934	Retained

How often does the firm use professionals as a source of creativity and innovation	7.109		Retained
How often are professionals incorporated in the firm's activities	7.099		Retained
How often do top managers and technical staff possess high education levels and specialised training	7.982		Retained
Do top managers and technical staff have professional skills	8.950		Retained
New opportunities in the firm are as a result of		0.034	Expunged
The firm has a department or a special unit for R&D		0.056	Expunged
What percentage (%) of your budget is assigned to R& D		8.260	Retained
How often are customers involved in generating new product ideas?		0.374	Expunged
Are customers concerns often addressed by the firm?		7.515	Retained
How often are customers input directly influence the firms' decision?		7.219	Retained

How often does the firm modify a product when it finds that the customers would like the firm to do so?	8.204	Retained
How often does management reward new product initiatives?	7.476	Retained
Does management apportion part of the budget for innovative programs?	7.024	Retained
How often does management offer training programs to prepare employees to offer high quality customer service	7.610	Retained
How often are employees trained to handle the introduction of new products and services	8.600	Retained
How often does the firm source capital from entrepreneurs?	0.343	Expunged
Is capital sourced from entrepreneurs used to develop new products?	8.587	Retained
How often are innovating firms likely to be financed by venture capitalists	7.869	Retained
How often are venture based firms faster in	7.294	Retained

bringing their products to the market		
What percentage(%) of your firm's annual revenue is earmarked for innovation?	8.861	Retained
In which geographical markets did your enterprise sell products during the last five years (2011 – 2015)?	7.278	Retained
Which form of innovation has your firm done in the past 5 years	8.580	Retained
How often is your firm involved in export trade?	8.736	Retained
How often does your firm equip in-house technical teams?	0.238	Expunged
How often does your firm embrace e-commerce?	7.496	Retained
How often does your firm enter new markets or increase current market share?	8.626	Retained
How often does your firm acquire external knowledge?	8.157	Retained
How often does your firm utilize new ways of marketing like digital and social media?	7.816	Retained
How often does your firm use a website to	8.335	Retained

promote its product			
Does the firm use electronic data interchanged based solution	8.693		Retained
How often does your firm Develop new sales and distribution channels?	0.250		Expunged
How often does your firm adopt new ways of connecting to customers and building relationships?	8.314		Retained
The product the firm markets depend on real market needs	7.854		Retained
The marketing personnel in the firm spend time discussing customers future needs with other functional department	8.170		Retained
Does your firm benchmark with others in the same industry?		-0.014	Expunged
If you take a risk and fail are you punished by the organization?		-0.293	Retained
Does your organization create partnerships with the best partners in the industry before competitors enlist them?		7.341	Retained
As a manager please		8.276	Retained

indicate the level of your risk taking		
How many products has the firm produced that are; Not produced by other firms	8.650	Retained
How many products has the firm produced that are; closely related to those from other firms	8.008	Retained
How often has your firm introduced new product lines since its inception?	0.204	Expunged
Does the firm produce new products that are designed to provide value to new and existing customers?	0.397	Expunged
How often has your business processes gone through changes in the last 5 years	8.365	Retained
How often is your firm able to identify new opportunities?	7.533	Retained
Is your firm able to introduce new products before competitors?	7.889	Retained
Does your firm beat competitors to enter new markets	8.171	Retained
Does your firm improve the quality or the number of features of	7.291	Retained

its products or services before its competitors			
Are mistakes treated as a normal part of trying something new?	8.736		Retained
How often does your firm take informed risks?	8.167		Retained
How often is risk taking encouraged in the firm	7.183		Retained
Does your firm take the risk of missing an opportunity with the same weight as the risk of failure	7.133		Retained
How many people are employed in your organization?		8.082	Retained
What is your average turnover in KES ‘000,000?		7.877	Retained
Net Profit		0.886	Retained
Net Assets		0.717	Retained
Return on Investment (ROI)		0.748	Retained
Sales Turnover		0.904	Retained
Does your firm have a trend of increasing sales from the previous years		-0.525	Retained
Does your firm sell its products online		0.039	Expunged
How often does your firm meet its profits projections		-0.678	Retained
Has the price per unit		0.755	Retained

been increasing in the last five years		
How often does the firm use ROI as a measure of the firms performance	-0.554	Retained
Do you regard ROI as a high contributor to your forms performance in the last five years	-0.485	Retained

Appendix V: Durbin Watson Tables

Critical Values for the Durbin-Watson Test: 5% Significance Level

T=200,210,220,...,500, K=2 to 21

K includes intercept

T	K	dL	dU	T	K	dL	dU	T	K	dL	dU
200	2	1.75844	1.77852	210	10	1.6855	1.86394	220	18	1.61562	1.9471
200	3	1.74833	1.78871	210	11	1.67532	1.87445	220	19	1.60547	1.95776
200	4	1.73815	1.79901	210	12	1.66508	1.88505	220	20	1.59527	1.96852
200	5	1.72789	1.80942	210	13	1.65478	1.89574	220	21	1.58503	1.97935
200	6	1.71755	1.81994	210	14	1.64441	1.90653	230	2	1.77525	1.7927
200	7	1.70713	1.83057	210	15	1.63398	1.91742	230	3	1.76647	1.80154
200	8	1.69663	1.84133	210	16	1.62348	1.92839	230	4	1.75763	1.81045
200	9	1.68607	1.85219	210	17	1.61293	1.93947	230	5	1.74873	1.81945
200	10	1.67543	1.86316	210	18	1.60232	1.95063	230	6	1.73977	1.82854
200	11	1.66471	1.87423	210	19	1.59165	1.96188	230	7	1.73075	1.83771
200	12	1.65394	1.88541	210	20	1.58094	1.97323	230	8	1.72168	1.84697
200	13	1.64308	1.89671	210	21	1.57015	1.98467	230	9	1.71254	1.85632
200	14	1.63216	1.9081	220	2	1.77003	1.78829	230	10	1.70335	1.86574
200	15	1.62117	1.91961	220	3	1.76086	1.79753	230	11	1.6941	1.87524
200	16	1.61011	1.93122	220	4	1.75161	1.80686	230	12	1.68479	1.88483
200	17	1.599	1.94292	220	5	1.74229	1.81628	230	13	1.67544	1.8945
200	18	1.58781	1.95473	220	6	1.73292	1.82581	230	14	1.66602	1.90424
200	19	1.57657	1.96665	220	7	1.72348	1.83543	230	15	1.65655	1.91407
200	20	1.56527	1.97865	220	8	1.71398	1.84513	230	16	1.64703	1.92398
200	21	1.5539	1.99075	220	9	1.70441	1.85492	230	17	1.63746	1.93397
210	2	1.76445	1.78358	220	10	1.69477	1.86482	230	18	1.62784	1.94403
210	3	1.75483	1.79326	220	11	1.68509	1.87479	230	19	1.61816	1.95417
210	4	1.74513	1.80305	220	12	1.67533	1.88486	230	20	1.60844	1.96439
210	5	1.73537	1.81295	220	13	1.66552	1.89502	230	21	1.59868	1.97467
210	6	1.72554	1.82294	220	14	1.65566	1.90526	240	2	1.78012	1.79685
210	7	1.71563	1.83305	220	15	1.64573	1.91559	240	3	1.77171	1.8053
210	8	1.70566	1.84325	220	16	1.63575	1.92601	240	4	1.76325	1.81384
210	9	1.69561	1.85355	220	17	1.62571	1.93651	240	5	1.75473	1.82246

Appendix VI: Small and Medium Manufacturing Firms (List of 2017)Building, Mining and Construction Industry

ARM Cement Ltd
Bamburi Cement Ltd
Buyuna Building Materials
Central glass industries
East Africa Portland cement
Flamingo tiles (Kenya ltd)
Glewn investment ltd
International energy Techn Ltd
Kenbro industries Ltd
Kenya Builders and Concrete ltd
Manson hart Kenya ltd
Orbit enterprises ltd
Reliable concrete works ltd
Sat ceramic ltd
Savanna cement ltd
Space and style ltd
Tile and carpet centre
Virji vishram patel and sons
Valrem construction

CHEMICAL AND ALLIED SECTOR

Anfi Kenya Ltd
Basco products (k) Ltd
Bayer east Africa Ltd
Betersdorf East Afriaca Ltd
Blue Ring Products Ltd
Boc Kenya Ltd
Buyline Industries Ltd
Canon Chemicals Ltd
Carbacid (K) Ltd
Chemicals and Solvent
Chrysal Africa Ltd
Continental products
Cooper K-brands Ltd
Crown gases Ltd
Crown paints (kenya) Ltd
Danfords industries Ltd
Decase chemicals industries ltd
Deluxe inks ltd
Desbro Kenya ltd
Doric industries
Elex products ltd
Galaxy paints and coating ltd
Grand paints ltd
Haco tiger brand (EA) ltd
Henkel Kenya ltd
Henlez polymer
Hi- tech ink and coating ltd
Inter consumer products
Johnson diversey east Africa ltd
Kamili Packers ltd
Kel chemicals ltd
Kenya nat Ink & chemicals ltd
Kip melamine co. ltd
Kridha ltd
Leatherlife (EPZ) ltd
Oreal east Africa ltd
Maroo polymers ltd
Match masters ltd
Mea ltd
Metoxide Africa ltd
Murphy chemicals ltd
Odex chemicals ltd
Orbit chemicals ltd
Osho Chemicals ltd
Rolychem east Africa
Procter and gamble
PZ cussons EA ltd
Reckitt benckiser (EA) ltd
Rock industries ltd

Rutuba bio agri & organic fertilizers Co. ltd
Sadolin paints (EA) ltd
Saweco paints ltd
Soilex prosolve ltd
Strategic industries ltd
Super brite ltd
Superform ltd
Syngenta east Africa ltd
Synresins ltd
Tri- clover industries ltd
Tropical Brand (Africa)ltd
Twiga chemicals industries ltd
Unilever east Africa ltd
Vitafoam products ltd
Waridi creations ltd
West minister paints and resins ltd

ENERGY, ELECTRICALS AND ELECTRONICS SECTOR

Amedo centre Kenya ltd
Asano international ltd
Assa abloy east Africa ltd
Aucma digital technology
Avery east Africa ltd
Bauman engineering ltd
Centurion systems ltd
Digitech east Africa ltd
East african cables ltd
Farm refrigeration and electrical systems ltd
Holman brothers (E.A)ltd
Ibera Africa power (E.A) ltd
International energy technik td
Kenwest cables ltd
Libya oil Kenya ltd
Manufacturers and supplies (k) ltd
Metlex international ltd
Marshall Fowler engineers ltd
Nationalwide chemicals industries ltd
Optimum lubricants ltd
Ouru power ltd
Power technics ltd
Powered lubricants
Roka industries
Scales and software (k) ltd
Socabelec (E.A) ltd
Sollatek electronics (k) ltd
Solmpex africa ltd
Synergy lubricants solutions
Ubbink east Africa
Vivo energy Kenya ltd

FRESH PRODUCE

Acqiza development co ltd
Avoken ltd
From eden
Kankam Exporters ltd
Mahee flowers
Maridadi flowers
Rainforest farmland Kenya ltd
Sunland Roses ltd

FOOD AND BEVERAGES

Africa Spirits ltd
Agriner agricultural development
Agripro –pak ltd
Al mahra industries
Al phine foods ltd
Alpine coolers ltd
Aquamist ltd
Bakers corner ltd
Belat enterprises
Belfast Millers ltd
Beverage services Kenya ltd
Bidco Africa ltd
Bio food products ltd
Buwty ltd
The breakfast cereal co ltd
British American tobacco Kenya ltd
Broadway bakery ltd
Brookside dairy ltd

C. Dormans ltd
C. Czarnikow sugar east Africa ltd
Cadbury Kenya ltd
Candy Kenya ltd
Capwell industries ltd
Cewtrofood industries ltd
Chrag Kenya ltd
Cocacola East and central Africa ltd
Coffe agriworks ltd
Deeper industries
Europack industries ltd
Excel Chemicals ltd
Farmers' choice ltd
Glaciersproducts
Global fresh ltd
Gonas best ltd
Green forest food td
Heritage foods Kenya ltd
Highland canners ltd
Insta products (ep z) ltd
Jambo biscuits (k) ltd
Jetlak Foods ltd
Kamili Packers ltd
Ka oil refineries
Kenafric bakery
Kanafric industries ltd
Kewblest ltd
Kenchic ltd
Kaetaste products
Kenya breweries ltd
Kenya sweet ltd
Kenya wine agencies
Kesian Kenya ltd
Koba waters ltd
Kuguru food complex
Kwality candles and sweets
London distillers (k) ltd
Manji food industries
Mastermind tobacco (k) ltd
Mayfeeds kenyaltd
Melvinmash intrnational
Minibakeries Nairobi
Maritini Kenya ltd
Njengo ltd
Nairobi Bottlers ltd
New Kenya co-operative creameries ltd
Nestle food Kenya ltd
Norda industries ltd
Nutro manufacturers EPZ ltd
Palmhouse Diaries LTD
Patco industries ltd
Pernod Richard Kenya ltd
Pearl industries ltd
Pembe flour mills ltd
Premier flour mills ltd & premier food ltd
Pristine international ltd
Proctor & Allan (E.A) ltd
Prom Asidor kennya ltd
Rafiki Millers ltd
Razco ltd
Re-sun spices ltd
Salim wazarani Kenya ltd
Sameer agriculture and livestock Kenya ltd
SBC Kenya ltd
Sigma supplies ltd
Spice world ltd
Sunny processors
Tru foods ltd
Trust feeds ltd
Trust flavor millsltd
Umoja flour mills
Unga group ltd
United distillers and vintners
Value pak foods
Vinepak foods
Wanji food industries
Wrigley Company (E.A) LTD

LEATHEER AND FOOTWEAR

Alpharama Ltd

Arthi River Ltd
Bata Shoe Company (Kenya)Ltd
Budget Shoes Ltd
C & P shoe industries
Leather industries Kenya ltd
Sandstorm Africa ltd
Zingo investment

METAL AND ALLIED SECTOR

Agro Irrigation and pump
Allied east Africa ltd
Alloy steel casting ltd
Apex steel ltd
Arvind engineering
Asl ltd stee division
Asp company ltd
Ashut engineers ltd
Arthi river steel plant ltd
Blue nile wires ltd
Boothi extractions ltd
City ingineering works ltd
Crystal industries ltd
Davis &shirtliff ltd
Devki stee mills
Dushi enterprises
East Africa Spectre ltd
East Africa foundry works
East Africa Glass Wear Mart ltd
Easy Coach East Africa Ltd
Elite tolls ltd
Fine Engineerring
Friendship container manufacturing ltd
General aluminum fabricators ltd
Harveer bas body Builders ltd
Hobra manufacturing ltd
Insteel ltd
Iron art ltd
Kaluworks ltd
Ken metal industries
Mabati rolling mills
Load trailers
Kenya coach industries
Kenya grange vehicle industries ltd
King bird (k) ltd
King finn kenya
Mann manufacturing co. ltd
Master fabricaters ltd
Megh cushion industries ltd
Motorbike Africa ltd
Mutsimoto company ltd
Pipe Manufacturers ltd
R.T (east africa) ltd
Scania east Africa ltd
Sohansons ltd
Songyi motorcycles international ltd
Soroya motor spares
Theevan Enterprises ltd
Toyota Kenya ltd
Toyota tshusho east Africa ltd

PAPER AND BOARD

Associated paper and stationery ltd
Autolihyoltd
Bag and envelop converters
Bag and envelop manufacturers (k) ltd
Belsize industries ltd
Brand printers ltd
Carton Manufacturers ltd
Cempack solutions ltd
Chandaria industries ltd
Colour labels ltd
Colour packaging ltd
Adpak international ltd
Allpack industries ltd
P.L Patel press Kenya
Dodhia packaging ltd
Dune packaging ltd

East africa Packaging Industries
Economic Industries ltd
Elite offset ltd
Ellams products
English press ltd
Essential Manufacturing
Euro packaging ltd
Flora Printers ltd
Fortune printers and stationeries ltd
Fransiscan Kolbe press
General Printers ltd
Graphics and allied ltd
IconPprinters ltd
International papers & and board suppliers ltd
Juja pulp and paper ltd
Kartasi industries
Kenafric diaries Manufacturers ltd
Kenya litho ltd
Kenya paper mill
Kenya stationery ltd
Kim – fay east africa
Kql graphics ltd
L.a.b international Kenya ltd
Label converters ltd
Manipal international printing press ltd
Mfi Ultra print ltd
Modern lithographic (k) ltd
Mufundi paper ltd
Palmy enterprises
Paper House of Kenya ltd
Paperbags ltd
Pressmaster ltd
Printpak multipackaging
Printwell industries
Punchline ltd
Rayco printing works
Regal press Kenya
Sintel security print solutions
Stallion stationery Manufacturers ltd
Startpack industries ltd
Tetra pak ltd
The rodwell press ltd
Twiga stationery and printers ltd
United Bags Manufacturers ltd
Vakharia international papermills ltd

PHARMACEUTICAL AND MEDICAL EQUIPMENT SECTOR

African cotton industries
Alfa medical Manufacturers ltd
Autosterile ltd
Benmed pharmaceuticals ltd
Beta health care international ltd
Biodeal laboratories ltd
Biopharma ltd
Cosmos ltd
Dawa ltd
Elys chemicall industries ltd
Glaxo smithkline kenya ltd
Global Merchants ltd
Labaratory and allied ltd
Manhar Brothers (k)ltd
Medivet products ltd
Novelty manufactures ltd
Osschemie (k)ltd
Pharmaccess africa ltd
Pharmaceutical manufacturing co(k)ltd
Questa care ltd
Regal pharmaceuticals ltd
Scales and soft ware's (k)ltd
Skylight chemicals ltd
Lain pharmaceutical ltd

PLASTICS & RUBBER SECTOR

Acme containers ltd
Afro plastics (k) ltd
Bluesky industries ltd
Betetrad (k) ltd
Bobmil industries ltd
Brush manufactures ltd
Cables and plastics ltd
Canaaneast company ltd
Complast industries ltd
Coniny indutries ltd
Cocorico investment ltd
Darshan plastics ltd
Dynaplas ltd
Elgiread (kenya) ltd
Elgon kenya ltd
Eslon platic of kenya ltd
Five styar industries ltd
Flar kenya ltd
Foam mattress
General platics ltd
Hi.plast ltd
Jamlam indusrtries ltd
Jumbo chem
Kenpoly manufactures ltd
Kentainers ltd
Kinpash enterprices ltd
27 .l.g harris &co ltd
Lakhir plastics ltd
Laneeb platic industries ltd
Malplat industries
Metroplat indutries ltd
Nairobi plastic ltd
Ombi rubber roller ltd
Platics electricons
Plastic and rubber industries ltd
Polyflex industry ltd
Polythene indutries ltd
Princeware africa (k)ltd
Prosel ltd
Rubber product ltd
Safepak ltd
Sanpak africa ltd
Signode Packaging systems ltd
Singh retread ltd
Pringbox kenya ltd
Super manufactures ltd
Tech pak industries ltd
Thermopak ltd
Top pak ltd
Treadsetters types ltd
Uniplastics ltd
Vectus kenya ltd
Wonderpac indutries ltd

TEXTILE & APPARELLS

All Tex Epz Ltd
Alph Knits Ltd
Force Equipment Ltd
Global Apparels Kenya Ltd
Kema (EA) Ltd
Kenwear Garments
Manufacturers
Kenya Tents Ltd
Kenya Trading (EPZ) Ltd
Kikoy Co Ltd
Nidco Textiles
Newwide Garment (K) Ltd
Royal Garment Indutriies Ltd
Spin Knit Ltd
Spinners & Spinners Ltd
Sunflag Textiles And Knitwear
Miles Ltd
Tarpo Industries Ltd
Thika Cloth Mills Ltd
Ts Spinning And Weaving Ltd
Vatas Manufacturers Ltd
Future Garment (Epz) Ltd

TIMBER, WOOD & FURNITURE

Fine Wood Works Ltd
Furniture Internation Ltd
Kenya Wood Ltd
Newline Ltd
Ned Inerior Dewrators Ltd
Panesar’s Kenya Ltd

PG Bison (K) Ltd	
Rosewood Manufacturers Ltd	Funiture
Shah Timber Mart Ltd	
Shamco Industries Ltd	
Tim Sales Ltd	
Woodmakers Ltd	
Wood Tex Kenya	