

**DETERMINANTS OF COMPETITIVENESS OF SMALL
AND MEDIUM AGRO PROCESSING FIRMS IN KENYA**

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**Determinants of Competitiveness of Small and Medium Agro
Processing Firms in Kenya**

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Philosophy in Business Administration in the Jomo Kenyatta
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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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DEDICATION

I dedicate this thesis to my wife Rosemary Nkatha; my parents, Edward Muranga and Julia Wanjiru; my uncle, EJM Kinyanjui; and my children, Eddie and Sharon. I will forever cherish their love, guidance and patience.

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank.
AFDB	Africa Development Bank
AFFA	Agriculture Fisheries and Food Authority
ANOVA	Analysis of Variance
EU	European Union
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GoK	Government of Kenya
ICT	Information and Communication Technology
ISO	International Standards Organization
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KARLO	Kenya Agricultural and Livestock Research Organisation
KIRDI	Kenya Industrial Research and Development Institute
KTDA	Kenya Tea Development Agency Holdings Limited
LDC	Least Developed Countries
MCG	Murang'a County Government
MIT	Massachusetts Institute of Technology

MNCs	Multinational Corporations
MNEs	Multinational Enterprises
OECD	Organization for Economic Co-operation and Development
PCA	Principal Component Analysis
PRIs	Public Research Institutes
R & D	Research and Development
RBV	Resource Based Value
RoK	Republic of Kenya
SMEs	Small and Medium Enterprises
SMMEs	Small and Medium Manufacturing Enterprises
SOEs	State Owned Enterprises
SPSS	Statistical Package for Social Sciences
ST&I	Science, Technology and Innovation
TQM	Total Quality Management
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
US \$	United States of America Dollar
USA	United States of America
WEF	World Economic Forum

DEFINITION OF KEY TERMS

Agro-processing: Transforming products originating from agriculture, forestry and fisheries (FAO, 2013).

Business Networking: A socioeconomic business activity by which groups of like-minded business people recognize, create, or act upon business opportunities (Osterle, Fleisch & Alt, 2001). It is a grouping of individuals, organizations and agencies organized on a non-hierarchical basis, around common issues or concerns, which are pursued proactively and systematically, based on commitment and trust and whose reason for existing is connecting with other business people in order to form business relationships that mutually benefit all the parties involved (Dhliwayo, 2014).

Chance: All the factors that are beyond the power of the firm and the government including wars, political decisions by foreign governments, shifts in the world financial markets and major technological breakthroughs (Porter, 1990).

Competitiveness: Ability of a firm to do better than comparable firms in sales, market share, or profitability (Lall, 2000). Competitiveness involves productivity, efficiency and profitability elements (Sancharan, 2011).

Government: Refers to policies and attitude of government towards business. Government policies that would affect business include: nationalization, privatization, taxation, interest rates, spending and government subsidies (Porter, 1990).

Innovation: Is the implementation of a new or significantly improved product (a physical good or service), process, marketing method, or organizational method in business practice, workplace organization, or external relations (OECD, 2010).

Managerial Capability: Ability of a manager to create a strong workplace culture which facilitates the employees to grow and engage, and at the same time achieve business goals and objectives. Managerial capabilities include knowledge; leadership qualities; personal qualities; collaborative decision making; and skills to nurture creativity and innovation (Szczepańska-Woszczyzna & Dacko-Pikiewicz, 2014).

Productivity: Is economic output per unit of input. The unit of input can be labor hours (labor productivity) or all production factors including labor, machines and energy (total factor of productivity) (Atkinson & Ezell, 2012).

SMEs: They are defined based on the number of employees, annual turnover, annual balance sheet total, and level of autonomy. A small enterprise consists of those firms with 10- 50 employees, annual turnover of between Ksh.500, 000 and Ksh.5 million and investment of between Ksh.5 million and Ksh.20 million. A medium-size enterprise would have 50-100 employees, annual turnover of between Ksh.5 million to 800 million (RoK, 2005).

Technology: It pertains to the equipment, hardware, software, procedures and technical knowledge brought to bear in the firm's transformation of inputs into outputs (Thomas, Narayanan & Ramanathan, 2012).

Value Addition: Is the processing, branding, quality certification and accreditation, as farm-level quality improvements that the market values (RoK, 2010). A product whose appeal to consumers has been increased through packaging, processing, marketing, or production practices or services is said to be value added (Ehmke, 2008).

ABSTRACT

The purpose of this study was to analyze the determinants of competitiveness of small and medium agro-processing firms in Kenya. Most farmers in Kenya export semi-processed low-value produce, some of which they later import as finished products. The limited ability to add value to agricultural produce coupled with high production costs could be attributed to low investment in innovation and use of outdated technology. In order to earn more from their efforts, agro-processors in Kenya must embark on production of consumer ready products that will compete regionally and globally. To attain this competitiveness, the agro-processors must adopt the determinants of competitiveness that will greatly influence their competitive success. This study's independent variables were four important determinants of competitiveness (innovation; business networking; technology; and managerial capabilities) while the dependent variable was competitiveness. The study reviewed both theoretical and empirical literature about competitiveness of small and medium agro processing firms and determinants of competitiveness of firms. Porter's diamond theory of competitiveness guided the study but three other relevant theories were also considered. The study adopted correlational survey research design to guide the collection, analysis and presentation of data. Questionnaires were the main instruments of collecting data from respondents sampled from 180 agro-processing firms in Murang'a County in Kenya. Quantitative data was analyzed using SPSS while the qualitative data was subjected to content analysis. The results have been presented in frequency tables, scatter diagrams, pie-charts and graphs. The study revealed that innovation; business networking; managerial capability; and technology significantly influence competitiveness of small and medium agro-processing firms in Kenya. However, the business networks that small and medium agro processing firms engaged in were found to be based on trust and not formally established. The study also revealed that although technology was important in the improvement of brands' value; productivity; and profitability of the agro processing firms, the firms did not strategically prioritize the use of technology in production and they had not fully embraced ICT. The study recommended that SMMEs should recruit suitable managers; encourage and reward entrepreneurial spirit among the staff; engage in formal strategic business networks; invest more resources in R & D; prioritize the use of technology in production; establish functioning websites; and fully embrace technology to stimulate competitiveness of their firms. The study also recommended that both the national and county governments in Kenya should offer subsidies that would encourage small and medium agro processing firms to invest more in R & D and modern technology to spur innovation and competitiveness. The study recommended further research to investigate why small and medium agro processing firms in Kenya did not strategically prioritize the use of technology in production although it had been established as an important determinant of firm level competitiveness. The study also recommended similar studies may be carried out to analyze the influence of other determinants like for example, affordable credit; regulatory framework; supportive policies; road infrastructure; and affordable energy on the competitiveness of agro processing firms in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Competitiveness of a firm can be defined as its ability to do better than comparable firms in sales, market shares, or profitability (Lall, 2000). It is created at the firm-level and emerges from complex patterns of interactions between the government, enterprises and other actors (Lalinsky, 2013). It is embodied in the characteristics of the firm such as the current efficiency and effectiveness in the usage of resources; willingness to reinvest the profits; ability to innovate and capability to improve the production technology (Metcalf, Ramlogan & Uyarra, 2003; Raduan, Jegak, Haslinda & Alamin, 2009; Schwenk & Shrader, 1993). Firm level competitiveness involves productivity, efficiency and profitability elements (Sancharan, 2011). The essence of understanding and utilizing the determinants of competitiveness lies in creating tomorrow's competitive advantages faster than competitors can mimic the ones you possess today (Prahalad & Hamel, 1990).

In strategic management literature, the concept of competitiveness has now become a buzzword like globalization and liberalization. It has gained prominence in both policy and academic circles specifically in the search for factors that are necessary to ensure external macroeconomic performance, sustained economic growth, and improvement in living standards of the population (Ramirez & Tsangarides, 2007). It has received attention from researchers, governments and business organizations because of its close association with the success of an entity. In the past decades, many works on competitiveness with different perspectives have been published (Hoskisson, Eden, Lau & Wright, 2000; Porter, 1985). But most of the work on competitiveness has been based in the developed world with some studies in the rural locations of the developing countries.

Competitive advantage is a position of superior performance that a firm can achieve through one of the generic strategies: cost leadership, differentiation or focus (Porter, 1985). In order to generate sustainable competitive advantage, an organization must

possess core competences which must not only produce economic value, but also be scarce, imperfectly imitable, and imperfectly tradable (Barney, 1986; Dierickx & Cool, 1989; Peteraf, 1993). One of the core competences of a firm is managerial capability which has been acknowledged as an important source of competitive advantage that generate above normal rent for the organization (Barney, 1991; Penrose, 1959). Ehmke (2008) has shown that the energy, persistence and resourcefulness of managers ultimately led to the competitive success of their businesses. In competitive markets, innovation helps to maintain or grow the market share or profits and can be a route to competitiveness.

Innovative production, processing and logistics can also create cost efficiencies and improve services that translate into higher profit margins (Porter, 1985). In a globally-competitive landscape, competitiveness is sustained through rising productivity originating from innovation, invention, R&D and service provision (OECD, 2000). Technology has become one of the most important tools for achieving competitiveness, combined with efficient marketing performance (Thomas et al., 2012). Much of the increase in global productivity in the last decade is attributed to information and communication technologies (Thomas et al., 2012). Strategic business networks resonate with locking the venture into a set of secure and rewarding network links that competitors find hard or expensive to break (Wickham, 2006). Collaborative networked organizations are structured primarily to make a favorable position against the competition and the relationships are key sources of competitive advantage (Wickham, 2006).

1.1.1 Global Trends of Competitiveness

Taken within the historical context, competitiveness in the manufacturing sector has evolved with time (Chemengich, 2013). Competitiveness originated from a Latin word, *competer*, which means involvement in a business rivalry for markets (Lall, 2000). Modern competitiveness of enterprises, industries and countries may be traced as far back as the mercantilism era of between 1600s and 1800s in Western Europe when European nations struggled to establish empires worldwide. The dominant actors of trade at that time were the merchants, who used to travel by sea in search of

goods from other countries. Their merchandise included timber, cloves, slaves, minerals, linen and cutlery. Gold was the basis of payment at that time and a country having more gold in its vaults was considered wealthier and more competitive.

Smith (1776) in his book, *Wealth of Nations*, postulated that countries should produce goods for which they had absolute advantage and import goods that they did not have absolute advantage to produce. Later, Ricardo (1891) argued that every country however poor, had something to offer to the rest of the world and should, therefore, specialize in producing goods for which it had a comparative advantage and import those it did not have a comparative advantage. The 19th century's laissez faire capitalism did not operate as smoothly as Smith (1776) and Ricardo (1891) had envisioned. Cartels and monopolies came to dominate key sectors of the economy such as energy and transportation.

The inefficiencies of the cartels led to creation of many state-owned enterprises (SOEs) in Europe and in many of the newly independent nations. With time it became apparent that SOEs suffered from low productivity and provided a fertile ground for corruption (Clerides, 2012). The development of the economic theories of auction provided a useful set of tools for designing new markets in areas like energy, telecommunications and the environment (Clerides, 2012). This paradigm shift was facilitated by technological improvements that made it possible to foster competition in sectors that were previously thought to be natural monopolies, such as telecommunications. By mid-19th century, many US firms began to globalize by setting up business plants in various parts of the world and by the late 20th century, most Japanese and Chinese firms had joined the globalization race. By the 1970's the process of globalization propelled by the MNEs was quite entrenched, marked by tremendous movement of people, knowledge, goods, services and technology across borders.

The wave of market liberalization began in the 1970s in the United States and gradually spread throughout the globe (Clerides, 2012). Today, competitive pressures have steadily escalated as a result of continued international trade liberalization, globalization and great technological innovations in communication (Chang &

Kilduff, 2002). Determinants of competitiveness like innovativeness, technology, strategic planning, skills development and market access have become important to evolving business entities (Clerides, 2012).

Manufacturing companies in the US are today facing intensified competition which is not merely based on product design, marketing ingenuity or financial strength but on superior manufacturing organization (Prahalad & Hamel, 1990). The US firms have neglected manufacturing organization for a long time and are finding it difficult to regain the lost competitiveness. At the top of many US corporate agendas rests the determination to boost productivity, product quality and product innovation (Wheelwright & Hayes, 1985). Further, Prahalad and Hamel (1990) concluded that the root cause of American enterprises' loss of competitive advantage was not because of a disadvantaged external environment, but rather because they had neglected to examine the organizations' core competences.

In Europe, the enlargement of EU has brought about increased technological change, liberalization of markets and pressure of Western European countries to increase their competitiveness (Papulova & Papulova, 2006). Firms doing business in the EU are associated with high quality, ISO standards certification and flexibility (Papulova & Papulova, 2006). Economic globalization has created new competitors for the SMEs in Europe, especially from low labor cost countries like China and India, but it has also provided greater incentives and opportunities to access the various markets and knowledge sources needed to build lasting competitive advantage through continuous innovation (Lalinsky, 2008).

Up until recently, one would have struggled to hear anyone mention business success and African firms in the same sentence (Amoako-Gyampah & Boye, 1998). Barriers at institutional, sector and company levels saw to it that performance was invariably below standard. Most firms in these economies in the past operated in environments of limited competition, fixed currency, fixed exchange rates, price controls and government subsidies (Amoako-Gyampah & Boye, 1998). But that is in the past and Africa's economy is expanding fast and its enterprises are becoming even more competitive (Tvedten, Wendleboe & Jeppesen, 2014).

As firms in Africa integrate themselves into the world economy they find that multinationals and firms from larger emerging economies are also moving into their local economies and increasing the competition in the domestic market (Khanna & Palepu, 2010). The presence of MNEs in Africa has introduced increased competition through superior manufacturing technology and high quality products. There is, therefore, a strong need for African enterprises to develop strategies that account for the key external and internal factors that determine competitiveness. It is necessary to promote creativity and innovative technologies to locally process the continent's abundant natural resources, and to create more wealth and jobs for the youth on the continent (Agbor & Taiwo, 2014). Strategy is essential for enterprises in Africa as they fuse Western market-oriented models with traditions where family networks and kinship dominated. Inherent difficulties exist in adopting strategies from a different continent in their entirety (Tvedten *et al.*, 2014).

The ability of businesses in Africa to create and sustain competitive advantage depends on their capacity to obtain and leverage financial, human and other resources and also capabilities to organize business activities (Acquaah, 2007). Africa's greatest hope for continental development is its vibrant human resources. However, to accelerate Africa's transition to an innovation-led, knowledge-based economy, her human resources must be empowered with the necessary managerial skills. Greater emphasis must also be placed on innovation and on appropriate adaptation of technology and existing research results (Agbor & Taiwo, 2014).

1.1.2 Competitiveness of Agro-processing Industry in Kenya

Agriculture remains the backbone of the Kenyan economy and is the single most important sector in the economy, contributing approximately 25% of the GDP, and employing 75% of the national labor force (RoK, 2005). Globally, value addition in agriculture determines the competitiveness of a country's produce in the world markets. However, the Kenyan farmers export semi-processed, low-value produce, which accounts for 91 % of total agriculture-related exports (RoK, 2010). Consequently, the country loses billions in earnings by not adding value to its produce.

The small and medium manufacturing enterprises contribute 18% of the Kenyan GDP (RoK, 2005). Daniels (1999) posits that the informal sector in Kenya constitutes 98% of all businesses in Kenya and absorbs 50% of new non-farm employment seekers. The sector is important in job creation contributing close to 80% of all new jobs annually (RoK, 2005). However, the sector is confronted with challenges such as the effects of globalization and the influx of sub-standard counterfeits which have compromised the competitiveness of Kenya's finished goods (Chemengich, 2014). Potential for adding value to products such as tea, coffee, pyrethrum, hides and skins, milk, beef, fruits and vegetables remains largely untapped (RoK, 2013). But a characteristic feature of Kenya's agricultural sector is the dominance of primary production with very little on-farm and off-farm processing, translating into low incomes for farmers (Shiribwa, 2012). The limited ability to add value to agricultural produce coupled with high production costs make Kenyan exports less competitive (RoK, 2013). But in order to maximize income from the sector, efforts must be made to intensify value addition to products (Shiribwa, 2012).

1.1.3 Kenya Vision 2030 and Agro-Processing in Kenya

According to the Global Economic Report (2014-2015), Kenya was ranked a poor 90th out of 133 countries in global competitiveness (WEF, 2015). But the poor position contradicts Kenya's vision of being a globally competitive and prosperous nation with a high quality of life by the year 2030 as outlined in the Kenya Vision 2030 blueprint (RoK, 2010). In the blueprint, one of the strategic areas identified that can make Kenya competitive is value addition to products and services in tourism, agriculture, trade and manufacturing (RoK, 2007).

Agro-processing industry comprises sub-sectors such as food, textile, and energy biotechnology. Kenya's agro processing industry accounted for 6% of GDP and 30% of export earnings which constituted 70% of the production value in the overall manufacturing sector value in 2006 (RoK, 2008). Investment opportunities in this sector exist in various industries such as: white refined industrial sugar; fruit concentrates; meat and fish products; oil crops; nuts; soya beans; dairy products;

hides and skins; textiles; and wood products. In order to achieve the 10% economic growth envisioned in Kenya Vision 2030, it is critical to transform smallholder agriculture from subsistence to an innovative, commercially oriented and modern agricultural sector. This transformation will be accomplished through value addition to farm, livestock and forestry products before they reach local, regional and international markets (GoK, 2007). Agro-processing will help to create jobs and reduce poverty thus contributing to the attainment of the goals set out for both economic and social pillars of the vision 2030 blueprint. The sector has been identified as key to addressing incidences of high poverty levels, unemployment, disparities in regional development, and meager foreign exchange earnings from exports of primary or semi-processed agricultural produce (RoK, 2013).

The determinants of competitiveness are many and vary from one subsector to the other. Van Rooyen, Esterhuizen and Doyer (2000) identified fifteen important drivers influencing the competitive success of the agro-food and fiber complex in South Africa. However, some determinants are more crucial in influencing competitiveness than others because when applied they have been proven to steer organizations to greater profitability (Mutua, Namusonge & Karanja, 2012). This study considered four important determinants of competitiveness namely: innovation; business networking; technology; and managerial capabilities which have been widely used in various studies in determination of SMEs' competitiveness (FAO, 2013; Gulati, Norhia & Zaheer, 2000; Pokhariyal & Yalla, 2011; RoK, 2013; World Bank, 2003).

1.2 Statement of the Problem

In competitive markets, innovation helps to maintain or grow the profits of firms and can be a route to competitiveness. It creates cost efficiencies and improves services that translate into higher profit margins (Porter, 1985). It should further be noted that businesses that invest in R &D, and do what is distinctive and difficult to replicate are likely to be more profitable than their rivals (Pearce & Robinson, 2011; Raduan et al, 2009). But despite the importance attached to innovation and technology in

enhancing competitiveness of firms, studies in Kenya have shown that small and medium manufacturers are applying relatively old technology when compared to its neighbors (Pokhariyal & Yalla, 2011) and are therefore finding it difficult to access the export market due to poor production techniques (RoK, 2007). According to Kenya Vision 2030, agro processing is an important sub sector in the industrialization process in Kenya (RoK, 2007) but the sector may not achieve the desired level of competitiveness due to the high cost of doing business, use of outdated technology and shortage of appropriate skills to carry out innovative activities (FAO, 2013; Pokhariyal & Yalla, 2011; RoK, 2013; World Bank, 2008). Like other SMEs the Agro-based enterprises in Kenya, typically involves a relatively limited range of technologies that do not differ widely across product categories (Waithaka, 2016). It was therefore important to carry out this study to analyze the influence of innovative activities and technology adopted by small and medium agro processing firms in pursuit of greater competitiveness.

Business networks provide access to information, resources, markets, and technologies that have the potential to maintain or enhance the competitive advantage of the firms (Gulati, et al., 2000). Those firms that take up new opportunities accruing from relationships in a business network are more likely to be profitable and productive than firms in hierarchical arrangements. Public Private Partnerships in value-added agriculture have received great attention in Kenya vision 2030 blueprint, with an expected investment of US \$ 231 Million in the Ministry of Agriculture and US \$ 15 Million in the Department of Fisheries development for PPPs (FAO, 2013; GoK, 2007). But despite these efforts, weak industrial linkages and collaborations; and weak public private partnerships are often cited as challenges affecting the productivity of SMMEs in Kenya (Chemengich, 2014; GoK, 2007; Otieno, 2012). It was therefore important to carry out the study so as to assess the influence of business networking on competitiveness of small and medium agro processing firms in Kenya.

Managerial capability has long been acknowledged as an important source of competitive advantage that generate above normal rent for an organization (Barney, 1991; Penrose, 1959). Van Rooyen, et al. (2000) found out that managerial

capabilities were important for the competitive success of agro-food industries in South Africa. The SMMEs in Kenya should endeavor to acquire managerial capabilities in both the operational and strategic areas to enable them attain their objectives. This study aimed at analyzing the influence of managerial capabilities on competitiveness of small and medium agro-processing firms in Kenya.

Some studies of determinants of competitiveness have been done in developed and developing countries (Lalinsky, 2013; Ramirez & Tsangarides, 2007; Van Rooyen *et al.*, 2000). In Kenya, studies of determinants of competitiveness of firms have had varied results in diverse sectors (Chemengich, 2014; Ngugi, Gakure & Mugo, 2012; Onyango, 2011; Otieno, 2012; Wanjau, 2010). From the foregoing, this study sought to fill the gap by analyzing the determinants of competitiveness of small and medium agro-processing firms in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study was to analyze the determinants of competitiveness of small and medium agro-processing firms in Kenya.

1.3.2 Specific Objectives

The specific objectives were:

1. To analyze the influence of innovation on the competitiveness of small and medium agro processing firms in Kenya
2. To assess the influence of business networking on the competitiveness of small and medium agro processing firms in Kenya
3. To examine the influence of technology on the competitiveness of small and medium agro processing firms in Kenya
4. To analyze the influence of managerial capabilities on the competitiveness of small and medium agro processing firms in Kenya

1.4 Research Hypotheses

The study hypothesized that:

H₀₁: Innovation has no significant influence on the competitiveness of small and medium agro-processing firms in Kenya

H₀₂: Business networking has no significant influence on the competitiveness of small and medium agro-processing firms in Kenya

H₀₃: Technology has no significant influence on the competitiveness of small and medium agro-processing firms in Kenya

H₀₄: Managerial capabilities has no significant influence on the competitiveness of small and medium agro-processing firms in Kenya

1.5 Significance of the Study

At the macro-economic level, this study of determinants of competitiveness will have far reaching implications for policymakers at both the county and national levels of government in Kenya. The many problems of poverty, low productivity, inadequate infrastructure and poorly integrated markets faced by developing countries are often exacerbated by an under-developed agro-industrial sector (AFDB, 2016). The findings of the study will inform the policy makers on how the competitiveness of agro-processing firms can be sustainably improved so as to create more jobs. When firms increase their productivity and profitability they will consequently be able to contribute to the attainment of the goals set for the economic and social pillars of Kenya Vision 2030. It is necessary to promote creativity and innovative technologies to locally process the abundant natural resources and at the same time create more wealth and hence better paying jobs for the youth in Kenya. Competitive agro-processing firms will also contribute immensely to Kenya's industrialization and lead to improved rural incomes, save on transport costs by delivering high-value, low-volume products, and create opportunities for using by-products as inputs. It will also provide opportunities to convert perishable commodities into more durable products thus enhancing the food security of the country (RoK, 2008).

Competitiveness is vital because it is the lifeline of a nation's economy (Bhawsar & Chattopadhyay, 2015). This study will inform agencies like Kenya Revenue Authority, Competition Authority of Kenya, Kenya Investment Authority, the Ministry of Industrialization and Enterprise Development and the Kenya's Vision 2030 Secretariat on competitive approaches adopted by firms and the market forces of the manufacturing sector. The agencies may also consider funding the adoption of policies and processes that can make the SMMEs in Kenya to be more competitive.

The significance of this study is critical at firms' operational level. A good understanding of competitiveness related issues such as the determinants, measurements, frameworks and models will help managers and other industry operators not only in finding stronger areas for reinforcement and weaker ones for improvement, but also in formulating informed corporate strategies and decisions that will help establish a competitive position for their enterprises (Sancharan, 2011). The business managers will therefore attach due importance to competitiveness and apply it in their day-to-day operations in order to achieve higher levels of productivity and profitability (Bhawsar & Chattopadhyay, 2015). Agricultural industry in Kenya will be richer from information provided by this study on how to better position a firm in the competitive environment. This study will benefit Kenyan farmers and agro-processors by providing them with information that will assist them to add value to their products. To maximize income from the agro-based manufacturing sector, efforts must be made to intensify value addition to products (Shiribwa, 2012). The information on the determinants of competitiveness of agro-processing SMMEs will encourage the SMMEs to add value and deter them from exporting raw or semi-processed products.

1.6 Scope of the Study

This study intended to analyze the determinants of competitiveness of small and medium agro-processing firms in Kenya. The study focused on agro-processing firms in Kenya due to the critical role of the sector to the economy and its potential to provide jobs (Waithaka, 2016). Kenya's agro processing industry accounted for 6% of GDP and 30% of export earnings which constituted 70% of the production value

in the overall manufacturing sector value in 2006 (RoK, 2008). The study would be carried out in Murang'a County in Kenya, it would have been richer if it had surveyed small and medium agro-processing firms in all counties of Kenya, but because of the constraint of time and other resources, the study was restricted to Murang'a County. Like most counties in Kenya, Murang'a County is predominantly rural and its economy is agriculture-based (RoK, 2008).

Murang'a County is one of the five counties in the central region of the Republic of Kenya. It is bordered to the North by Nyeri, to the South by Kiambu, to the West by Nyandarua and to the East by Kirinyaga, Embu and Machakos Counties. It lies between latitudes 0° 34' South and 1° 7' South and Longitudes 36° East and 37° 27' East (RoK, 2013). The county occupies a total area of 2,558.8Km² with a population of 936,228 persons (RoK, 2013). Murang'a County does not have big manufacturing industries but there are several small and medium agro-processing factories with coffee being the leading sub sector followed by tea. Most of the factories produce semi-processed products which are exported to other counties and internationally as raw materials and therefore do not fetch optimum prices (RoK, 2013). Only a few factories like Del Monte, Equatorial Nut Processors and Kenya Nut Company produce finished products and hence are the largest employers (RoK, 2013).

There are 161 coffee pulping factories, 3 macadamia nuts processing companies, 3 fruits processing factories, 4 dairy plants, 3 animal feeds factories and 6 cottage factories dealing with agricultural value addition in Murang'a County (RoK, 2013). The county integrated development plan has in its priority listed several agro-processing projects such as; mango processing plant at Kiharu, avocado processing plant, vegetables canning factory, cassava value addition plant in Maragua Ridge, Kenyatta Agriculture Training College's agro-processing unit and sunflower cottage industry at Kigumo. The county also has plans to restructure the entire coffee subsector and emphasize on more value addition in the tea subsector (RoK, 2013).

1.7 Limitations of the Study

The researcher faced a limitation of lack of responsiveness since some of the managers were not free to disclose the information sought in the questionnaire for the

fear that it may end up with their competitors. In order to delimit this, the researcher presented a letter of introduction from the university indicating that the information sought was for academic purposes only which increased the respondents' confidence. Agro processing firms in Murang'a County are distributed across its eight sub counties which made it challenging for the researcher to collect data in the planned time. To overcome the limitation the researcher hired and trained three research assistants who helped to distribute and collect the questionnaires.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers both theoretical and empirical review of literature. The conceptual framework of the study was based on Porter's Diamond Theory of National Competitiveness. The study reviewed empirical evidence of previous studies on the variables of the study namely: innovation; business networking; technology; managerial capabilities; and competitiveness of firms.

2.2 Theoretical Framework

Contending theories of strategic management seek to explain how individual firms can gain competitive advantage in the global marketplace (Barney, 1991; Ohmae, 1982; Penrose, 1959; Porter, 1985; Wernerfelt, 1984). These theories have been extended to the question of why industries in particular regions or nations are more or less competitive in the global economy (Porter, 1990; Rugman & Verbeke, 2002). There are many theories of competitiveness but this study reviewed: Porter's Five Forces Theory; Porter's Diamond Theory of National Competitiveness; Resource Based Theory of Competition; and Ohmae's 3 Cs Theory.

2.2.1 Porter's Five Forces Theory

According to Porter (1980), there are five major forces that determine a firm's ability to compete namely: rivalry within the industry; threat of new entrants; threat of substitutes; bargaining power of suppliers; and bargaining power of buyers. The five forces can be analyzed by firms in the assessment of their competitors and decide how to compete against them (Porter, 1980). After the analysis a firm can choose one of the three generic strategies of competitive advantage: cost leadership, differentiation or focus (Porter, 1985).

The number and concentration of firms in an industry will determine the intensity of competition among the existing firms. There are four types of competition based on

the number of firms namely: monopoly, monopolistic competition, oligopoly and perfect competition. In one extreme, there is only one firm that enjoys monopolistic powers and in the other extreme, there are many firms offering undifferentiated products that are in a perfect competition market structure where there is intense competition. Firms operating in oligopoly and monopolistic competition market structures offer differentiated products and services.

Firms entering an industry, will bring with them new capacity and a desire to gain market share and profits. Entering firms may face entry barriers and competition from existing firms which may opt to launch vigorous defense of their market share. The bargaining power of the suppliers and buyers must also be taken into consideration when formulating competitive strategies. Availability of substitutes places a ceiling on prices that a firm can charge and the buyers' prospects of buying substitutes when the company increases its prices must also be taken into account when formulating competitive strategies. Porter's (1980) five forces theory supports the objectives of this study because by appreciating the five forces, a firm that will continually engage in innovation; enter into strategic business networks; invest in technology; and employ unique managerial capabilities will stay ahead of the competition in an industry and erect significant entry barriers.

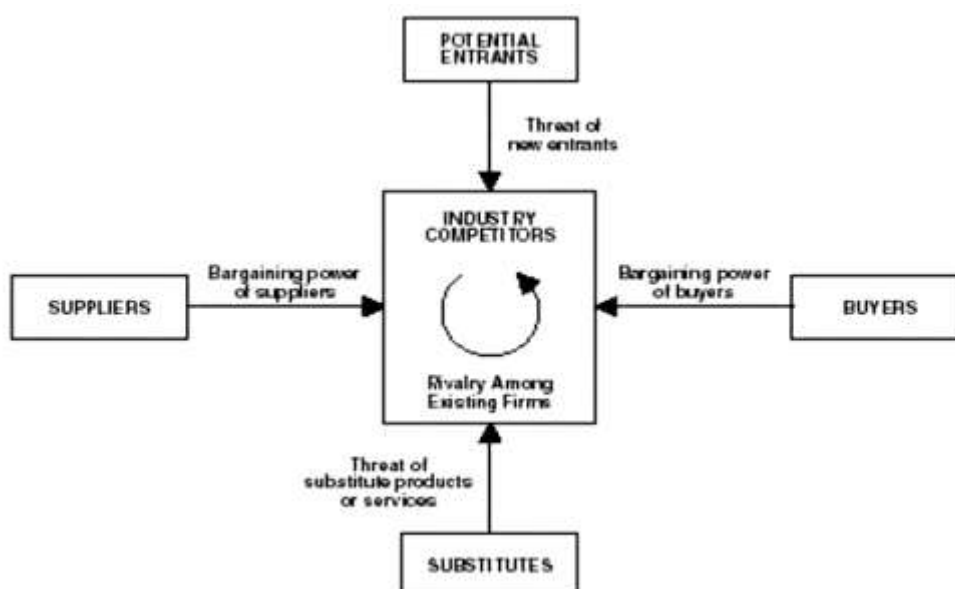


Figure 2.1: Porter's Five Forces Theory Source: Porter (1980).

2.2.2 Porter's Diamond Theory of National Competitiveness

In this model, Porter (1990) starts at the interaction of four factors that represent a diamond which are: (i) strategy, structure and firm rivalry; (ii) conditions of input factors; (iii) demand conditions; and (iv) related and supporting industries. Porter (1990) argues that competitiveness of an entity lies in the four broad categories or attributes with two intervening attributes (Government and Chance) that shape the environment in which firms or industries compete.

Factor conditions are the advantageous factors of production that give some firms competitive edge over their competitors. They include human resources, physical resources, knowledge resources, capital resources and infrastructure (Porter, 1990). Created factors such as skilled labor, infrastructure, technology and production costs are necessary to compete in a given industry (Sinngu & Antwii, 2014). The fact that a country possesses good non-key factors like cheap unskilled labor force and abundant sources of raw materials does not generate sustained competitive advantage. However, specialized key factors such as skilled labor, capital and infrastructure lead to competitiveness since they are more difficult to replicate (Porter, 1990). The objectives of this study were drawn from the created factors of a firm namely managerial capabilities, innovation and technology.

Demand conditions include domestic demand composition, demand size and internationalization of the domestic products. Customers in the home market can help companies create a competitive advantage, when sophisticated home market buyers pressure firms to innovate faster and to create more advanced products than those of competitors (Porter, 1990). Agro-processing firms in Kenya can benefit from availability of domestic and regional markets.

Related and supporting industries involve the presence or absence of domestic suppliers and related industries that are internationally competitive. Porter (1990) argues that a set of strong related and supporting industries is important to the competitiveness of firms or industries. When the local supporting industries are competitive, local companies are also likely to be competitive as well. Examples of related and supporting industries of agro-processing industry are research

institutions, financial institutions, transportation companies, universities and colleges, and packaging companies (Sinngu & Antwii, 2014). Business networks formed with related and supporting industries will provide timely information that will enable a firm to remain sustainably competitive.

Firms' strategy, structure and rivalry involves culture, structure, management skills, pricing strategy, buyers' and suppliers' market power, threats of new entrants and substitutes. If competition is very strong in the domestic market then local firms may develop skills that can be used to compete internationally. A more developed and intensive interaction between these factors will generate better productivity, innovativeness and the sector's export growth making the entity more competitive (Porter, 1990). Governments play an important role in international competitive success of their firms since they can influence each of the above determinants either positively or negatively through policies. Government interventions can occur at local, regional, national or supranational level (Porter, 1990). Chance conditions include factors such as wars, political decisions of foreign states and discontinuity of technologies. When they occur, chance factors are beyond the power of the industry and Government. They can either hurt or benefit the industry's competitive position. Porter (1990) argues that government and chance factors must be viewed differently from the other four determinants.

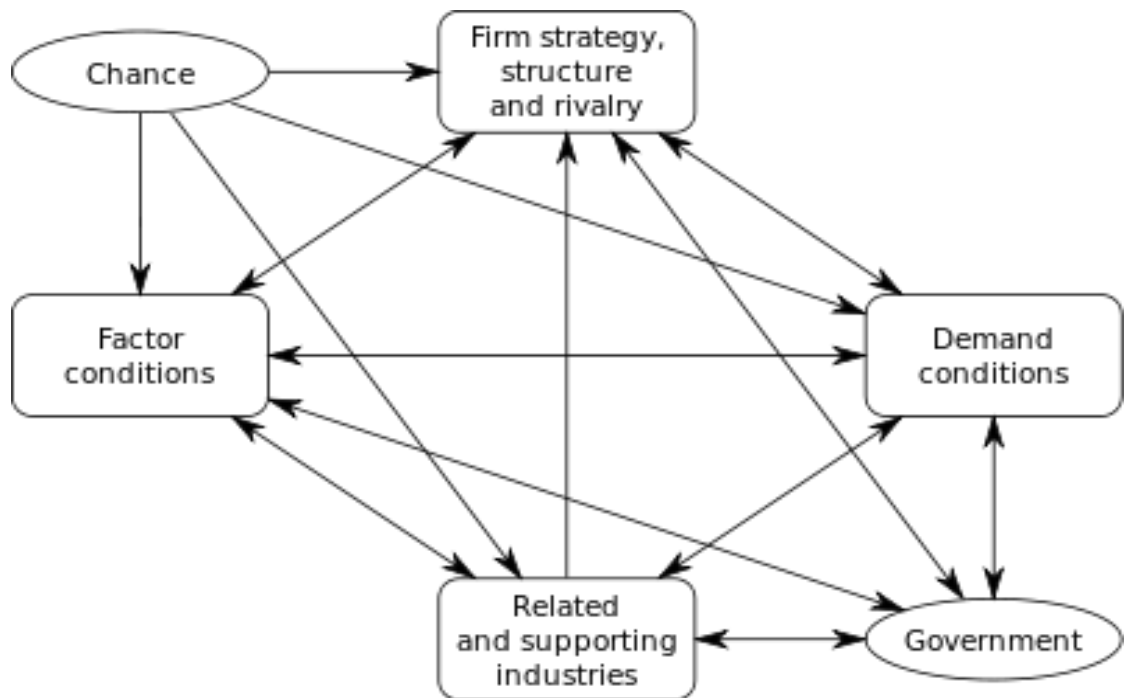


Figure 2.2: Porter’s Diamond of National Competitiveness

Source: Porter (1990).

2.2.3 The Resource Based Value (RBV) Theory

The RBV theory was first introduced by Wernerfelt (1984) and is based on the premise that the source of competitive advantage lie in an organization’s internal resources as opposed to positioning in the external environment. A firm's resources at a given time could be defined as the tangible and intangible assets which are tied semi-permanently to the firm (Caves, 1980). Resources of a firm would include brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures and capital (Werner felt, 1984).

According to Hisrich, Peters, and Shepherd, (2005); Pearce and Robinson (2000); Rwigema and Venter (2004) resources can be viewed as valuable only if they meet the core competitive characteristics like competitive superiority, resource scarcity, appropriateness, inimitability and durability. Further, Barney (1991) argues that resources lead to sustainable competitive advantage only when they are valuable,

rare, inimitable and non-substitutable. Knowledge is the basis of the entrepreneurial resource and resides in the collective mind of the entrepreneur, management and employees (Christensen, 2004; Hisrich et al., 2005).

Competitive advantage depends on unique resources and capabilities that a firm possesses (Barney, 1991). The RBV theory predicted that certain types of resources owned and controlled by the firm have the potential and promise to generate competitive advantage and eventually superior performance (Ainuddin, Beamish, Hulland & Rouse, 2007). Grant (1991) suggests that resources like patents and brand strength form the basis for profitability. The RBV theory underpins the objectives of this study because the theory focuses on internal processes and capabilities like innovation and managerial capabilities which were key variables of this study.

2.2.4 Ohmae's 3Cs Model

The 3Cs Model was developed by the renowned business and corporate strategist Kenichi Ohmae in 1982. It is a business model which offers a strategic look at the factors needed for competitive success. Ohmae (1982) posits that successful business strategy does not result from rigorous analysis but from a particular state of mind of the strategist with a sense of mission that fuels creativity. The strategist should focus on three key factors for competitive success: customer; competitors and corporation which Ohmae (1982) called the 3Cs of the strategic triangle. It is only after integrating the three factors that a sustained competitive advantage can be achieved.

According to Ohmae (1982), customer based strategies focus on the interests of the customers and not those of shareholders, founders or other stakeholders. On the other hand, corporation strategies are functional based and their aim is to strengthen the key industry functional areas relative to those of competitors. Competitor based strategies are constructed with an eye on possible sources of differentiation. Small and medium manufacturing enterprises can use their characteristics of flexibility and creativity to segment clients according to their objectives for use of their products (Amrule, 2013). Significantly improved customer service level enhances sales performance and as a result a firm's overall performance is improved (Birasnav, 2013). Ohmae (1982) further argues that environmental factors have to be taken into

account when shaping the competitive strategy. The theory supports this study's objectives because innovation, technology, business networking and managerial skills should be priority areas "in the mind of a strategist" as he constructs competitive strategies.

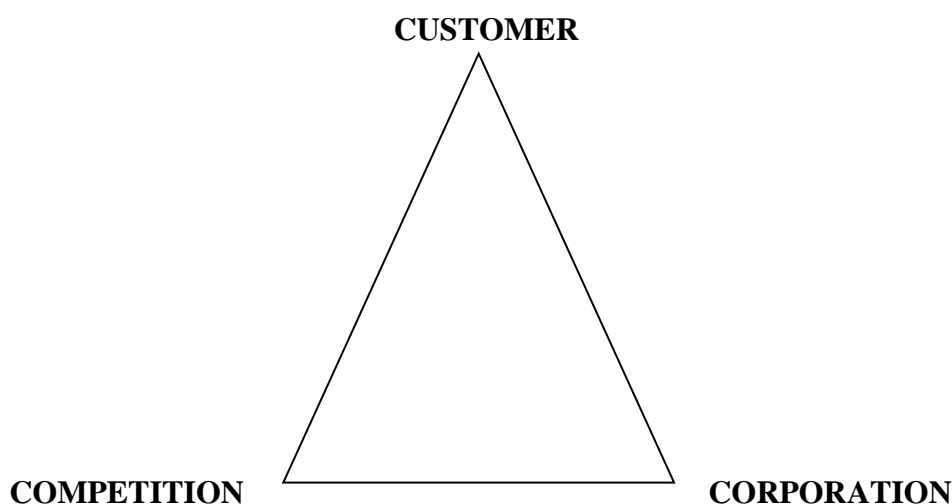
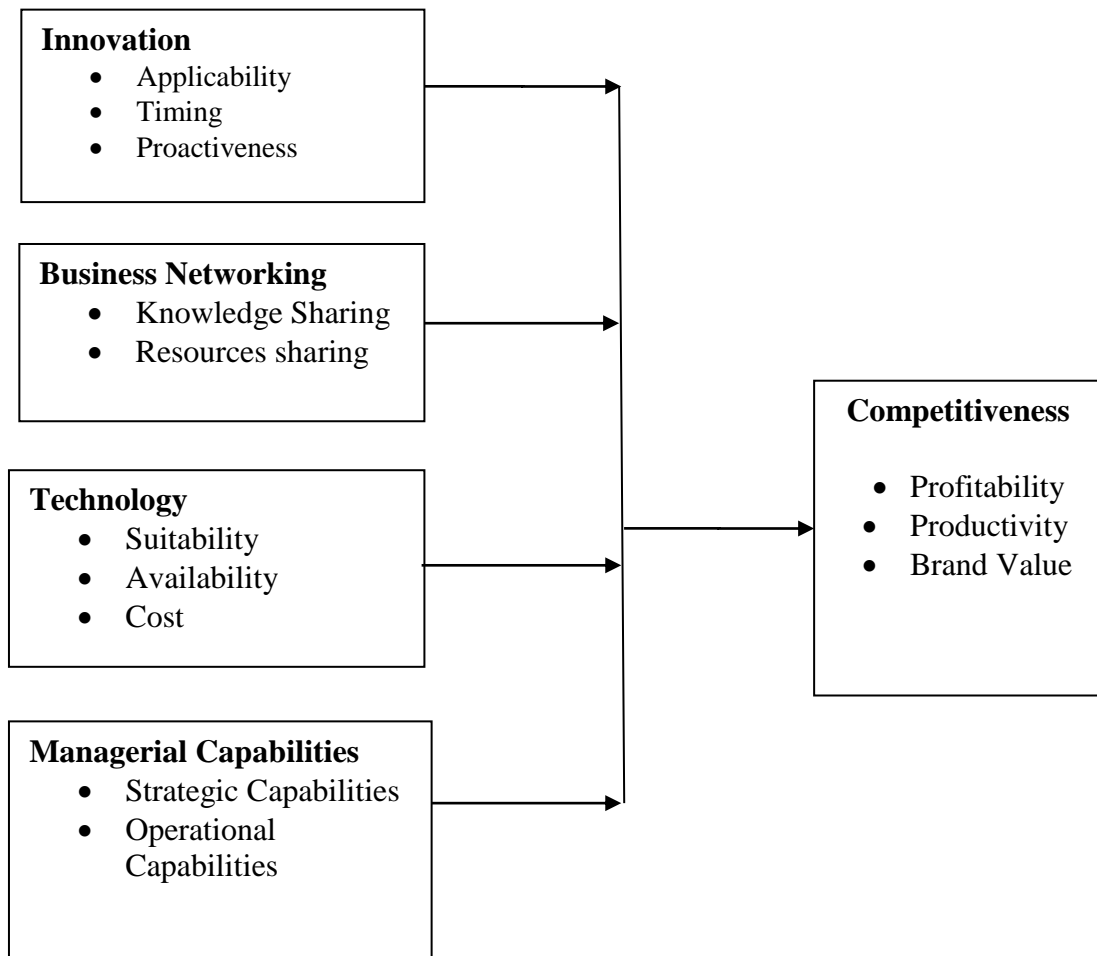


Figure 2.3: The Strategic Triangle of 3 Cs Source: Ohmae (1982)

2.3 Conceptual Framework

A Conceptual framework is a hypothesized model identifying the relationships between the dependent variable and the independent variables of the study (Mugenda & Mugenda, 2003). It is a model that guides and aligns thinking in more productive channels that keep the researcher focused on the study variables and their relationships. It helps a researcher to conceptualize the relationships between variables in the study and show the relationships graphically or diagrammatically (Mugenda & Mugenda, 2003). This study adopted Porter's (1990) Diamond Model which, as a measurement of competitiveness, is a predominantly accepted and commonly used model in both micro-economic and macro-economic competitiveness surveys in the literature. This study's independent variables were innovation; business networking; technology; and managerial capabilities while the dependent variable was competitiveness of firms which was measured using profitability, productivity and brand value.



Independent Variables

Dependent Variable

Figure 2.4: The Conceptual Framework

2.4 Review of Variables

2.4.1 Competitiveness

Competitiveness of a firm can be defined as its ability to do better than comparable firms in sales, market shares, or profitability (Lall, 2000). It is also commonly used to describe economic strength of an entity against its competitors in global markets in which goods, services, people, skills, and ideas move freely across geographical borders (Ajitabh & Momaya, 2005). Competitiveness of a firm is about being different and seeking to establish a profitable and sustained superior position against the forces that determine an industry's competition. It involves deliberately choosing

to perform activities differently or to perform different activities from rivals in order to deliver a unique mix of value to the customers (De Wit & Meyer, 2010; Porter, 2003).

Competitiveness can be conceptualized and measured at country, industry, firm or product levels. The measurement technique of competitiveness varies with the unit of analysis, for example, firm, industry or country and also indicators of competitiveness (Garelli, 2012). From literature it has been found out that there exists a wide range of determinants of competitiveness but a paucity of all-encompassing conceptualizations (Sancharan, 2011). Researchers have widely selected profitability, productivity, product quality, balance of trade, market share and rate of growth as the broad measures of competitiveness (Rugman *et al.*, 2012; Sancharan, 2011).

The concept of international competitiveness has gained prominence in both policy and academic circles specifically in the search for factors that are necessary to ensure external macroeconomic performance, sustained economic growth, and improvement in living standards of the population (Ramirez & Tsangarides, 2007). Indicators of competitiveness at country level are per capita income, export composition and balance of trade. Strategies for enhancing national competitiveness include financial programs to increase savings, manage exchange rates, tax policies and other macroeconomic policies. Besides financial strategies, programs to enhance workers' skill, quality management, educational and moral standards also feature prominently in a nation's endeavor to boost competitiveness (Huggins, 2000).

Amin and Hagen (1998) investigated the reasons behind the worsening competitiveness of the US and identified major barriers behind the loss of US' competitiveness in international market as: challenged productivity; ineffective investment pattern in research and development; widening trade deficit; technological development being caught up by other nations; losing ground in product quality; and lack of strong political and legal environment. Adams, Gangnes and Shachmurove (2006) investigated the factors responsible for rising competitiveness of China relative to its East Asian rivals and identified four

determinants of Chinese competitiveness as: revealed comparative advantage; exchange rate; labour cost and FDI.

Bhaumik and Banik (2006) studied determinants of competitiveness in less developed countries. They investigated the reasons behind the failure of Caribbean Economies, unlike East Asian Economies, in exploiting the opportunity of being geographically close to the highly developed economies of the world. Lack of FDI, limitation in the availability of skilled labor and the imbalance in domestic savings to the investment were reported as the primary reasons behind competitive disadvantages of the Caribbean Economies. With the exception of very few countries, Africa ranks very low on global competitiveness compared to all other regions with a vast majority of African Countries at the very bottom of the many indices related to competitiveness (World Economic Forum, 2014). The lagging competitiveness of African economies is also reflected in Africa's trade performance. Africa's exports are concentrated in oil, minerals, and, to a lesser extent, agricultural commodities. Its overall share of global exports has risen somewhat in the last decade, but it remains very low at around 1% if fuel, minerals, and other primary commodities are excluded (World Economic Forum, 2014).

Rugman *et al.* (2012) posit that competitiveness emerges at the intersection of country and enterprise dimensions. They argue that competitiveness is determined by the interactions between a company's capabilities and the assets of the country in which the company conducts its activities. Garelli (2012) clarifies the link between nations and enterprises in the conceptualization and measurement of competitiveness. He emphasizes that firms are responsible for creating economic value, while nations establish an environment that can encourage or discourage firms to achieve that economic value. Porter (1985) emphasizes that firms, not nations, compete in international markets.

At the industry level, the suggested measure of competitiveness is total factor productivity while those suggested at the firm level include cost, profitability, productivity and market share among others (Garelli, 2012). However, the measures of competitiveness also vary from industry to industry. For example in a multi-

faceted industry like tourism and hospitality, the attributes that will contribute to a destination's competitiveness will vary in their importance in different locations, depending on the product mix and target market segments. In hospitality industry, the determinants of competitiveness will include legislation, infrastructure, hotel emplacement, ability to innovate, quality of human resources, cost control, quality and diversity of services, ability to interact with partners, changes in the external environment and promotion activities (Sancharan, 2011).

Competitiveness at a firm level involves productivity, efficiency and profitability elements (Sancharan, 2011). It is usually measured using such indicators as a firm's productivity, profitability, export performance, brand value and/or market share (Lalinsky, 2013). From the definitions of firm level competitiveness, it can be inferred that a firm's competitiveness rests in its adaptability and ability to realize long-run profit. It is not enough for a firm to be competitive but it should aim to attain sustainable competitiveness. Effective entrepreneurs know that establishing and maintaining a competitive advantage is a great challenge and that without careful attention, competitive advantage can be easily lost (Bateman & Zeithaml, 1990). Firms must adopt different strategies in their bid to sustain their long run profitability which may include innovation, information technology, niche market, network, cluster and foreign direct investment strategies among others. The ability of firms to create, access and commercialize new knowledge in domestic, regional or global markets is also fundamental for their sustained competitiveness. Competitiveness is synonymous with a firm's long-run profit performance, its ability to compensate its employees and provide superior returns to its owners (Garelli, 2014) and it is therefore at the core of the success or failure of the firm (De Wit & Meyer, 2010).

Brand strength can lead to competitive success of an organization since customers who value brand name are more likely to purchase due to the familiarity of the products (MacDonald & Sharp, 2000). An organization achieves this when it sees its customers' objectives as its own objectives and enables its customers to easily add more value or, in the case of final consumers, feel they are gaining true value for money. A firm is said to be competitive if it can produce products and services of superior quality at lower costs than its domestic and international competitors

(Garelli, 2014). Chikan (2008) posits that a firm's competitiveness is the capability of that firm to sustainably fulfill its double purpose of meeting customer requirements but at a profit. This capability can be realized by offering goods and services which customers value higher than those offered by competitors.

2.4.2 Innovation

Innovation is the implementation of a new or significantly improved product (a physical good or service), process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations (OECD, 2010). Miller, Rankin and Neathey (2001) refer to innovation as the design and production of complex and rapidly changing products or services that differ from those of competitors. It reflects the firm's tendency to engage in and support new ideas and novelty (Lumpkin & Dess, 1996). It also involves the introduction of a new commodity, technology, new source of supply or new type of organization that not only strikes at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives (Schumpeter, 1943).

Innovations can be incremental, radical or disruptive to the extent to which they disturb or change how a practice is performed and involve the generation of novel and useful ideas (Pearce & Robinson, 2011; Raduan et al., 2009). Innovativeness is considered to be radical since it represents a basic willingness to depart from existing technologies or practices and venture beyond the current state (Covin & Miles, 1999). Firms' innovation, including the development of new products or services, as well as new administrative systems, is considered an important source of sustainable competitive advantage (Covin & Miles, 1999). Thus, recognition should be accorded to the positive influence that innovation has on a firm's productivity and profitability and hence its survival (Covin & Miles, 1999). In this sense, innovation is identified as a key capability for a firm that is critical for its financial performance (Zaheer & Bell, 2005).

Innovation entails the application of knowledge to the production of goods and services. Access to information is in itself a source of competitive advantage and product upgrading approaches should therefore emphasize on knowledge creation,

transfer and appropriation (Acs & Audretsch, 1990). In order to survive in today's complex and ever changing business environment, organizations must be strategically aware. They must seek timely information and act quickly in response to opportunities and threats. One way of attaining the information is through leveraging the powerful tool of information technology. ICT is important in facilitating innovation which in turn presents vast opportunities for businesses to infuse efficiencies in their operations and processes in order to serve their customers more efficiently or enter new markets (Ochola, 2013).

Innovation is embodied in a strong organizational commitment to engage in experimentation and other creative processes that may result in new products, services or technological processes (Kreiser, Marino & Weaver, 2002; Lumpkin & Dess, 1996; Wickland & Shepherd, 2005). To be successful, firms must figure out how to bring new goods and services that appeal to identifiable markets to fruition (Ward, 2004). To compete sustainably and outperform their rivals, the SMMEs must find suitable ways of creating value for their customers through R&D. A business that invests in R&D, and does something that is distinctive and difficult to replicate is more likely to be more profitable than its rivals (Pearce & Robinson, 2011; Raduan *et al.*, 2009). Therefore, R & D must be prioritized in the knowledge-based industries to allow firms to maintain cutting edge positions in the highly competitive world (Van Rooyen *et al.*, 2000). Experimentation helps to identify the requisite organizational and skills changes for effective adaptation (Van Rooyen *et al.*, 2000).

Firms should strive to be proactive in their search of knowledge in order to remain competitive. Being proactive refers to a posture of anticipating and acting on future wants and needs in the marketplace, thereby creating a first-mover advantage. Proactive firms have the desire to be pioneers, by being the first to capitalize on emerging opportunities (Wickland & Shepherd, 2005). In a globally-competitive landscape, competitiveness can be sustained through increasing productivity originating from innovation; invention; Research and Development(R&D); and service provision (OECD, 2010). Innovators should be characterized by the ability to sense the needs; anticipate change and a positive attitude to them, determination (careful planning of activities and tenacity in action); the ability to combine the

overall vision with attention to every detail; participative leadership style; and stubbornness combined with persuasion skills and tact ((Szczepańska-Woszczyzna & Dacko-Pikiewicz, 2014).

Innovative production, processing and logistics can create cost efficiencies and improved services that translate into higher profit margins (Porter, 1996). Innovation is the key to competitiveness of an enterprise since it involves the initial commercialization of invention by producing and selling a new product, service, or process (Metcalf et al, 2003). Dynamic environments serve to encourage the development of radically new products and technologies by innovative firms which are poised to capture premium market segments or pre-empt new entries (Zahra & Bogner, 2000). Therefore, a firm gains sustainable competitive advantage by invariably upgrading its processes and activities through innovation (Porter, 1996) which in turn improves its profitability. An innovative strategic posture can contribute to firm performance as it increases the chances that a firm will realize first mover advantage, stay ahead of their competitors, gain a competitive advantage and capitalize on emerging market opportunities that lead to improved financial results (Hult *et al*, 2004).

Innovation is a grand human resource strategy that seeks to reap the premium margins associated with creation and customer acceptance of a new product or service (Waiganjo, 2013). Accumulation of employees' observations and experiences leads to acquisition of tacit knowledge that is hard to emulate and hence can be a source of competitive advantage (Metcalf et al., 2003). Employees must be encouraged to suggest areas that they feel need improvement. The successful acquisition, development and deployment of innovative activities require competent and skilled researchers and practitioners in key sectors of importance to the economy.

Regulatory and institutional environment that is conducive for innovation should be cultivated and should promote: stable property rights; independence of the judiciary; transparent and simple rules; low costs governing the registration and operation of enterprises; and use of information and communication technologies. These factors

when taken into consideration influence the business climate in which the innovation-based enterprises operate, and thus determine the demand for innovation (UNECE, 2012). In Kenya, most researchers at universities and PRIs complain regularly of lack of funds and initiative on part of the government to support and direct relevant research (Banji & Sampath, 2007). Reliance on external donor funding for research, which is at best sporadic and not dependable means that innovative activities in academic institutions in the country continue at a rate that hardly reflects its true potential (Banji & Sampath, 2007). Several basic and technological research laboratories exist in government departments, universities and research institutions (RoK, 2012). The research equipment and financial support to these laboratories is however inadequate and cannot meet and sustain the needs of rapidly changing technology (RoK, 2012). Moreover some of the machines and equipment required for physical sciences research are too expensive and beyond the budgetary allocation of the small laboratories. Kenya must make a deliberate effort to institute basic science research at the highest level. The government should assist in the acquisition of high precision instruments and hence the setting up of a centralized national physical science laboratory (RoK, 2012). Proper training and capacity building, as well as investment in relevant physical and scientific infrastructure is necessary to ensure that the country has the requisite absorptive capacity to benefit from the numerous technology initiatives and efforts going on within and outside its frontiers (Banji & Sampath, 2007).

2.4.3 Business Networking

A business network can be described as a grouping of individuals, organizations or agencies organized on a non-hierarchical basis around common issues or concerns, which are pursued proactively and systematically, based on commitment and trust and whose reason for existing is connecting with other business people in order to form business relationships that mutually benefit all the parties involved (Dhliwayo, 2014). Successful cooperation is based on trust and commitment and entails a voluntary and mutual agreement which can be set out in a formal and documented contract or an informal contract aimed at achieving common goals (Osarenkhoe, 2010). Business networking is thus a socioeconomic business activity by which

groups of like-minded business people recognize, create, or act upon business opportunities (Osterle *et al.*, 2001).

The idea of strategic business networks resonates with locking the venture into a set of secure and rewarding network links that competitors find hard or expensive to break (Wickham, 2006). The main motive for cooperation is to adopt collective strategies for value generation so as to enhance competitiveness. Collaborative networked organizations are structured primarily to make a favorable position against the competition and the relationships are key sources of competitive advantage (Wickham, 2006). The associative capacity depends on the degree that communities, groups and businesses share norms, common identity and are prepared to subordinate individual interests to those of larger groups (Fukuyama, 1995). Networks are valuable because they minimize transaction costs thereby improving the profitability of the actors in a network (Dhliwayo, 2014). By stimulating innovation and better utilizing the skills of the workforce, collaborating communities and businesses can increase productivity and become more competitive (Destefanis, 2012). Small firms can gain competitive advantage from utilization of established distribution channels and economies of scale associated with big firms through business networking (Bretherton, 2003).

Information sharing is extremely important for a successful business network. Companies need to be able to react swiftly to fluctuating markets, seize opportunities as they arise, and work efficiently in a demanding environment. The communication between participants must be timely and reliable (Acs & Audretsch, 1990). Sharing information between partners of a business network also serves as a breeding ground for new innovations. Challenges, potential solutions and novel ideas that are openly shared and resolved in co-operation make the network stronger and may also lead to new innovations (Prahalad & Hamel, 1990). Networks provide access to information, resources, markets, and technologies that have the potential to maintain or enhance the competitive advantage of the firms (Gulati *et al.*, 2000). Therefore, knowing the strategic networks of the firm becomes a central theme for understanding its strategy and performance (Gulati *et al.*, 2000). In particular, the fact of sharing knowledge has become an important focus in the field of strategic management, since this concept

has received a growing emphasis as a key determinant of firms' competitive advantage.

According to Grant (1996) knowledge can be regarded as a strategically important resource to be possessed by an organization. In addition, it has been recently shown in several studies that some kinds of knowledge, such as tacit, social, and complex knowledge, are difficult to imitate (Helfat & Rubitschek, 2000) and thus when shared they become a main source of long term profitability (Li, Poppo & Zhou, 2010). ICT tools are the most efficient way of sharing information between partners in a controlled, systematic manner (Ahokangas *et al.*, 2015). Companies can also promote their products and services, as well as build their brand, entirely within the Internet. Using the Internet, any company can reach more people faster and more efficiently, regardless of geographical restrictions or time zones (Ahokangas *et al.*, 2015). In today's business environment it is clear that a company needs to have an existing web presence in order to be credible in the eyes of other companies. A company also presents its references by uploading videos or updating a company blog and by choosing a suitable social media site (Ahokangas *et al.*, 2015).

When faced with situations of resource scarcity; performance distress; environmental pressures and economic downturns and also in order to gain a potential favorable corporation image and identity; organizations seek out cooperation (Schermerhorn, 1975). Strategic alliances along the value chain perform a critical function in accessing resources and capabilities not owned in sufficient measure by the organization and in stimulating the learning and appropriation of essential skills and capabilities (Bretherton & Chaston, 2005). In order to both promote innovation and enhance competitiveness, engaging in cooperative activities is a way of accessing complementary resources, pooling skills and capabilities instead of seeking competitive advantage over other firms (Powell, Koput & Smith-Doerr, 1996).

Organizations are encouraged to collaborate because partnering can provide access to new and improved resources, technologies, skills and systems necessary to move a firm into a position where business goals can be realized (Bretherton & Chaston, 2005). Competitive advantage can be achieved in two ways as alliances offer the co-

ordination and scale associated with large companies, but the flexibility, creativity, and lower overheads of small companies (Bretherton, 2003; Mattyssens & Van Den Butte, 1994; Rosenbloom, 1990; Spekman, 1988). Collaboration may occur in many areas, including research and development (R&D), sourcing, manufacturing and sales. Therefore, internal resources presented in the network should be valued because they can become the source of competitive advantages (Barney, 1991; Penrose, 1995; Prahalad & Hamel, 1990; Wernerfelt, 1984).

Collaboration with major universities and leading manufacturers is undertaken for the development of skills, processes, products and innovative materials. Collaboration with MNCs will help the small manufacturing firms in Kenya to leverage the MNCs' competences of skilled labour, research, innovation and business sophistication that will play a more important role in their competitiveness (Lall, 2000). A collaboration opportunity can also be identified by a broker or brokerage. The broker is responsible for interacting with potential customers, on behalf of the collaborative networks, during the early phases of response to these opportunities. When a collaboration opportunity is identified, this opportunity must be adequately qualified and the most suitable partners from the network shall be chosen to execute the work (Ahokangas *et al.*, 2015).

Nouwens and Bouwman (1996) posit that business networks enable collaborating firms to maximize their profits by taking advantage of higher flexibility at lower costs and risks. Advantages of collaboration may include expediting entry to foreign markets, utilizing economies of scale, amortization of product and service costs, risk sharing, access to capital, as well as access to capabilities such as managerial skills and functional knowledge. Nouwens and Bouwman (1996) add other advantages such as: risk-sharing by mutual entrepreneurship; exchange of information and knowledge at a higher level than in markets or hierarchies; achievement of higher quality through cooperation of the best specialists in the different organizations; achievement of important innovations by bundling R&D resources and expertise; and a wider market reach. The main disadvantage of the business network is the lack or the loss of bargaining and control power of the individual actor to ensure the control of profits over the entire business network. This is so because business network

fosters cooperation and coordination between stakeholders, overseeing the interests of the whole business network, in contrast to the interests of a particular actor.

2.4.4 Technology

Technology pertains to the equipment, hardware, software, procedures and technical knowledge brought to bear in the firm's transformation of inputs into outputs (Thomas et al., 2012). Technology is the main stimulus that initiates the growth and development in general of individual companies and countries. Much of the increase in global productivity in the last decade is attributed to information and communication technologies. Technology has become one of the most important tools for achieving competitiveness, combined with efficient marketing performance (Thomas et al., 2012).

Technology is fast changing and continuous innovations are to be made to keep the technology up to date and also to sustain technological capability (Thomas et al., 2012). One of the major forces enabling economic globalization has been ICT. The speed and minimal cost with which information can be transmitted across geographical space via the Internet and other electronic communication superhighways has altered the economic meaning of borders and distance (OECD, 2000). The rapid development of the digital technology and telecommunications have offered export possibilities for small and medium manufacturing firms in LDCs. ICT offers enterprises a wide range of possibilities for improving competitiveness such as; providing mechanisms for accessing new market opportunities, facilitating product innovations, accelerating market transactions and intensifying the use of information, knowledge and communication in processes (Fulantelli & Allegra, 2003).

The advent of the microprocessor and the proliferation of inexpensive communications technologies have completely altered the economic meaning of national borders and distance. While the telecommunications revolution has brought the cost of transmitting information across geographic space to virtually zero, the microprocessor revolution has vastly expanded the ability of many to participate in global communications and to use transmitted information. No longer are

international transactions arms-lengths interactions among corporations, they concern now interactions of individuals and expose people to ideas and experiences that were previously inaccessible (Bingham, 2003; Fulantelli & Allegra, 2003).

A company's technology strategy should reflect its proactive technology posture which involves constantly exploring for innovation in process technology and commitment to continuously advancing its manufacturing technology (OECD, 2000). It involves long-term plans for acquiring, managing and exploiting technological knowledge and ability to attain competitive advantage. According to Rothaermal (2008) for a firm to gain competitive advantage, it must have technological competencies that allow it to generate higher perceived value than the competitors or to produce at lower cost. Organizations that select manufacturing technologies by only considering current contexts and without much regard to future needs will be defeated by the competition (Obradovic, Ebersold & Obradovic, 2015).

Technology transfer enables firms in less technologically endowed countries to access the top of the range manufacturing technology and the accompanying skills. When local firms hire workers trained by the foreign affiliates they gain from such transfer of technology and knowledge spill over (Blomstrom & Kokko, 1998). Another kind of technological spill over occurs if an MNC entry leads to more severe competition in the host country, which forces local firms to use their existing resources more efficiently or to search for new technologies (Chemengich, 2014). Mwega and Ngugi (2007) argue that local firms may adopt technologies introduced by foreign firms through imitation or reverse engineering; as a result of labor turnover whereby workers trained by foreign firms transfer technological knowledge to local firms or they start their own firms. Mwakaje (2010) affirms that affordability and accessibility of technology facilitate technology applications by the less-endowed firms from developing countries.

The National Council on Science and technology in Kenya has a broad mandate of focusing on agricultural innovation and new technologies of importance to the country, such as biotechnology and ICTs. Despite this, organizations like Kenya Industrial Research and Development Institute (KIRDI) which have the mandate to

develop technologies for the use of local entrepreneurs in both traditional and new technology sectors operate with extreme staffing and funding shortages, and hence are not able to fulfill their mandates even partially (Banji & Sampath, 2007).

Despite the many gains of new technology there are accompanying disadvantages. An associated disadvantage of the rapid development in technology is the rapid obsolescence of products and technology (OECD, 2000) and as a consequence, businesses must justify the money, time and energy spent on technology (Whitmire, 2014). Although substituting labor with technology has enhanced competitiveness of many of the large corporations, it has also resulted in waves of corporate downsizing (OECD, 2000).

2.4.5 Managerial Capabilities

Managerial capability is the ability of a manager to create a strong workplace culture which facilitates the employees to grow and engage, and at the same time achieve business goals and objectives. Managerial capabilities include knowledge; leadership qualities; personal qualities; collaborative decision making; and skills to nurture creativity and innovation (Szczepańska-Woszczyzna & Dacko-Pikiewicz, 2014). Pearce and Robinson (2000) posit that unlike tangible and intangible assets, managerial capabilities are the skills, abilities and ways of combining assets, people and processes that a company uses to transform inputs into outputs. In addition to interpersonal skills, communication skills and the ability to motivate others, a manager should also have the ability to analyze, synthesize, and solve problems if his enterprise is to improve on productivity and profitability (Mumford, Scott, Gaddis & Strange, 2002).

To improve on profitability, managers must possess the requisite technical capabilities such as the ability to build relationships and trust; ability to delegate tasks effectively; ability to make contacts; the ability to train others, ability to support communication, manage conflicts and cooperate in the groups; the ability to adapt flexibly to complex and vague situations; and ability to take care of subordinates (Mumford et al., 2002). They must as well be conscientious, self-confident, show resoluteness, have self-control in stressful situations, possess the will

to improve skills, be consistent in performing tasks, be systematic, be reliable, be honest, be assertive and have an inclination to take risks (Mumford et al., 2002).

Managerial capabilities have long been acknowledged as an important source of competitive advantage that generate above normal rent for the organization (Barney, 1991; Penrose, 1959). Ehmke (2008) argues that the energy, persistence and resourcefulness of the manager will ultimately lead to the competitive success of the business. To attain this competitiveness, a manager must demonstrate operational capabilities like sensitivity, control, delegation and creativity in resource allocation and in expansion of the resource base (Papulova & Papulova, 2006). These unique organizational capabilities help to sustain a company's competitive advantage (Miller *et al.*, 2001) and ultimately, firms that are able to leverage human resources to implement a value creating strategy that is not simultaneously being implemented by any current or potential competitor can achieve competitive advantage (Barney, 1991).

Managers must possess the strategic capabilities to understand how changes in their competitive environment are unfolding. They must be able to act quickly in response to opportunities and barriers (Papulova & Papulova, 2006). To be successful in a dynamic and competitive environment, the manager needs to creatively identify those activities that his organization can excel on. In addition, he should ensure that more people share the necessary skills in order to attain more sustainable growth (Froy *et al.*, 2012).

Managers should have expert competencies of strategic thinking and planning. Strategic decisions made by senior managers influence a company's profitability depending on how they assess the environment and how they support innovation (Bessant & Tidd, 2011). According to Bingham (2003), the development of strategy depends upon a manager's ability to understand the external environment, his knowledge of competitor's business and his ability to combat threats. The senior managers should be able to analyze the market trends and give recommendations to the organization. They are compelled to have good interpersonal skills in order to

facilitate and mentor teams and workers to be self reliant and motivated in a competitive environment (Mintzberg, 1987).

Managers should possess diagnostic skills which include the ability to propose and implement change (Szczepańska-Woszczyzna & Dacko-Pikiewicz, 2014). Decisions by the managers have a strategic impact and contribute to strategic change. The decisions made will affect other firms in the industry and a capable manager should anticipate the likely reactions of his rivals. The strategic decisions also commit significant amount of a firm's resources and therefore managers must be strategically aware. To scan their environment effectively, the top managers must possess expert competencies such as: knowledge of the industry; operational, strategic and analytical skills; ability to observe the market and competitors; ability to motivate others; ability to cope with change; and ability to solve problems creatively (Froy *et al.*, 2012).

Managers should constantly encourage employees to cooperate creatively in solving problems, help them to be creative, eliminate an authoritative attitude, provide psychological freedom of action, properly inform and take care of the constant improvement of their intellectual level. It can be assumed that company innovation is conditioned, among others, by managers and: their mental focus on developing innovative activities; their ability to engage the appropriate resources in this activity; their ability to identify and use external impulses; their flexibility to accept many and at times controversial points of view; their ability to do experiments with calculated risk and to seek opportunities for radical breakthroughs (Szczepańska-Woszczyzna & Dacko-Pikiewicz, 2014).

In order to build successful and productive economies, countries will need skilled people who can adapt to change, think innovatively, and identify the new products and processes which will help firms to conquer new markets (Froy *et al.*, 2012). Roberts and Fusfeld (1981) argue that a high level of managerial skills is a requirement for individuals involved in high-technology firms, while technical and procedural skills are fundamental in knowledge-intensive entrepreneurial environments. Competitiveness is no longer associated only with exchange rates,

industrial policies, labor costs, and natural resource endowments. Today, it also includes workforce skills, management of how skills are used, and government's ability to formulate and implement education, training, and skills-based policies (ADB, 2012).

2.5 Empirical Literature

2.5.1 Innovation and Competitiveness

Various studies (Bowman & Ambrosini, 1997; Campbell-Hunt, 2000; Miller & Dess, 1993) have been conducted in advanced industrialized economies to corroborate the proposition that the implementation of a coherent business strategy enhanced competitiveness of firms by influencing organizational outcomes. Stojcic, Hashi and Telhaj (2013) in a study on the impact of innovation on firms' market share in Eastern European countries found out that investment in innovation had a strong and positive influence on growth of market share and profitability of companies. Hult, et al. (2004) posited that an innovative strategic posture can contribute to firm performance as it increases the chances that a firm will realize first mover advantage, stay ahead of their competitors, gain a competitive advantage and capitalize on emerging market opportunities that lead to improved financial results.

In a study on innovation and performance of firms in Pakistan, Hassan, Shaukat, Nawaz and Naz (2013) concluded that higher financial performance can be achieved better from increased innovativeness in manufacturing firms. The researchers further asserted that marketing innovation leads to product innovation, while product innovation is essential for process innovation. Hassan, et al. (2013) further established that market performance in the form of customer satisfaction, sales and profitability can be enhanced through innovative performance. Hall, Mairesse & Mohnen (2010) found out that over the past half century the private rate of return to research and development (R&D) in developed economies has been strongly positive, ranging from 20% to as high as 75%. Studies of small manufacturing firms competing in a wide variety of industries suggest that obtaining information on several aspects of specific environmental sectors such as customers, competitors and suppliers facilitate alignment between some competitive strategies and the business

environment (Beal, 2000). Asian development bank, ADB (2012) concluded that there was inexorable pressure for middle-income countries to advance as knowledge economies so as to retain and expand their shares in global value chains and in addition to production, there was the need for the countries to increase their investments in research and development (R&D), building brands, and marketing.

Various studies have shown that innovation has a strong and positive relationship with competitiveness of firms in diverse sectors. Mbui (2016) found out that technological innovation was a key driver in determining export value addition in tea subsector in Kenya. Njuguna (2016) found out that innovation had a significant effect on competitive advantage of youth enterprises in Kenya. WEF (2015) analysis of skills and innovation gaps in Latin America found out that an important consideration in that analysis was the complementarities of the skills and innovation challenges and their negative impact on productivity and competitiveness. The region's lack of skilled workers negatively impacted virtually all indicators of innovation including the quality and number of workers who were capable of generating innovation, which in turn limited firms' absorptive capacity. Low levels of innovative activities, in turn, suppressed the economy's demand for highly skilled workers, therefore creating a vicious cycle of low productivity that continued to plague the region and limited its competitiveness potential, highlighting the importance of jointly addressing the challenges in skills and innovation. However, other studies did not find a significant relationship between innovation and competitiveness (Chemengich, 2014; Wiklund & Shepherd, 2005).

2.5.2 Business Networking and Competitiveness

Several studies (Andersson & Floren, 2008; Clarke & Thorpe, 2006; Fuller-Love & Thomas, 2004; Johnson, Scholes & Whittington, 2005) have shown the benefits of entering formal business networks, such as sharing resources, gaining knowledge, creating strategic alliances and internationalizing. Powell et al. (1996) suggest that a network with superior knowledge sharing mechanisms between users, customers, suppliers and manufacturers will be able to 'out-innovate' competitors with less effective knowledge-sharing. WEF (2015) analysis of skills and innovation gaps in

Latin America found out that the gaps could be bridged through public-private collaborations which help to increase the impact and efficiency of investments, generate positive spillovers, and have the potential to positively influence competitiveness of the region by addressing structural limitations, such as the framework conditions and production driven weaknesses. The study also demonstrated that a strategic execution of public-private collaborations with a clear vision, strategy and evaluation system can be used to boost Latin America's productivity and raise its overall competitiveness.

Njuguna (2016) found out that collaborative networks as used by youth enterprises were statistically significant factors in relation to competitive advantage attained by the firms. On collaborative networks measures, Njuguna (2016) found out that marketing products and services together, fighting substitute goods together, bargaining for fair prices from suppliers together and teaming together for easy access to sources of finance positively impacted on competitive advantage of youth enterprises. However, Bretherton (2003) in a study of strategic alliances in the New Zealand wine industry found out that those wineries which were most dependent on strategic alliances to access a majority of key resources and capabilities were under-performers and did not develop sustainable competitive advantage. Porter (1990) and Bretherton, 2003 posited that key resources that were deemed critical to the organization must be owned, developed or appropriated so that the organization could maintain control over them in order to safeguard its autonomy within a business network.

2.5.3 Technology and Competitiveness

Sinngu and Antwii (2014) found out that the quality of technology was an enhancement to the industry's competitive success but the cost of acquiring the technology was a cause of concern for most firms in the citrus industry in South Africa. Thomas et al. (2012) in their comparative study of technology and industry clusters of SMEs in India found out that in-house arrangements were used by 84 % of firms to solve technological problems both in the technology and industry clusters

while the rest either hired experts for technological problem-solving or used a combination of collaboration, contractual outsourcing and technology buying.

Studies have shown that Kenya's small and medium enterprise manufacturers are applying relatively old technology as compared to its neighbors (Pokhariyal & Yalla, 2011). SMEs in Kenya are also finding it difficult to access the local and export market due to poor production techniques (RoK, 2007). Chemengich (2014) found out that technology had a strong positive influence on competitiveness of electrical and electronics subsector in Nairobi, Kenya but Simba's (2015) study of strategic management determinants of value addition in sea food in Kenya did not find significant relationship between technology and value addition.

2.5.4 Managerial Capabilities and Competitiveness

Chacko, Wacker and Asar (1997) found out that in order to achieve competitiveness, enterprises should not only create techno-managerial practices like automation, total quality management, benchmarking and JIT but also human resource practices, like employee empowerment and training. Froy et al.(2012) in a study on skills for competitiveness commissioned by OECD demonstrated that it was not just investment in the supply of skills which counts, but also work with employers to ensure that human potential is effectively harnessed and skills fully utilized. Van Rooyan et al. (2000) in their study of competitive success of the agro-processing in South Africa, found out that 76 % of the respondents indicated that managerial capabilities were very important factors in the competitive success of the agro-food industry. Van Rooyen et al.'s (2000) study corroborates Ehmke's (2008) finding that over half of business failures are directly related to managerial incompetence.

Chemengich (2014) in a study of determinants of competitiveness of electrical and electronics manufacturing enterprises in Kenya, found out that there was strong agreement (92.3%) among manufacturers for the need to undertake continuous staff development in order to cope with changing market requirements which confirmed the business community's belief that development of managerial capabilities enhanced the sector's competitiveness. Chemengich (2014) further argued that her findings were in line with the Kenya government's reviewed education and training

policy of equipping graduates with skills that meet market requirements (RoK, 2012). Muthenya (2008) did a study on the relationship between tea value addition and profitability of exporting companies in the Kenyan tea industry and found out that a company's profitability, liquidity and shareholder's wealth were affected by how the managers allocated the available resources they have been entrusted with. ADB (2012) suggested that developing Asia needed a robust and market driven skills development system that would contribute to competitiveness and therefore the call for more investments in higher order skills and capabilities. There was a need to develop curricula, courses, and certifications for a whole host of service related occupations as well as investment in broader, transferable skills that were required for higher-level occupations and were demanded by employers. However some studies did not find strong and significant relationship between managerial capabilities and competitiveness of firms. Lalinsky (2013) in a study of competitiveness of Slovak, companies found out that gradual econometric analysis did not confirm positive statistically significant direct impact of professional management on company productivity. In terms of export competitiveness, he concluded that there was a relatively small, but statistically significant impact of foreign management and euro adoption on competitiveness.

2.6 Critique of Reviewed Literature

Several studies on determinants of competitiveness have been carried out but covering various large industries in the developed world (Bowman & Ambrosini, 1997; Campbell-Hunt, 2000; Miller & Dess, 1993). The study revealed some studies of determinants of competitiveness of SMEs in the least developed countries but their results were mixed and inconclusive. Simba (2015) in a study of strategic management determinants of value addition in sea food in Kenya, for example, did not find significant relationship between technology and value addition while Chemengich (2014) found out that technology had a strong and positive influence on competitiveness of electrical and electronics subsector in Nairobi, Kenya. Studies of innovation and competitiveness of firms have had inconclusive results too. For example, several studies ((Hall et al., 2010; Hassan et al., 2013; Hult et al., 2004; Mbui, 2016; Miller & Dess, 1993; Njuguna, 2016; Stojcic, et al., 2013) have shown

that innovation had significant influence on competitiveness of firms in diverse sectors. However, other studies did not find significant relationship between innovation and competitiveness (Chemengich, 2014; Wiklund & Shepherd, 2005).

Several studies (ADB, 2012; Ehmke, 2008; Muthenya, 2008; Van Rooyan et al., 2000) found out that managerial capabilities had significant influence on competitiveness of firms in diverse sectors but Lalinsky (2013) in a study of competitiveness of Slovak companies found out that gradual econometric analysis did not confirm positive statistically significant direct impact of professional management on company productivity. Njuguna (2016) found out that collaborative networks as used by youth enterprises were statistically significant factors in relation to competitive advantage attained by the firms. However, Bretherton (2003) in a study of strategic alliances in the New Zealand wine industry found out that those wineries which were most dependent on strategic alliances to access a majority of key resources and capabilities were under-performers and did not develop sustainable competitive advantage.

The determinants of competitiveness of various studies in LDCs also vary from one study to the other. For example, Chemengich's (2014) study used technology, innovation, market access and regulations while Van Rooyen et al. (2000) used Porter's (1990) four determinants of strategy, structure and firm rivalry; factor conditions; demand conditions; related and supporting industries among others. Ehmke's (2008) study used resources, customer incentives, goal clarity, quality, organizational alliances and competition mapping. The studies were not uniform in their adoption of independent variables and therefore have not been conclusive.

2.7 Research Gap

From the foregoing, it was clear that innovation, business networking, managerial capability and technology were important determinants of competitiveness of firms. However most of the studies of determinants of competitiveness reviewed were concentrated in industrialized countries (Bowman & Ambrosini, 1997; Campbell-Hunt, 2000; Miller & Dess, 1993) with some in developing countries (Papulova & Papulova, 2006; Sinngu and Antwii, 2014; Van Rooyen et al., 2000). In Kenya,

studies of determinants of competitiveness were concentrated in urban areas for example, Onyango (2011) who studied the determinants of competitive performance of Kenyan small and medium enterprises in food processing in Nairobi which is the capital city of Kenya. Studies of determinants of competitiveness of agro-processing firms in rural areas of LDCs like Kenya will enrich the strategic management body of knowledge.

The review of literature revealed that although several studies (Hall et al., 2010; Hassan et al., 2013; Hult et al., 2004; Mbui, 2016; Miller & Dess, 1993; Njuguna, 2016; Stojcic et al., 2013) have found significant influence of the various determinants on the competitiveness of firms in diverse sectors, there were other studies (Chemengich, 2014; Wiklund & Shepherd, 2005) that did not find significant influence of the determinants on the competitiveness of firms. Therefore the studies have not been conclusive. From the foregoing, this study was carried out to fill the gaps by analyzing the influence of determinants of agro processing firms in Kenya.

2.8 Summary

This chapter reviewed four theories of competitiveness that guided the study. The review of empirical literature revealed a few studies of determinants of competitiveness in various industries like sea food; leather; electrical and electronics; construction and some in agro-processing. The conceptual framework for this study adopted Porter's (1990) diamond theory of national competitiveness. The independent variables were the determinants of competitiveness namely: innovation; business networking; technology; and managerial capabilities. The dependent variable of this study was competitiveness of small and medium agro processing firms in Kenya. The study adopted Porter's (1990) diamond theory of competitiveness which was relevant to the objectives of the study. Kenya's agro processing which is dominated by little value addition can greatly benefit from the study as it transforms from the manufacturing of semi-processed goods to customer-ready products. Studies of determinants of competitiveness of other sectors such as hospitality, craft industries, horticulture and aquaculture can also enrich the strategic management body of knowledge. Therefore, the current study intended to fill the

existing knowledge gaps by carrying out a study of determinants of competitiveness of small and medium agro-processing in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers research methodology adopted for the study, research philosophy and the research design used in gathering information. It covers the population; sampling frame; the sampling design; data collection instruments and procedures; and data processing and analysis methods adopted for the study. Piloting, reliability and validity of the study's instrument are also covered in this chapter.

3.2 Research Philosophy

Research philosophy considers the role of the assumptions that are made about the way the world works; what different philosophies consider as being acceptable knowledge; and the role of values and research paradigms (Saunders, Lewis & Thornhill, 2009). This research was approached from pragmatism philosophy which blends both positivism and interpretivism philosophies. While positivism is an epistemological position which generally informs quantitative research by advocating the application of the methods of the natural sciences to the study of social reality and beyond (Bryman, 2004), interpretivism informs qualitative research by referring to the way human beings make sense of the world around them (Saunders et al., 2009). Pragmatism as a worldview or philosophy arises out of actions, situations, and consequences rather than antecedent conditions. There is a concern with applications what works and solutions to problems. Instead of focusing on methods, researchers emphasize the research problem and use all approaches available to understand it (Creswell & Creswell, 2017).

Pragmatists argue that the most important determinant of the research philosophy adopted is the research question since one approach may be 'better' than the other for answering particular questions. Moreover, if the research question does not suggest unambiguously that either a positivist or interpretivist philosophy is adopted it

confirms the pragmatist's view that it is perfectly possible to work with both philosophies. Tashakkori and Teddlie (1998) contend that pragmatism is intuitively appealing, largely because it avoids the researcher engaging in what they see as rather pointless debates about such concepts as truth and reality. In their view one should study what interests you and is of value to you, study in the different ways in which you deem appropriate, and use the results in ways that can bring about positive consequences within your value system. Practical reality is that research rarely falls neatly into only one philosophical domain and business and management research is often a mixture between positivist and interpretivist philosophies, perhaps reflecting the stance of realism (Tashakkori & Teddlie, 1998).

3.3 Research Design

Research design is the arrangement of all conditions that affect a research ranging from data collection to data analysis (Cooper & Schindler, 2013). It constitutes the blueprint for the collection, measurement, and analysis of data (de Vaus, 2001). This study adopted correlational survey research design which seeks to establish the relationship between two or more variables that do not readily lend themselves to experimental manipulation (McLeod, 2008). It is a technique of gathering information by questioning those individuals who are the object of the research and who belong to a representative sample, through a standardized questioning procedure with the aim of studying relationships between variables (Corbetta, 2003; McLeod, 2008; Orodho, 2003; Zikmund, 2003). Correlational survey design is a non-experimental form of research in which investigators use the correlational statistic to describe and measure the degree or association (or relationship) between two or more variables or sets of scores (Creswell & Creswell, 2017). The design has been elaborated into more complex relationships among variables found in techniques of structural equation modelling, hierarchical linear modelling, and logistic regression (Creswell & Creswell, 2017).

The correlational survey research design was appropriate for this study since it enabled the researcher to analyze the influence of the independent variables (innovation, business networking, technology and managerial capabilities) on the

dependent variable (competitiveness). The design was also appropriate for this study because it was flexible enough to allow the study of a wide range of variables and their inter relations regardless of limitations of time and financial resources (Kothari, 2006; McLeod, 2008). The design was also suitable because it produced statistical information which could be displayed in graphical forms and whose results had predictive implications to decision making and therefore would be relevant to policy-makers and businessmen (Lune & Berg 2016). Correlational survey research design has been used by other researchers to investigate the associations between the independent variables and dependent variable. For example, Chemengich (2014) used correlational survey research design to study the relationships between technology; innovation; regulations; and market access and the competitiveness of the Kenyan electrical and electronics manufacturing sector. This study used both qualitative and quantitative approaches to analyze data. The mixed methods approach collects both quantitative and qualitative data sequentially in the design (Creswell & Creswell, 2017). The researcher based the inquiry on the assumption that collecting diverse types of data best provided a more complete understanding of a research problem than either quantitative or qualitative data alone. The mixed method allowed the study to enjoy both the structure of quantitative research and the flexibility of qualitative inquiry (Creswell & Creswell, 2017).

3.4 Population

Population refers to an entire group of individuals, events or objects having common observable characteristics (Mugenda & Mugenda, 2003). Cooper and Schindler (2013) define population as the total collection of elements about which one wants to make inferences while Kothari (2006) defines it as the study's universe. This study's population was the 180 factories spread across the eight sub counties of Murang'a County in Kenya.

Table 3.1: Population

Sub- County\	Industry	Coffee	Dairy	Fruits	Nuts	Animal Feeds	Cottages	Total
Kangema	15	2						17
Mathioya	16							16
Murang'a East	6				1			7
Murang'a South	8	1	1	1	1	3	5	19
Gatanga	21			2	1		1	25
Kandara	34	1						35
Kigumo	38							38
Kahuro	23							23
Total	161	4	3	3	3	3	6	180

Source: County Development Planning Office, Murang'a(RoK, 2013)

3.5 Sampling Frame

The sampling frame describes a list of all population units from which the sample will be selected (Cooper & Schindler, 2013). The sampling frame for this study was obtained from a list of agro processing companies listed by the Murang'a County integrated development plan. The study obtained a sample of 249 from 766 managers of the 180 agro processing firms from all the eight sub counties of Murang'a County in Kenya. The choice of managers was informed by previous studies (Mumford et al., 2002; Van Rooyan et al., 2000) that have revealed the importance of managers in the competitive success of small and medium enterprises.

Table 3.2: Sampling Frame

Sub Sector/Sub County	Coffee	Dairy	Fruits	Nuts	Animal Feeds	Cottage
Kangema	60	12				
Mathioya	64					
Murang'a East	24			9		
Murang'a South	32	7	12	9	9	20
Gatanga	84		24	9		4
Kandara	136	7				
Kigumo	152					
Kahuro	92					
Total	644	26	36	27	9	24
Overall Total						766

Source: County Development Planning Office, Murang'a (2013)

3.6 Sampling and Sampling Technique

According to Mugenda and Mugenda (2003), the sampling process is a process of selecting elements from a population in such a way that each element in the sampling frame has an equal chance of being selected. The sample size was determined using a formula proposed by Creswell and Creswell (2017). Sampling was done using stratified sampling where each of the sub counties of Murang'a County was treated as a stratum. Stratification means that specific characteristics of individuals are represented in the sample and the sample reflects the true proportion in the population of individuals with certain characteristics. When randomly selecting people from a population, these characteristics may or may not be present in the sample in the same proportions as in the population; stratification ensures their representation (Creswell & Creswell, 2017). Within each stratum, it is appropriate to identify whether the sample contains individuals with the characteristic in the same proportion as the characteristic appears in the entire population (Creswell &

Creswell, 2017). Stratified sampling was appropriate for this study since the number of agro processing firms differed from one sub County to the other. Their products also differed depending on their locations. From each stratum a simple random sample was obtained using computerized random numbers.

3.6.1 Sample Size

According to Creswell & Creswell (2017) a sample size from a population of 10,000 or more, can be computed using the formula below;

$$n = \frac{z^2 p(1-p)}{e^2}$$

Here: n = minimum sample size

p = population proportion with a given characteristic or percentage of picking a choice, expressed as a fraction. The choice of p is guided by past surveys or general knowledge. For purposes of this study P = 0.6

z = standard normal deviate at the 95% confidence level (1.96),

e = confidence interval, expressed as a decimal (5%).

The sample will be obtained as follows:

$$n = \frac{z^2 p(1-p)}{e^2}$$

$$n = \frac{1.96^2(0.6)(0.4)}{0.05^2} = 369$$

But for a population of less than 10,000, Creswell & Creswell (2017) suggests the following formula:

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

Here:

n_f = the desired sample size for a population of less than 10,000,

n = the sample size obtained for a population greater than 10,000 and

N = the estimate of the population size.

$$n_f = \frac{369}{1 + \frac{369}{766}} = 249$$

Table 3.3: Sample Size by Strata (Sub County)

Sub County	Population	Factor	Sample	Percentage
Coffee	644	0.3	186	75
Dairy	26	0.5	13	5
Fruits	36	0.4	15	6
Nuts	27	0.4	12	5
Animal Feeds	9	1.0	9	3
Cottage	24	0.6	14	6
Total	766		249	100
Sample Total			249	

Source: County Development Planning Office, Murang'a (2013)

Table 3.4: Sample Size by Sub Sector

Sub County	Population	Factor	Sample	Percentage
Coffee	644	0.3	186	75
Dairy	26	0.5	13	5
Fruits	36	0.4	15	6
Nuts	27	0.4	12	5
Animal Feeds	9	1.0	9	3
Cottage	24	0.6	14	6
Total	766		249	100
SampleTotal			249	

Source: County Development Planning Office, Murang'a (2013)

3.7 Data Collection Instruments

The researcher used self administered questionnaires to collect primary data from top and middle level managers of agro-processing firms in Murang'a County. The questionnaires were designed to contain both open ended and closed questions. The open-ended questions permitted greater depth of response, (Orodho, 2003) because the respondent was free to give an adequate presentation of an item in the questionnaire and convey flexibility in his choice. The closed questions were designed to keep the questionnaire to a reasonable length thereby encouraging response (Mugenda & Mugenda, 2003).

Items in the questionnaire were arranged in a logical sequence according to the various variables of the study. It contained two parts. Part A dealt with the preliminaries and organizational background information while part B sought responses on issues related to the determinants of competitiveness which were the

independent variables of this study and the dependent variable which was the competitiveness of agro-processing firms. The questionnaire contained Likert scale types of questions where the respondents were required to indicate their level of agreement with statements that expressed favorable or unfavorable view towards a concept being measured. The Likert scale contained polar anchors 1-5 measuring from negative to positive responses to a statement with 1 being the value allocated for the most negative and 5 for the most positive.

3.8 Data Collection Procedure

The researcher with the help of three research assistants delivered the questionnaires to the respondents and whenever possible collected them within two weeks. Secondary data was obtained from secondary sources of data to assess the competitiveness of various agro-processing firms. The secondary sources included Murang'a County Government; Ministry of Agriculture, Livestock and Fisheries Development, AFFA, KALRO and Ministry of Industrialization and Enterprise Development.

3.9 Pilot Test

According to Orodho (2003), piloting is an important stage in the design of questionnaires. When properly done, it helps to establish whether questions are measuring what they are supposed to and whether the wording is clear. It also helps to correct bias and non responsiveness. The study piloted the questionnaires using 15 managers who comprised 6% of the sample and 2% of the population. This was within the recommended limit of 1% to 10% of the target population (Cooper & Schindler, 2013; Creswell & Creswell, 2017; Mugenda & Mugenda, 2003).

Cooper and Schindler (2013) posit that a pilot test is conducted to not only detect any weakness in design and instrumentation but also provide proxy data for selection of a probability sample. Pilot testing provided an opportunity to detect and remedy a wide range of potential problems within the measuring instrument. The pilot data was analyzed to determine how much time was needed to complete one questionnaire and decide whether the instruments should be revised to encourage response. The pilot

test also tested data for relevance, interpretability and usefulness in addressing the study objectives (Abok, 2013). The questionnaire was improved after the piloting. The pilot test helped the researcher to include constructs of profitability, productivity and brand value as they relate to competitiveness of firms that were initially omitted. The results of the pilot study were also useful in determining the reliability and validity of the questionnaire.

3.9.1 Reliability

Reliability measures the degree to which a research instrument gives consistent results (Mugenda & Mugenda, 2003). It refers to the accuracy and precision of a measurement procedure (Copper & Schindler, 2013; Zikmund, 2003). Reliability is concerned with estimates of the degree to which a measurement is free of random or unstable error (Copper & Schindler, 2013). Cronbach alpha was used to test the internal reliability of the measurement instrument. Sekaran & Bougie (2010) posit that Cronbach's alpha coefficient ranges between 0 and 1 with higher alpha coefficient values of 0.7 and above indicating higher reliability.

3.9.2 Validity

Validity refers to the degree to which a study accurately reflects or assesses the specific concept the researcher is attempting to measure (Mugenda & Mugenda, 2003). Validity is the extent to which differences found with a measuring tool reflect true differences among respondents being tested (Copper & Schindler, 2013). Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. Validity can be measured by the extent the data obtained accurately reflects the theoretical or conceptual concepts; that is if the measurements obtained are consistent with the expectations. The usual procedure in assessing validity is to use experts in a particular field to assess the accuracy of the measuring instrument (Mugenda & Mugenda, 2003). Principal Component Analysis (PCA) was done and it helped to determine the least number of factors that could account for the common variance of variables. The researcher was assisted by his supervisors to ensure that the items in the questionnaire accurately represented the concept of the study.

3.10 Data Processing and Analysis

The qualitative data was analyzed using principal component analysis while quantitative data was coded to allow for quantitative data analysis using SPSS software. Before doing data processing, data was first cleaned during the process of coding. This was to ensure completeness and quality of data for meaningful analysis (Mugenda & Mugenda, 2003; Kothari, 2004). Quantitative data analysis involved the derivation of statistical descriptions and interpretation of data that relied purely on numerical values like the measures of dispersion. It also involved making conclusions from numerical values through the process of quantification that can allow reliability, comparability and validity of the findings, (Orodho, 2003). The findings were then presented using frequency distribution tables; measures of central tendency such as mean, median and mode; pie charts; and graphs. Inferential statistics generated helped to show relationships between variables. Correlation analysis was performed to determine the strength of the relationship between various independent variables with the dependant variable. The Analysis Of Variance (ANOVA) was carried out to show the goodness of fit of the overall model and significance of the relationship between the dependent and independent variables based on a 1 % level of significance.

Regression analysis model is the most suitable when there is more than one explanatory variable on the dependant variable. Regression analysis enabled the researcher to show the direction of the relationships between the multiple independent variables with the dependent variable of competitiveness of agro processing firms. It also helped to determine whether the multiple variables predicted the dependent variable (Orodho, 2003). The regression analysis and correlation analysis yielded the coefficient of determination (R^2) which explained percentage change of the dependent variable that was attributable to change in the independent variable(s). This study assumed the following regression model:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$$

where:

Y =The dependent variable which, in this study, was competitiveness.

β_0 = the Y- intercept, the value of competitiveness that was not explained by independent variables.

β_i = Partial regression coefficients that explained the influence of each independent variable on the dependent variable Y ; where $i= 1,2,3,4,5$

x_1 =Innovation

x_2 =Business Networking

x_3 =Technology

x_4 =Managerial capability

ϵ is the error term.

3.10.1 Assumptions of Linear Regression

Tests for the assumptions of linear regression analysis were carried out. Normality is one of the assumptions of linear regression analysis. A normality test was used to determine whether the sample data was drawn from a normally distributed population within some tolerance. The normal Q-Q plot showed that the data about competitiveness was normally distributed since the points were close to and within the diagonal line. To further test for normality, the study used Kolmogrov-Smirnov test for normality.

Multicollinearity is concerned with high correlation between independent variables. Ideally there should be a high correlation between the dependent variable and the independent variables, while the independent variables should have low correlation with each other (Hair, Black, Babin & Anderson, 2010)). To prove the absence of multicollinearity, Hair et al. (2010) suggest that a correlation between two independent variables should not exceed 0.9. The test done showed that all the

correlations between the independent variables fell well below 0.9 and therefore there was no problem of multicollinearity. Variance Inflation Factor (VIF) was used to further test for multicollinearity among the variables in the regression model at acceptable tolerance levels. VIFs in excess of 10 indicate poorly estimated coefficients and a possible problem of multicollinearity (Myers, 1990).

Autocorrelation is the similarity of a time series over successive time intervals. It can lead to underestimates of the standard error and can cause one to think predictors are significant when they are not. The study used Durbin Watson Test to measure autocorrelation in residuals from regression analysis. The Durbin Watson test reports a test statistic with a value of 0 to 4 where 2 indicates no autocorrelation while a value of less or greater than 2 indicates the presence of autocorrelation. Whenever, Durbin Watson statistic is approximately equal to +2, then we can be satisfied that there is no autocorrelation (Gujarati & Porter, 2009).

3.11 Operationalization of Variables

Table 3.5: Operationalization of variables

Variable	Operational Indicator	Operatioanalization	
		Questionnaire Item	
Dependent Variable	1. Profitability	Part B Section V	
Competitiveness of firms	2. Productivity	Part B Section V	
Independent Variables	3. Brand value	Part B Section V	
	1. Timely introduction of innovation	Part B Section I	
	1. Innovation	Part B Section I	
		2. Applicability of innovation	
	2. Business Networking	1. Resource Sharing	Part B Section II
		2. Knowledge Sharing	Part B Section II
	3. Technology	1. Availability of technology	Part B Section III
		2. Suitability of technology	Part B Section III
		3. Cost of technology	Part B Section III
	Managerial Capabilities	1. Strategic Capabilities	Part B Section IV
	2. Operational Capabilities	Part B Section IV	

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This study sought to analyze the determinants of competitiveness of small and medium agro-processing firms in Kenya. This chapter covers the findings of the background of the firms; descriptive statistics for the various variables of the study; and inferential statistics. The researcher used correlation analysis, linear regression analysis, analysis of variance and content analysis to establish the nature of the influence of the independent variables (Innovation; Business Networks; Technology; and Managerial Capability) on the dependent variable (Competitiveness). The inferential statistics were then used to test the four hypotheses of the study.

4.2 Background Information

4.2.1 Response Rate

The researcher with the assistance of three research assistants distributed 249 questionnaires to managers of agro-processing firms in Murang'a County in Kenya. Out of the distributed questionnaires, one hundred and seventy six (176) duly filled questionnaires were returned which comprised seventy one percent (71%) of the sample. Flynn, Schroeder, Sakakabira, Bate and Flynn (1990) posit that it is important to reach a response rate that is greater than 50% while Mugenda & Mugenda (2003) and Babbie (1990) posit that response rates of 60% are good while 70% are very good. The response rate of this study (71%) is therefore within the acceptable range.

4.2.2 Position Held in Company

Ninety two respondents (52%) out of the 176 respondents, were secretary managers which is a title given to managers of coffee societies. Coffee is the main cash crop that is grown in Murang'a County which explains the high number of respondents

from the coffee sector. Production managers and managers of different agro-processing firms came second and third with each having thirty three respondents (19%). Others who responded included owner managers (2%), quality assurance managers (1%), managing directors (1%), workers (5%), assistant farm manager (1%) and supervisor (1%).

The findings indicate that a wide range of stakeholders were involved in the study. The top managers are tasked with the role of strategic decision making and can commit a firm's resources in pursuit of competitive advantage. The involvement of different levels of managers minimized bias and therefore the findings could be relied upon to make conclusions in regard to determinants of competitiveness of small and medium agro processing firms in Murang'a County.

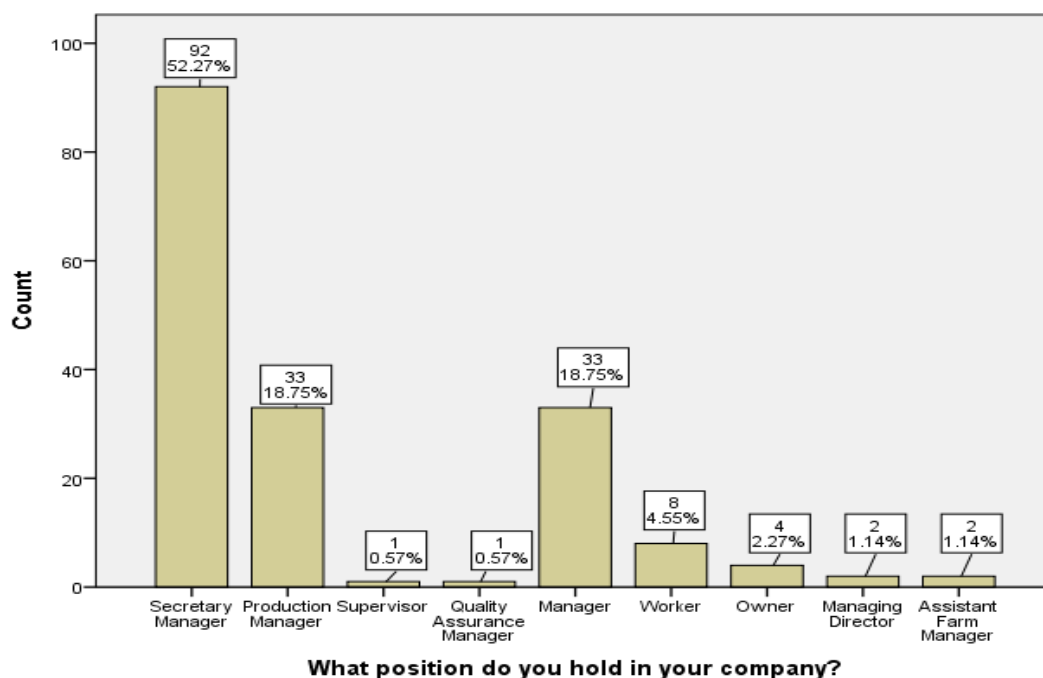


Figure 4.1: Managerial Position Held at the Company

4.2.3 Level of Education of Respondents

A majority of respondents, as shown in Fig. 4.2, were diploma holders (48%), followed by graduates (32%), then certificate holders (19%) and finally post graduate at 1%. The findings of this study have revealed that a majority of managers of small

and medium agro processing firms in Murang’a County had attained at least tertiary level of education. The findings suggested that all the respondents had attained the requisite education that would enable them to strategically position their firms in order to enhance their competitiveness. The findings concur with the argument of ILO (2011) that higher levels of educational attainments lead to a more skilled and productive workforce, capable of producing higher standard of goods and services more efficiently.

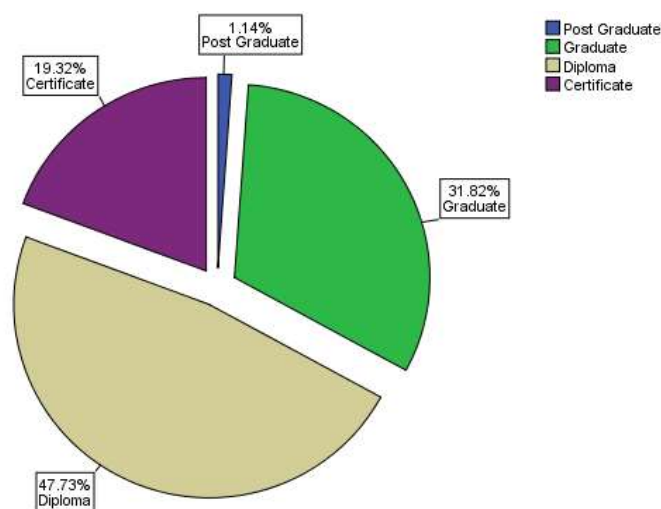


Figure. 4.2: Level of Education of Respondents

4.2.4 Age of Small and Medium Agro-processing firms in Murang’a

A majority of agro processing firms were registered in the late 1990s. Most of the coffee societies in Murang’a County were formed in 1990s after the split of the giant Murang’a Co-operative Union. Most of the small agro-processing firms in Murang’a County are relatively young and some still in formative years. The study considered age of a firm since it is a factor that may influence the strategic positioning of the firm as it plans its competitiveness moves. The liability of newness presents new SMEs with a greater risk of survival than older enterprises since new enterprises do

not have the experience, access to external resources, links, reputation or the legitimacy of the older enterprises (Amyx, 2005).

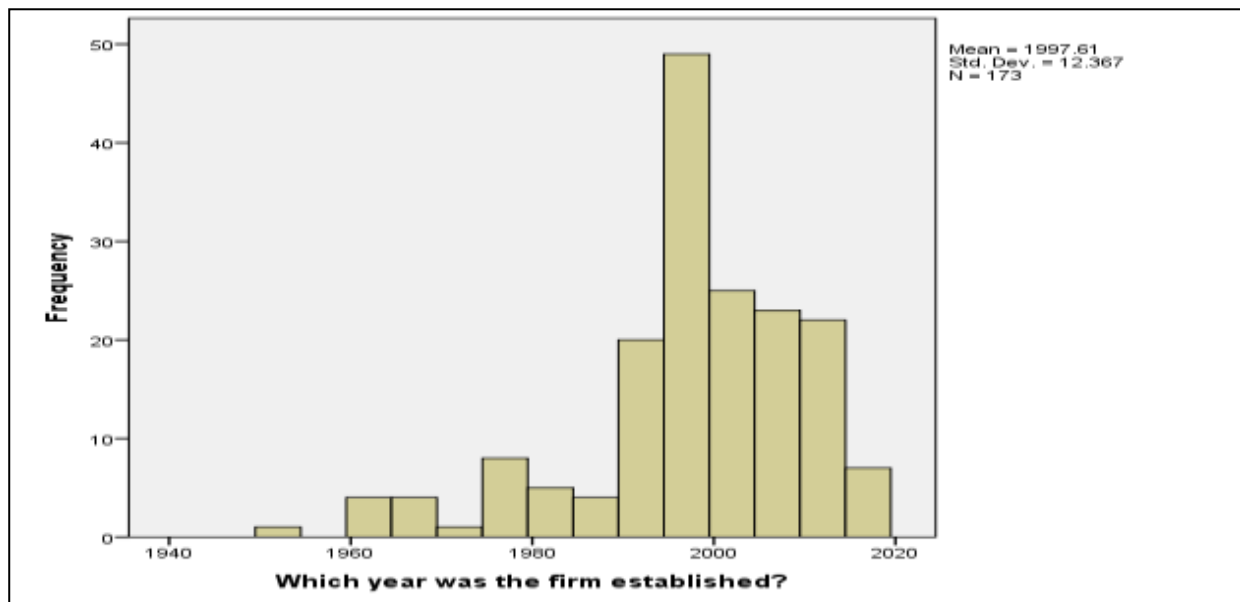


Figure. 4.3: Year of Establishment of Agro Processing firms

4.2.5 Legal Status of Companies

A vast majority (91%) of agro-processing firms in Murang'a County were legally registered with only 9 % of the firms being unregistered. The finding would indicate that the small and medium firms were ready for business and were willing to

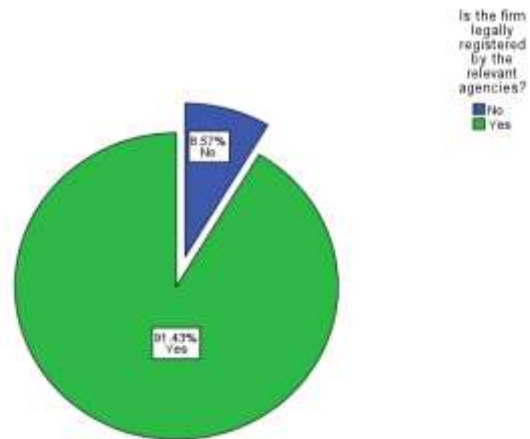


Figure. 4.4: Legal Status of Agro-processing Firms in Murang'a County

4.2.6 Number of Employees of Firms

A majority of the firms had a workforce of less than a hundred workers with only two macadamia nuts processing firms providing employment to more than 500 people. The findings indicate that the agro-processing subsector in Murang'a County is dominated by small firms employing less than fifty workers.



Figure. 4.5: Number of workers of Small and Medium Agro-processing firms in Murang'a

4.2.7 Products Manufactured by the Small and Medium Agro-processing Firms

Table 4.1 shows that a majority of the respondents (60.8%) process coffee followed by nuts at 11.9%, animal feeds at 10.8%, dairy products at 9.7%, fruit juices 2.8%, fortified foods 1.7%, fruits 1.1 % and crisps at 1%. Opportunities for adding value to other agricultural, livestock and timber products still exist in Murang'a County. MCG has laid down plans to set up factories that will enable value addition to bananas, cassava, avocados and mangoes, which are widely grown in the county. Value addition in fish products will also help to improve the household incomes of fish farmers in Murang.a County.

Table 4.1: Products Manufactured by Agro-processing Firms in Murang'a County

Product	Frequency	Percentage (%)	Cumulative Percentage (%)
Coffee	107	60.8	60.8
Macadamia, Cashew and Peanuts	21	11.9	72.7
Animal Feeds	19	10.8	83.5
Dairy Products-Yoghurt	17	9.7	93.2
Fruit Juices	5	2.8	96.0
Fortified Blended flours	3	1.8	97.8
Fruits	2	1.1	98.9
Banana and Potato Crisps	2	1.1	100.0
Total	176	100.0	

4.2.8 Main customers of Small and Medium Agro-processing firms in Murang'a County

Domestic market constituted 79.5% of the market for the products processed by agro processing firms in Murang'a County and only 20.5% were export bound. The main

customers of the products were: local coffee millers (39.8%); wholesalers and retailers (27.3%); export market (20.5%); dairy farmers (8.5%); private millers (2.8%); and non-governmental organizations (1.1%). The low share of exported goods indicated that there was a need to produce goods that would compete more aggressively in international markets so as to improve not only the earnings of the processing firms but also household incomes of the local farmers.

Table 4.2: The Main Customers of the Small and Medium Agro-processing Firms

Customer	Frequency	Percentage (%)	Cumulative Percentage(%)
Wholesalers and Retailers	48	27.3	27.3
Local Millers	70	39.8	67.1
Private Millers	5	2.8	69.9
Non-Governmental Organizations	2	1.1	71.0
Dairy Farmers	15	8.5	79.5
Export Market	36	20.5	100.0
Total	176	100.0	

4.2.9 Competitive Strategies of Firms

A majority of the firms (68.18%) responded that they had competitive strategies in place while 38.82% did not have. The finding would suggest that a majority of SMMEs had clear visions on the competitive paths they wanted to take in order to ensure that they could survive in the ever competitive manufacturing sector.

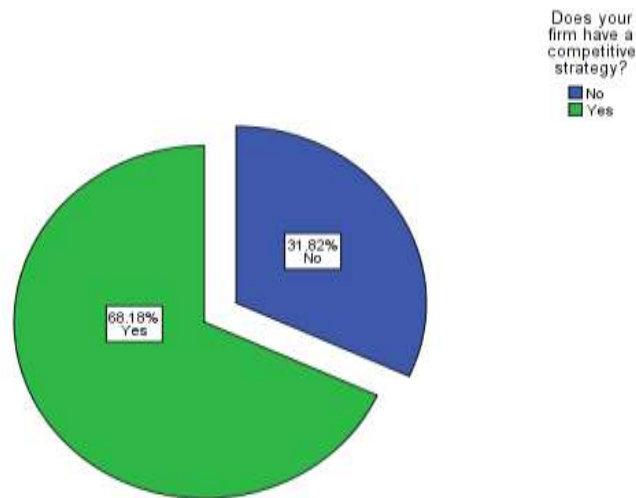


Figure. 4.6: Whether Agro-processing firms in Murang'a have competitive strategies.

4.2.10 Reliability and Factor Analysis

The reliability of each construct was examined to ensure the items collectively measured their intended construct consistently as recommended in the extant literature (Saunders et al., 2009). Reliability was examined using Cronbach's alpha coefficient which ranges between 0 and 1 with higher alpha coefficient values of 0.7 and above indicating higher reliability (Sekaran & Bougie, 2010). As Table 4.3 indicates, Cronbach's alpha values for the different variables of this study were well above 0.70 and therefore the results were within the acceptable range of between 0.7 and 1.0.

Table 4.3: Reliability Analysis

Item	Cronbach's Alpha	Frequency
Innovation	0.744	10
Business Networks	0.942	10
Technology	0.846	10
Managerial Capability	0.781	8
Competitiveness	0.886	9

Principal Component Analysis (PCA) determined the least number of factors that could account for the common variance of the variables. As shown in Table 4.4, Principal Component Analysis for the thirteen items in the questionnaire about innovation helped to expunge three items that fell below a score of a rounded off value of 0.4 and retained ten items. PCA thus strengthened the content validity of items contained in the retained factors of innovation.

Table 4.4: Factor Loadings for Innovation

Statement	Component	Comment
Innovative processing improves our brand value in the market	.865	Retain
To what extent has timely introduction of innovation contributed to the profitability of your firm in the last three years?	.769	Retain
To what extent has applicable innovation contributed to the productivity of your firm in the last three years?	.759	Retain
To what extent has timely introduction of innovation contributed to the attractiveness of your firm's brands in the market?	.751	Retain
Timely introduction of innovative products has improved our productivity	.657	Retain
We continually follow new developments in our industry	.579	Retain
Innovations we can easily apply help to improve productivity	.437	Retain
We reward staff members who suggest innovative ideas	.399	Retain
We introduce innovative products ahead of competition	.357	Retain
What innovative product and/or process has your company introduced in the last three years?	.355	Retain
We have an innovation strategy	.347	Expunge
We collaborate with research institutions	-.166	Expunge
Trade fairs/ science exhibitions are sources of innovations	.089	Expunge

Extraction Method: Principal Component Analysis.

Principal Component Analysis (PCA) was used to determine the least number of factors which could account for the common variance of business networking. The study intended to measure the influence of business networking on competitiveness of small and medium agro processing firms by using 10 items. As shown in Table 4.5 all the 10 had factor loadings above 0.40 and therefore all were found to be valid for the constructs they represented and were retained in the study.

Table 4.5: Factor loadings for Business Networking

Statement	Component	Comment
Collaborative training of our employees enhances productivity.	.908	Retain
Business networks help us to access critical capabilities and resources that aid productivity	.886	Retain
We participate in business networks	.862	Retain
Business networking enhances existing capabilities	.843	Retain
Shared information helps in increasing our profitability	.841	Retain
Shared resources have improved the firm's productivity	.822	Retain
Our business networks are based on trust	.819	Retain
Our social business contacts provide useful information that improves the value of our brands	.810	Retain
Collective strategies reduce our transaction costs.	.802	Retain
We collaborate with NEMA and other Quality Assessors to build our reputation	.765	Retain

Extraction Method: Principal Component Analysis.

Principal Component Analysis (PCA) was used to determine the least number of factors which could account for the common variance of technology. The study intended to measure the influence of technology on competitiveness of small and medium agro processing firms by using 10 items. As shown in Table 4.6, one factor was found to be below a factor loading of 0.4 and was therefore expunged. The other nine had factor loadings which were above 0.40 and therefore were found to be valid for the constructs they represented and retained in the study.

Table 4.6: Factor loadings for Technology

Statement	Component	Comment
Specialized modern technology improves our productivity	.803	Retain
Locally available technology stimulates productivity	.754	Retain
Long term profitability justifies cost of technology	.748	Retain
We consider our future needs as we upgrade technology	.735	Retain
Locally available technology improves our profitability	.678	Retain
Technology improves efficiency of resource utilization	.657	Retain
A functioning website improves our brands' attractiveness	.618	Retain
Environment friendly technology suits our long term profitability strategy	.607	Retain
Locally available technology enhances our brands' value	.534	Retain
Environment friendly technology enhances our brand image	.376	Expunge

Extraction Method: Principal Component Analysis.

Principal Component Analysis (PCA) was used to determine the least number of factors which could account for the common variance of managerial capability. PCA was done on the ten items in the questionnaire measuring the influence of managerial capability on competitiveness of small and medium agro processing firms. As shown in table 4.7, PCA helped to expunge two items that fell below a score of 0.4 and retained eight items that had a score of more than 0.4 thus strengthening the content validity of the constructs.

Table 4.7: Factor Loading for Managerial Capability

Statement	Component	Comment
Our strategic posture ensures sustainable profitability	.710	Retain
Staff training and skills improvement stimulates productivity	.681	Retain
Proactive change management skills improve brand value	.674	Retain
Strategic management trainee programs stimulate long term profitability	.629	Retain
Motivation skills of managers improves productivity	.615	Retain
Managers' optimal allocation of resources stimulates productivity	.612	Retain
Top managers possess requisite capabilities that ensure long term profitability	.576	Retain
Resourcefulness of managers improves the brand image.	.436	Retain
Techno- management practices like TQM improves brand reputation	.340	Expunge
Participative strategic planning improves value of our brands	.250	Expunge

Extraction Method: Principal Component Analysis.

Principal Component Analysis (PCA) was used to determine the least number of factors which could account for the common variance of competitiveness. The general objective of the study was to analyze the determinants of competitiveness of small and medium agro-processing firms in Kenya. As shown in table 4.8, one factor was found to be below a factor loading of rounded value of 0.4 and was therefore expunged. The other five had factor loadings which were above 0.40 and therefore were found to be valid for the constructs they represented and were retained in the study.

Table 4.8: Factor loading for Competitiveness

Statement	Component	Comment
Innovation improves our productivity	.845	Retain
Business networks we engage in enhances productivity	.836	Retain
Innovation has improved our brand value	.759	Retain
Technology in place has improved our brand value	.651	Retain
Managerial capabilities have strengthened value of our brands	.383	Retain
Productivity is enhanced by utilization of unique managerial capabilities	.322	Expunge

Extraction Method: Principal Component Analysis.

4.3 Descriptive Statistics for the Study's Variables

The researcher analyzed descriptive statistics for all study variables namely: innovation; business networking; technology; managerial capabilities and competitiveness. The Likert scale contained polar anchors 1-5 which measured from negative to positive responses to statements in the questionnaire used with 1 being the value allocated to the most negative and 5 to the most positive response. In this section, **SD** stands for Strongly Disagree, **D** for disagree, **N** for Neutral, **A** for Agree and **SA** for Strongly Agree.

4.3.1 Innovation

Table 4.9 shows results to questions about regarding the extent to which innovation had contributed to the competitiveness of firms using productivity, profitability and brand value as key indicators of competitiveness. The respondents, with a mean of 3, indicated that applicable innovation had contributed to productivity of the firms to a moderate extent. Responding to a question about how timely introduction of innovation had contributed to the attractiveness of their brands in the market, the respondents, with a mean of 3, responded that it was to a moderate extent. The finding, with a mean of 3, indicated that timely introduction of innovation

moderately contributed to profitability of agro processing firms. A majority of the respondents, with a mean of 3, responded that applicable innovation had contributed to the productivity of their agro processing firms to a moderate extent. Timely introduction of innovation will assure the firm introducing either a product, process or service a first mover competitive advantage. This finding resonates with the findings of other scholars (Covin & Miles, 1999; Mbui, 2016; Njuguna , 2016).

Table 4.9: Extent to Which Innovation Contributed to Competitiveness of Firms

	No Extent at All	Little Extent	Moderate	Great Extent	Very Great Extent	Mean	Std Dev
To what extent has applicable innovation contributed to the productivity of your firm in the last three years?	8.0%	11.4%	35.2%	40.3%	5.1%	3	1
To what extent has timely introduction of innovation contributed to the profitability of your firm in the last three years?	9.1%	14.8%	37.5%	31.8%	6.8%	3	1
To what extent has timely introduction of innovation contributed to the attractiveness of your firm's brands in the market?	9.7%	13.6%	48.9%	21.0%	6.8%	3	1

As shown in 4.10, agro-processing firms encouraged innovation and appreciated the contribution of innovation to competitiveness of their firms. A majority of respondents, with a mean of 4, agreed to the statement that their firms followed new

developments in their industry and with a mean of 3 they were neutral that their firms introduced innovative products ahead of competition. Respondents agreed (mean of 4) that their firms rewarded staff members who suggested innovative ideas, The respondents also agreed with the following statements as indicated by the mean after the statements: trade fairs/science exhibitions were sources of innovation (mean 4); firms collaborated with research institutions (mean of 4); and firms had innovation strategies (mean of 4).

A majority of respondents (with a mean of 4) agreed with the statement that timely introduction of innovative processes and products had improved the productivity of their firms while the respondents, with a mean of 4, agreed that innovation they can easily apply had helped in improving their productivity. The mean of 3 indicated that most of the respondents were of the view that easy to apply innovative processes had contributed to the productivity of their firms to a moderate extent. With a mean of 4, most of the respondents were of the view that innovations that they could easily apply helped them to improve their productivity to a great extent.

In response to a question about the extent to which timely introduction of innovation had contributed to profitability of their firms. A majority of the respondents agreed (mean of 4) were of the opinion that innovative processing had improved their brand value in the market. The findings, with a mean of 4, indicated that timely introduction of applicable innovation determined competitiveness of small and medium agro processing firms. A majority of the respondents (mean of 4) were of the view that timely introduction of innovation had helped to improve their brands value, productivity and profitability to a great extent. Applicable innovation was found to contribute to productivity and value of brands to a great extent but had a moderate contribution towards profitability. The findings concurred with the findings of other scholars. Zaheer and Bell (2005) identified innovation as a key capability of a firm that was important for its financial performance while Covin and Miles (1999) found out that innovation had a positive influence on a firm's profitability. The finding also echoed that of Ochola (2013) who concluded that innovation presented vast opportunities for businesses to infuse efficiencies in their operations and processes in order to serve their customers more efficiently or enter new markets. It

also concurred with Atikiya (2015) who found out that innovative activities helped to develop strong brand identification for the SMES' products and services in Kenya.

Table 4.10: Innovation and Competitiveness of Agro-processing Firms

	SD	D	N	A	SA	Mean	Std Dev
Timely introduction of innovative processes has improved our productivity	0.6%	11.3%	14.8%	44.9%	28.4%	4	1
Innovative processing improves our brand value in the market	0.6%	10.7%	13.1%	50.6%	25.0%	4	1
We introduce innovative products ahead of competition	1.1%	13.1%	32.4%	43.7 %	9.7%	3	1
We continually follow new developments in our industry	1.7%	10.2%	27.8%	43.8%	16.5%	4	1
We reward staff members who suggest innovative ideas	2.8%	11.9%	31.8%	34.7%	18.8%	4	1
We collaborate with research institutions	2.9%	13.6%	16.5%	55.1%	11.9%	4	1
We have an innovation strategy	1.1%	10.8%	23.9%	55.7%	8.5%	4	1
Trade fairs/ science exhibitions are sources of innovations	1.7%	10.8%	22.7%	39.2%	25.6%	4	1
Innovations we can easily apply help to improve productivity	1.7%	9.1%	14.2%	53.4%	21.6%	4	1

Table 4.11 shows responses to the questionnaire item that required respondents to suggest other ways other than the ones mentioned in the questionnaire in which innovation could further enhance competitiveness. The results were tabulated in table 4.11 after being analyzed qualitatively using content analysis and summarized in percentages. The use of internet marketing and e-commerce (30.7%) and setting up of more research stations (22.1%) were suggested as possible important sources of competitiveness for the agro processing firms in Kenya by over half of the

respondents. The other suggested sources of competitiveness that can be attributed to innovation were: more educational fairs and exhibitions (14.6 %); provision of quality products ahead of competition (11.4 %); staff skills development (10.8 %); the use of mobile money transfer to pay farmers and suppliers (9.8 %); and giving prizes to the best producers and managers (1.1%). The findings concurred with Porter (1996) who posited that a firm gains sustainable competitive advantage by invariably upgrading its processes and activities through innovation which in turn improves its profitability.

Table 4.11: Suggested Innovative Sources of Competitiveness

Opinion	Frequency	Percentage (%)	Cumulative Percentage (%)
Use of internet marketing and e-commerce	54	30.7	30.7
Setting up of more research stations	39	22.1	52.8
More educational fairs and exhibitions	26	14.8	67.6
Provision of quality products ahead of competition	20	11.4	79.0
Staff skills development	19	10.8	89.8
Use of mobile money payments to farmers and suppliers	16	9.1	98.9
Prize giving to best producers and managers	2	1.1	100.0
Total	176	100	

4.3.2 Business Networking

As shown in table 4.12, a majority of the respondents agreed (with a mean of 4) that their firms engaged in business networks and that the business networks they engaged in were based on trust recording a mean of 4. An impressive majority of the respondents (mean of 4) replied that business networks they engaged in provided useful information that helped them to improve the value of their brands in the market. A majority of the respondents agreed (mean of 4) that business networks assisted their firms in accessing critical capabilities and resources that aided their

productivity. A majority of the respondent agreed (mean of 4) that business networking activities enhanced the existing capabilities of their firms while slightly over half of them, with a mean of 4, said that shared information and resources within the networks helped to improve their profitability. In response to a statement as to whether collaboration with NEMA and other quality assessors helped to build brands' reputation, a majority of the respondents, were in agreement (mean of 4) while with a mean of 4 they agreed that collective strategies reduced transaction costs of their firms. A majority of the respondents were also in agreement (mean of 4) that collaborative training enhanced productivity of their firms.

The findings indicated that business networking influences competitiveness of small and medium agro processing firms. A majority of the respondents (mean of 4) replied that business networks they engaged in provided useful information that helped them to improve the value of their brands; profitability and productivity to a great extent. The results show that the resources that were shared within business networks assisted small and medium agro processing firms to access critical capabilities and resources that aided their productivity, enhanced their brands value and improved their profitability. The findings concurred with several scholars. Nouwens and Bouwman (1996) posited that business networks enabled collaborating firms to maximize their profits by taking advantage of higher flexibility at lower costs and risks. Dhliwayo (2014) argued that networks were valuable because they minimized transaction costs thereby improving the profitability of the actors in a network while Destefanis (2012) and Bretherton (2003) posited that collaborating businesses can increase productivity and become more competitive from utilization of established distribution channels and economies of scale associated with big firms. Information sharing is extremely important for successful business networking. Sharing information between partners of a business network also serves as a breeding ground for new innovations which helps to strengthen the brands value. The study also concurred with Prahalad and Hamel (1990) who held the view that challenges, potential solutions and novel ideas that were openly shared and resolved in co-operation made the network stronger and may also have led to new innovations.

Table 4.12: Business Networks and Competitiveness of Agro-processing Firms

	SD	D	N	A	SA	Mean	Std Dev
We participate in business networks	0.6%	11.4%	10.2%	63.1%	14.8%	4	1
Our business networks are based on trust	0.6%	10.8%	14.2%	61.4%	13.1%	4	1
Our social business contacts provide useful information that improves the value of our brands	0.6%	12.5%	19.3%	33.0%	34.7%	4	1
Business networks help us to access critical capabilities and resources that aid productivity	1.7%	16.5%	22.2%	44.3%	15.3%	4	1
Business networking enhances existing capabilities	2.3%	18.2%	17.6%	48.9%	13.1%	4	1
Shared information helps in increasing our profitability	0.6%	1.4%	23.9%	43.8%	20.5%	4	1
Shared resources have improved the firm's productivity	0.0%	13.1%	25.6%	49.4%	11.9%	4	1
Collective strategies reduce transaction costs.	0.0%	14.8%	25.0%	33.5%	26.7%	4	1
We collaborate with NEMA and other Quality Assessors to build our reputation	1.1%	19.3%	21.6%	41.5%	16.5%	4	1
Collaborative training of our employees enhances productivity.	0.6%	15.9%	11.4%	39.8%	32.4%	4	1

Table 4.13 shows the results of qualitative analysis of data regarding the functions of firms that respondents felt greatly benefited from business networks they engaged in. A majority of the respondents (30.1%) felt that marketing and sales benefitted the most from business networking followed by management and board training (19.9%), distribution of farm inputs (13.6%), quality control (8.5%), purchasing (8.0%) and planning (6.8%) in that order. These findings echo those of Destefanis (2012) and Bretherton (2003) who posited that collaborating businesses can increase productivity and become more competitive from utilization of established distribution channels and economies of scale associated with big firms.

Table 4.13: Functions Greatly Influenced by Business Networks

Function	Frequency	Percentage (%)	Cumulative Percentage (%)
Marketing and sales	53	30.1	30.1
Processing	35	19.9	50.0
Distribution of farm inputs to farmers	24	13.6	63.6
Management and board training	23	13.1	76.7
Quality control	15	8.5	85.2
Purchasing	14	8.0	93.2
Planning	12	6.8	100.0
Total	176	100.0	

Table 4.14 shows the results of qualitative analysis of data regarding the question about how business networking could further improve the productivity of firms. Most of the respondents (27.3 %) were of the opinion that business networks can help them to reach even larger markets. 16.9% of the respondents felt that business networking can help them to acquire new manufacturing technology while 13.6% were of the view that business networking can help them to modernize existing technologies. Other responses and their accompanying percentages were as follows:

feedback from customers and suppliers (11.4%); understanding operations of international markets (9.6%); benchmarking with other firms to improve efficiency (9.1%); capacity building (7.4%); unlocking and fully utilizing potential (5.1%). These findings resonate with the findings of Destefanis (2012) and Bretherton (2003) who posited that collaborating businesses can increase productivity and become more competitive from utilization of established distribution channels and economies of scale associated with big firms.

Table 4.14: Suggestions of how business networking can enhance competitiveness

Opinion	Frequency	Percentage (%)	Cumulative Percentage (%)
Larger market coverage	48	27.3	27.3
Access to new manufacturing technologies	29	16.5	43.8
Modernization of existing technology	24	13.6	57.4
Feedback from customers and suppliers	20	11.4	68.8
Understanding operations of international markets	17	9.6	78.4
Benchmarking with other firms to improve efficiency	16	9.1	87.5
Capacity building	13	7.4	95.9
Unlocking and fully utilizing potential	9	5.1	100.0
Total	176	100.0	

4.3.3 Technology

In response to a question about the extent to which a firm’s strategic positioning had prioritized the use of technology, Table 4.15 shows that a majority of the respondents responded that it was to a moderate extent which yielded a mean of 3. Many of the small and medium agro processing firms in Kenya are small start ups that may opt to use the locally available technology however rudimentary but look forward to acquiring affordable technology in the future.

Table 4.15: Prioritization of Technology by Agro-processing Firms in Murang’a County

Item	No Extent at All	Little Extent	Moderate	Great Extent	Very Great Extent	Mean	Std Dev
To what extent has your firm’s strategic positioning prioritized the use of technology?	1.1%	15.9%	53.4%	18.8%	10.8%	3	1

A majority of the respondents agreed (mean of 4) that specialized modern manufacturing technology helped firms to improve productivity. Table 4.16 shows that a majority of the respondents agreed with all the other statements as indicated by mean of 4 with a standard deviation of 1. A big majority of the respondents responded in agreement that long term profitability justified the cost of technology. The respondents also agreed (mean of 4) that locally available technology stimulated productivity and improved profitability. They also agreed that environment friendly technology suited long term profitability strategy and improved efficiency of resources utilization.

A huge majority of the respondents, with a mean of 4, agreed that environment friendly technology enhanced the brand image; slightly over half of the respondents

(mean of 3) responded that functioning websites improved their brands' attractiveness, 56.8% agreed that locally available technology enhanced brands' value; while 73.3% of the respondents agreed that firms considered future needs as they upgraded technology. The results revealed the importance that agro processing firms in Kenya attached to technology in their endeavor to remain competitive. From the findings, it can be deduced that technology determines competitiveness of small and medium agro processing firms in Kenya. A majority of the respondents (mean of 4) agreed that the locally available technology stimulated productivity; improved profitability; and improved their brands' attractiveness. A majority of the respondents also agreed (mean of 4) that environment friendly technology suited their long term profitability strategy; enhanced the brand image; and improved efficiency of resource utilization. The findings also revealed that firms considered the costs of technology and their future needs of their firms when upgrading their technology. The findings also revealed the importance that agro processing firms in Kenya attached to technology in their endeavor to remain competitive. The study also revealed that long term profitability would justify the cost of technology. But despite the importance attached to new technology the findings revealed that a half of the firms did not have functioning websites.

The findings concur with findings of various scholars. Rothaermal (2008) posit that for a firm to gain competitive advantage, it must have technological competencies that allow it to generate higher perceived value than the competitors or to produce at lower cost and Obradovic, et al. (2015) who argue that organizations that select manufacturing technologies by only considering current contexts and without much regard to future needs will be defeated by the competition. Mwakaje's (2010) study affirms that affordability and accessibility of technology facilitate technology applications by the less-endowed firms from developing countries.

Table 4.16: Technology and Competitiveness of Agro-processing Firms

Item	SD	D	N	A	SA	Mean	Std Dev
Specialized modern technology improves productivity	0.0%	1.1%	27.3%	51.7%	19.9%	4	1
A functioning website improves our brands' attractiveness	9.1%	6.3%	31.8%	35.2%	17.6%	3	1
Locally available technology enhances our brands' value	1.7%	5.1%	36.4%	48.3%	8.5%	4	1
Locally available technology improves our profitability	0.0%	3.4%	42.6%	44.3%	9.7%	4	1
Locally available technology stimulates productivity	0.6%	11.4%	29.0%	46.0%	13.1%	4	1
Environment friendly technology suits our long term profitability strategy	0.0%	6.3%	31.3%	48.3%	14.2%	4	1
Technology improves efficiency of resource utilization	0.0%	4.5%	30.1%	50.0%	15.3%	4	1
We consider our future needs as we upgrade technology	0.0%	7.4%	19.3%	54.0%	19.3%	4	1
Environment friendly technology enhances our brand image	0.0%	2.3%	20.5%	64.2%	13.1%	4	1

Table 4.17 summarizes opinions of respondents about how technology can further improve the competitiveness of agro processing firms by improving the value of their brands. The results were analyzed qualitatively using content analysis and presented in a frequency table using percentages. A significant 31.8% of the respondents were of the opinion that technology can enable firms to produce better packaging materials and grading discs that would help them to improve their brands' value. 27.3% responded that technology helped them to add value and increase quality of their brands. Of the respondents, 18.8 % were of the opinion that technology helped them to produce at lower costs, 11.9 % held that technology helped them to reduce

damaged products while 9.1 % were of the view that technology helped to account for raw materials and finished products.

Table 4.17: Suggestions of how technology can enhance competitiveness of firms

Opinion	Frequency	Percentage (%)	Cumulative Percentage (%)
Better packaging materials and grading discs	56	31.8	31.8
Increase value addition/quality	48	27.3	59.1
Low cost of production	33	18.8	77.9
Low loss and damage of products	21	11.9	89.8
Accountability of raw materials/products	16	9.1	98.9
Use of milking machines and coolers to increase quality of milk	2	1.1	100.0
Total	176	100.0	

4.3.4 Managerial Capability

As shown in table 4.18 all the ten statements had a mean of 4 with a standard deviation of 1 indicating that the majority of the respondents were in agreement with the various statements used to link managerial capability with the competitiveness of agro processing firms. Of the respondents: 82.4% agreed that participative strategic planning improved the value of their brands; 84.1% agreed that motivation skills of managers improved productivity; 87.5% agreed that resourcefulness of managers improved the brand image; 71% agreed that techno- management practices like TQM improved brand reputation; 76.7% agreed that staff training and skills improvement stimulated productivity; 82.3% agreed that top managers possessed requisite capabilities that ensured long term profitability; 83% agreed that managers' optimal allocation of resources stimulated productivity; 68.8% agreed that proactive change

management skills improved brand value; 80.1% agreed that strategic management trainee programs stimulated long term profitability; and 66.3% agreed that their strategic posture ensured sustainable profitability.

Based on the findings, it can be deduced that managerial capability influences competitiveness of the small and medium agro processing firms. The findings have revealed that strategic capabilities such as proactive change management skills and strategic planning have helped to improve brand value, productivity and long term profitability to a great extent (mean of 4). The findings also revealed that operational capabilities like resourcefulness of managers; techno- management practices; managers' ability to optimally allocate resources; staff training and skills improvement; and motivational skills improved the brand image; stimulated productivity; and improved long term profitability. The findings are supported by those of Szczepańska-Woszczyzna and Dacko-Pikiewicz (2014) who found out that most of the respondents rated the following qualities as important in competitiveness of firms: attitudes and behaviors as important influencers of competitiveness: openness to change; creativity; ingenuity; perseverance in pursuing the goal; and the ability to motivate all stakeholders, particularly employees, to behave pro-innovatively.

Table 4.18: Managerial Capability and Competitiveness of Agro Processing Firms

Item	SD	D	N	A	SA	Mean	Std Dev
Participative strategic planning improves value of our brands	1.7%	1.1%	14.8%	67.6%	14.8%	4	1
Motivation skills of managers improve productivity	0.6%	1.1%	14.2%	63.1%	21.0%	4	1
Resourcefulness of managers improves the brand image	0.0%	0.0%	12.5%	68.2%	19.3%	4	1
Techno- management practices like TQM improves brand reputation	2.8%	2.3%	23.9%	58.5%	12.5%	4	1
Staff training and skills improvement stimulates productivity	0.0%	8.0%	15.3%	51.7%	25.0%	4	1
Top managers possess requisite capabilities that ensure long term profitability	0.6%	0.0%	17.0%	67.0%	15.3%	4	1
Optimal allocation of resources stimulates productivity	0.0%	0.0%	17.0%	64.2%	18.8%	4	1
Proactive change management skills improve brand value	0.0%	6.8%	24.4%	59.1%	9.7%	4	1
Strategic management trainee programs stimulate long term profitability	0.0%	1.1%	18.8%	63.1%	17.0%	4	1
Our strategic posture ensures profitability		6.9%	26.9%	50.9%	15.4%	4	1

Table 4.19 show the results of the qualitative analysis of data collected in response to the question that required respondents to indicate aspects of managerial capabilities that they felt were necessary for the improvement of competitiveness of firms but

had not been mentioned in the questionnaire. A majority of the respondents, with a cumulative percentage of 90.3 %, opined that the five most important aspects of managerial capabilities were training of stakeholders about best production practices; motivation of producers and employees; delegation of duties; team working; and ability to consult all stakeholders. Ability of managers to train and motivate all stakeholders will ensure that the firm continually produces high quality products that competitors may find hard to imitate. The findings resonate with those of Szczepańska-Woszczyńska and Dacko-Pikiewicz (2014) who found out that the ability to motivate all stakeholders, particularly employees, to behave pro-innovatively influenced competitiveness of firms.

Table 4.19: Managerial Capabilities that can Enhance Competitiveness

Aspect	Frequency	Percentage (%)	Cumulative Percentage (%)
Training of stakeholders about best production practices	48	27.3	27.3
Motivation of producers and employees	36	20.5	47.8
Delegation of duties	27	15.3	63.1
Team working	24	13.6	76.7
Consultation of stakeholders	24	13.6	90.3
Experience of managers in production	14	8.0	98.3
Strategic planning and implementation	3	1.7	100.0
Total	176	100.0	

Table 4.20 shows the results of qualitative analysis of data collected in response to a question about what else could be done to fully utilize the managerial capabilities of firms in their endeavor to improve competitiveness. Most respondents (36.9%) said

that continuous training of managers and senior staff was an important factor that would enable firms to fully utilize the capabilities of their managers followed by continuous sensitization of managers on customers' changing needs and preferences (23.3%); offering of competitive salaries (18.2%); rewarding of top performers (13.6%); working as a team (6.8 %); and improvement of communication (1.2%) in that order. The findings concurred with those of other scholars. Szczepańska-Woszczyzna and Dacko-Pikiewicz(2014) found out that most of the respondents rated the following qualities as important in competitiveness of firms: attitudes and behaviors; openness to change; creativity; ingenuity; perseverance in pursuing the goal; and the ability to motivate all stakeholders, particularly employees, to behave pro-innovatively.

Table 4.20: Suggestions of how managerial capabilities can improve competitiveness

Opinion	Frequency	Percentage (%)	Cumulative Percentage (%)
Continuous training of managers and senior staff	65	36.9	36.9
Continuous sensitization of managers on customers' changing needs and preferences	41	23.3	60.2
Offering competitive salaries	32	18.2	78.4
Rewarding performers	24	13.6	92.0
Working as a team	12	6.8	98.8
Improve communication	2	1.2	100.0
Total	176	100.0	

4.3.5 Competitiveness

The general objective of the study was to analyze the determinants of competitiveness of agro processing firms in Kenya. The indicators of competitiveness used in the study were profitability, productivity and brand's value. In response to the question about the percentage profit attributable to innovation, a majority of the respondents (mean of 3 and mode of 3) responded that innovation

contributed between 30 % and 40% of the profits; business networks contributed 30-40%; managerial capabilities contributed 20-30%; and 20-30% of the profits were attributable to technology. As shown in table 4.21, more respondents responded that 30-40% (mode of 3 and mean of 3) of the firms' productivity is attributable to the technology in place.

Table 4.21: Elements of Competitiveness

Item	0-20%	20-30%	30-40%	40-50%	Over 50%	Mean	Std Dev
What percentage of your firm's profitability is attributable to innovation?	17.6%	24.4%	30.7%	22.7%	4.5%	3	1
What percentage of your firm's profitability can be attributed to the business networks you engage in?	16.5%	25.0%	38.1%	16.5%	4.0%	3	1
What percentage of your firm's profitability is attributable to managerial capabilities?	6.3%	38.6%	31.3%	18.8%	5.1%	3	1
What percentage of your firm's profitability is attributable to technology	9.1%	40.9%	31.3%	12.5%	6.3%	3	1
What percentage of your firm's productivity is attributable to technology?	8.5%	33.5%	43.8%	10.8%	3.4%	3	1

As summarized in table 4.22, most of the respondents agreed (mean of 4) with the various statements. A huge majority of the respondents (82.4%) agreed that innovation had improved productivity while 79% agreed that business networks enhanced productivity and 87% agreed that productivity was enhanced by utilization of unique managerial capabilities. Of the respondents, 82.4% agreed that managerial capabilities strengthened their brand value, 72.7% agreed that technology in place had improved brand value and 73.3% agreed that innovation had improved brand

value. The findings have shown that innovation has the potential of helping innovative small and medium agro processing firms in Kenya to be more competitive through increased productivity, profitability and brands' value.

The findings are consistent with the work of Denning and Dunham (2010) who argued that innovation was well accepted as the key critical factor for modern organization as it increased the competitive advantage. Denning and Dunham (2010) also found out that created innovation led to the lower production costs of the organization, new beneficial knowledge, new products, new production process, new working technique and new working procedure which in turn generated competitive advantage in the long run. The findings are consistent with various other scholars. Pearce and Robinson (2011) and Raduan et al. (2009) postulate that a business that invests in R&D, and does something that is distinctive and difficult to replicate is more likely to be more profitable than its rivals. Dhliwayo (2014) posits that networks are valuable because they minimize transaction costs thereby improving the profitability of the actors in a network and Destefanis (2012) argued that by stimulating innovation and better utilizing the skills of the workforce, businesses can increase productivity and become more competitive.

Table 4.22: Determinants of Competitiveness

	SD	D	N	A	SA	Mean	Std Dev
Innovation improves our productivity	0.0%	10.2%	7.4%	55.1%	27.3%	4	1
Business networks we engage in enhances productivity	0.6%	9.1%	11.4%	58.5%	20.5%	4	1
Managerial capabilities have strengthened value of our brands	0.0%	0.0%	17.6%	53.4%	29.0%	4	1
Productivity is enhanced by utilization of unique managerial capabilities	0.0%	0.0%	13.1%	59.7%	27.3%	4	1
Innovation has improved our brand value	0.0%	4.5%	22.2%	50.6%	22.7%	4	1
Technology in place has improved our brand value	0.0%	1.1%	26.1%	47.7%	25.0%	4	1

Table 4.23 shows the responses of the item requiring respondents to mention other determinants of competitiveness that they considered to be important but had been omitted in the questionnaire. The results were analyzed qualitatively using content analysis and presented in the frequency table using percentages. Table 4.23 shows that 31.3% of the respondents suggested that affordable credit for agro processing firms was an important determinant of their competitiveness. An impressive 21.3 % of the respondents were of the opinion that regulatory framework of the County Government of Murang'a was an important determinant of competitiveness of agro processing firms in Murang'a County. Supportive policies were third in importance at 20.5 %, good corporate governance fourth at 13.6 % and finally affordable energy at 13.0 %. The findings indicate that affordable credit, regulatory framework and supportive policies were rated highly in making small and medium agro processing firms more competitive. Various studies have however shown regulations to have no significant positive relationship with competitiveness of firms. For example, Van Rooyen et al. (2000) found out that government policies in place were constraining the competitiveness of South African agro-food industry. Onyango (2011) established that there was lack of sector specific policies to address the specific needs of food processing SMEs in Kenya while Chemengich (2014) found out that regulations had no significant relationship with the competitiveness of the electrical and electronic sector in Kenya.

Table 4.23: Suggested Additional Determinants of Competitiveness

Opinion	Frequency	Percentage (%)	Cumulative Percentage (%)
Affordable credit	55	31.3	31.3
Regulatory framework of county government	38	21.6	52.9
Supportive policies	36	20.5	73.4
Good corporate governance	24	13.6	87.0
Affordable energy	23	13.0	100.0
Total	176	100.0	

Table 4.24 summarizes opinions of respondents about what can be done to further improve the competitiveness of agro processing firms in Kenya. The data was analyzed qualitatively using principal component analysis and presented using percentages. 13.6% of the respondents were of the opinion that provision of subsidies to the agro processors would help to improve competitiveness of their firms while provision of guaranteed minimum returns (10.6%), reduction of taxes and license fees (9.3%), provision of affordable and reliable electricity (9.3%) and improvement of the roads (9.3%) were considered as important aspects of improving competitiveness. Other opinions that respondents considered as important in enhancing competitiveness included: provision of conducive business environment by the government; limiting the influence of middlemen; support of County Government to access new markets; and policies to encourage buying of locally processed products for use in hospitals, schools and offices.

Table 4.24: Suggestions for Improving Competitiveness

Opinion	Frequency	Percentage (%)	Cumulative Percentage (%)
Provision of subsidies	41	13.6	13.6
	32	10.6	24.2
Provision for guaranteed minimum returns/predictable prices			
Reduction of taxes and license fees by county and national governments	28	9.3	33.5
Provision of affordable and reliable electricity	28	9.3	42.8
Improvement of rural roads	28	9.3	52.1
Provision of conducive business environment by the government	25	8.3	60.4
Limit the influence of middlemen (brokers)	20	6.6	67.0
Direct export of products	19	6.3	73.3
Availability of affordable capital	15	5.0	78.3
	11	3.7	82.0
Provision of certified farm inputs			
Enhance good governance	7	2.3	84.3
County government policies to encourage buying of locally processed products for use in hospitals, schools and offices.	7	2.3	86.6
Market diversification by introducing organic farming products	7	2.3	88.9
Support of County Government to access new markets	6	2.0	90.9
Training of farmers on best practices	6	2.0	92.9
Writing off of farmers' debts	6	2.0	94.9
Tax holidays	5	1.7	96.6
Establish coffee shops in towns using available roasters	5	1.7	98.3
Utilization of by- products to increase profits	3	1.0	99.3
Fully automate all processes	2	0.7	100.0
Total	301	100.0	

4.4 Inferential Statistics

The researcher used correlation analysis, linear regression analysis and ANOVA to establish the nature of influence of the independent variables (Innovation; Business Networks; Technology; and Managerial Capability) on the dependent variable (Competitiveness). Tests for linear regression analysis assumptions of normality, multicollinearity and autocorrelation were done. Pearson Correlation was used to evaluate the strength of relationships between the four independent variables and the dependent variable. Pearson correlation coefficient (r) index shows the magnitude of relationship between the study variables and has a range of $-1 \leq r \leq +1$. Since correlation does not show causation, both simple and multiple linear regressions were used to establish the nature of the influence of independent variables on the dependent variable. The inferential statistics were then used to test the four hypotheses of the study.

4.4.1 Tests for Assumptions of Linear Regression Analysis

1. Normality Test

Normality is one of the assumptions of linear regression analysis. A normality test was used to determine whether the sample data was drawn from a normally distributed population within some tolerance. The normal Q-Q plot shown in Fig. 4.7 indicates that the data about competitiveness was normally distributed since the points are close to and within the diagonal line.

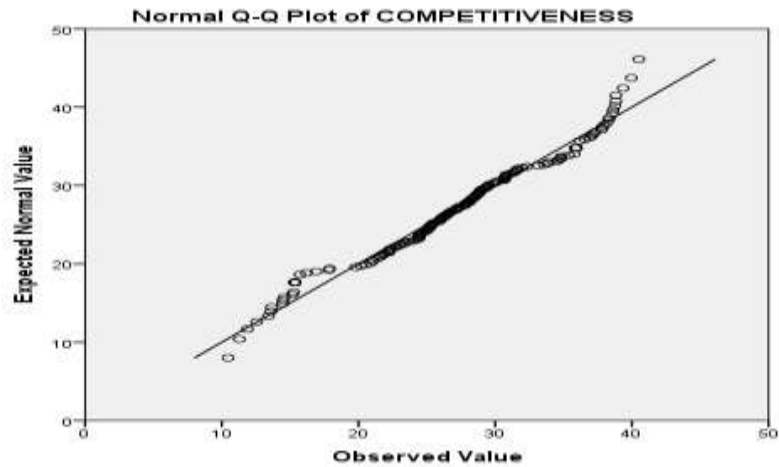


Figure 4.7: Q-Q Plot of Competitiveness

To further test for normality, the study used Kolmogorov-Smirnov test for normality which hypothesized that:

H_0 : Data is normal in distribution

As shown in table 4.25, the P value = 0.446. Since the P value is greater than the level of significance $\alpha = 0.01$, we fail to reject the null hypothesis H_0 and therefore conclude that the data was not different from normal in distribution.

Table 4.25: One-Sample Kolmogorov-Smirnov Test for Competitiveness

N		176
Normal Parameters	Mean	27.0552
	Std. Deviation	7.07507
Most Extreme Differences	Absolute	.065
	Positive	.065
	Negative	-.063
Kolmogorov-Smirnov Z		.863
Asymp. Sig. (2-tailed)		.446

2. Multicollinearity

Multicollinearity is concerned with high correlation between independent variables. Ideally there should be a high correlation between the dependent variable and the independent variables, while the independent variables should have low correlation with each other (Hair, Black, Babin & Anderson, 2010)). To prove the absence of multicollinearity, Hair et al.(2010) suggest that a correlation between two independent variables should not exceed 0.9. Table 4.26 shows that all the correlations between the independent variables fell well below 0.9 and therefore there was no problem of multicollinearity.

Table 4.26: Correlations Matrix

		COMPETITIVE NESS	INNOVA TION	BUSINES S NETWOR KS	TECHNO LOGY	MANAGE RIAL CAPABIL ITY
COMPETITIV ENESS	Pearso n Correla tion	1				
INNOVATIO N	Pearso n Correla tion	.678**	1			
BUSINESS NETWORKIN G	Pearso n Correla tion	.762**	.753**	1		
TECHNOLOG Y	Pearso n Correla tion	.519**	.563**	.77 4*	1	
MANAGERIA L CAPABILITY	Pearson Correlatio n	.496**	.434**	.58 1*	.727**	1

Correlation is significant at the 0.01 level (2-tailed) N= 176

Variance Inflation Factor (VIF) was used to further test for multicollinearity among the variables in the regression model at acceptable tolerance levels. VIFs in excess of 10 indicate poorly estimated coefficients and a possible problem of multicollinearity (Myers, 1990). The values of VIFs shown in Table 4.27 are well below the value of 10 and therefore there was no problem of multicollinearity.

Table 4.27: Collinearity Statistics

	Tolerance	VIF
INNOVATION	.382	2.621
BUSINESS NETWORKS	.251	3.985
TECHNOLOGY	.282	3.546
MANAGERIAL CAPABILITY	.463	2.160

3. Autocorrelation

Autocorrelation is the similarity of a time series over successive time intervals. It can lead to underestimates of the standard error and can cause one to think predictors are significant when they are not. The Durbin Watson Test is a measure of autocorrelation in residuals from regression analysis. The Durbin Watson test reports a test statistic with a value of 0 to 4 where 2 indicates no autocorrelation while a value of less or greater than 2 indicates the presence of autocorrelation. Whenever, Durbin Watson statistic is approximately equal to +2, then we can be satisfied that there is no autocorrelation (Gujarati & Porter, 2009). Table 4.28 indicates a Durbin Watson statistic of 2.026 which is approximately +2 and therefore autocorrelation was ruled out.

Table 4.28: Durbin-Watson Test for Autocorrelation

Durbin Watson Statistic	2.026
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4.4.2 Innovation and Competitiveness

The first specific objective of the study was to analyze whether innovation significantly influences competitiveness of small and medium agro processing firms in Kenya. The study hypothesized that:

H₀₁: Innovation has no significantly influence on the competitiveness of small and medium agro-processing firms in Kenya

1. Correlation analysis

The scatter diagram presented in Fig. 4.8 shows a positive linear relationship between innovation and competitiveness which indicate that an increase in one variable led to a corresponding increase in the other variable.

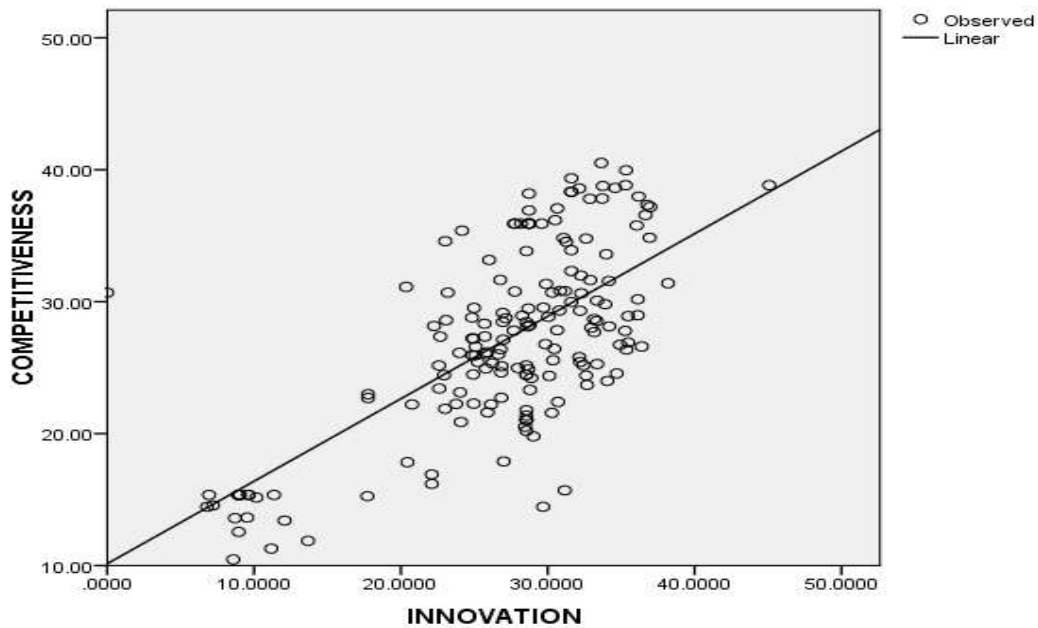


Figure. 4.8: Scatter Plot for Competitiveness against Innovation

As shown in table 4.29 the correlation between innovation and competitiveness was fairly positive at 0.678 and the relationship was also found to be significant since the P- value = 0.000 was less than the significant level $\alpha = 0.01$ (2-tailed).

Table 4.29: Correlation Coefficients for Innovation and Competitiveness

		COMPETITIVENESS	INNOVATION
COMPETITIVENESS	Pearson		
	Correlation	1	.678
	Sig. (2-tailed)		.000
	N	176	176
INNOVATION	Pearson		
	Correlation	.678	1
	Sig. (2-tailed)	.000	
	N	176	176

2. Regression Analysis

Simple linear analysis was performed to empirically determine whether innovation significantly influenced competitiveness of agro processing firms in Kenya. From table 4.30 a model for competitiveness as influenced by innovation was generated as:

$Y = 10.136 + 0.625 X_1$, where Y is the dependent variable, competitiveness and X_1 is an independent variable, innovation.

From the analysis, it can be inferred that for every unit change in innovation, competitiveness changed by 0.625 when all the other factors were held constant. The influence of innovation towards competitiveness was significant since the P value of 0.000 was less than the level of significance $\alpha = 0.01$ (2 tailed).

Table 4.30: Regression Analysis for Innovation and Competitiveness

	Unstandardized Coefficients	Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta		
(Constant)	10.136	1.446		7.011	.000
INNOVATION	.625	.051	.678	12.161	.000

Dependent Variable: competitiveness

Table 4.31 shows that the adjusted constant of determination, $R^2 = 0.456$, meaning that when all other factors were held constant, innovation explained 45.6% of the variations of competitiveness of agro-processing firms while 54.4% could be attributed to other factors.

Table 4.31: Model Summary for Innovation and Competitiveness

R	R²	Adjusted R²	Std. Error of the Estimate
.678	.459	.456	5.21675

Predictor (constant): Innovation

Table 4.32 shows the result of analysis of Variance (ANOVA) for regression coefficients which revealed a P-value of 0.000. Since the P value is less than 0.01 then the model of good fit is significant which indicate that innovation significantly influences competitiveness of agro processing firms at 1% level of significance.

Table 4.32: ANOVA for Innovation and Competitiveness

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4024.603	1	4024.603	147.885	.000
Residual	4735.315	174	27.214		
Total	8759.918	175			

Dependent Variable: COMPETITIVENESS Predictors: (Constant), INNOVATION

To test the hypothesis, the decision rule was to reject the null hypothesis $H_{01}: \beta_1=0$ if the regression coefficient β_1 was significantly different from zero at 1% level of significance. The results of regression analysis and ANOVA revealed that the influence of innovation on competitiveness was statistically significant at 1% level of significance ($P\text{-value}=0.000 < 0.01$) and the regression coefficient β_1 was different from zero ($\beta_1= 0.625$). From the foregoing, the null hypothesis H_{01} which hypothesized that innovation has no significant influence on the competitiveness of small and medium agro-processing firms in Kenya was rejected.

The finding was consistent with the findings of various other scholars. Audretsch (1995) identified SMEs as contributing 2.38 times more innovations per employee than the large firms and that profits increased due to the dynamic changes resulting from the innovation. Wiklund & Shepherd (2005) posit that innovation keeps firms ahead of their competitors, thereby gaining a competitive advantage that leads to improved financial results. Hassan, et al. (2013) concluded that higher financial performance can be achieved better from increased innovativeness in manufacturing firms. They also established that market performance in the form of customer satisfaction, sales and profitability can be enhanced through innovative performance.

4.4.3 Business Networking and Competitiveness

The second specific objective of the study was to assess whether business networking significantly influences competitiveness of small and medium agro processing firms in Kenya. The study hypothesized that:

H₀₂: Business networking does not significantly influence the competitiveness of small and medium agro-processing firms in Kenya

Versus

1. Correlation Analysis of Business Networking and Competitiveness

The scatter diagram presented in Fig. 4.9 depicts a positive linear relationship between business networking and competitiveness from which it can be observed that an increase in one variable led to a corresponding increase in the other variable.

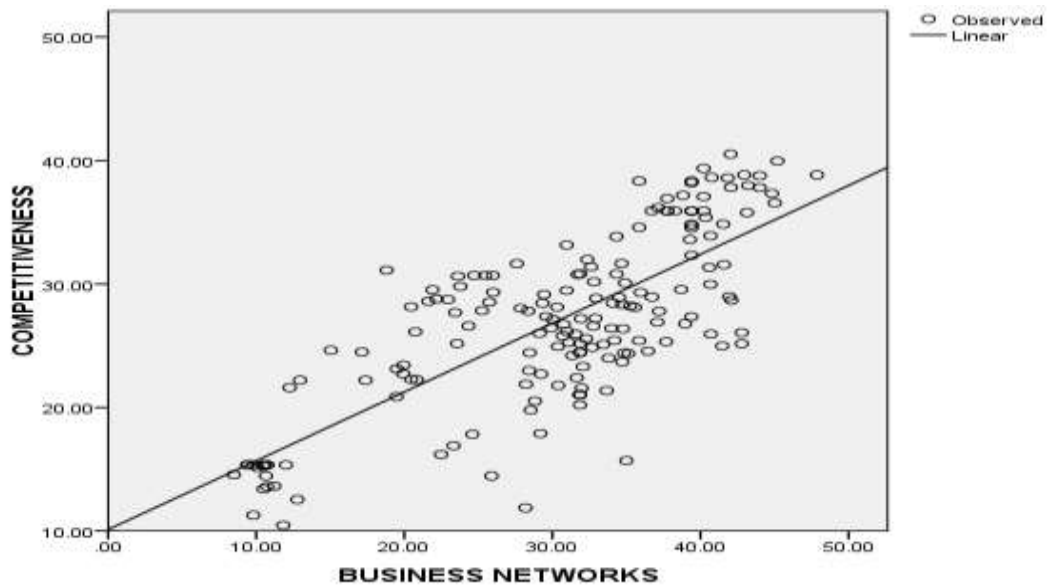


Figure. 4.9: Scatter Plot for Competitiveness against Business Networks

Pearson correlation coefficient was used to establish the strength of the relationship between business networking and competitiveness of agro processing firms in Murang'a County. Table 4.33 shows a strong positive and significant correlation ($r = 0.762$, $P\text{-value} = 0.000$) between business networking and competitiveness at 1% level of significance (2 tailed).

Table 4.33: Correlation Analysis: Business Networking and Competitiveness

		COMPETITIVENESS	BUSINESS NETWORKING
COMPETITIVENESS	Pearson Correlation	1	.762
	Sig. (2-tailed)		.000
	N	176	176
BUSINESS NETWORKING	Pearson Correlation	.762	1
	Sig. (2-tailed)	.000	
	N	176	176

2. Regression Analysis of Business Networking and Competitiveness

Simple linear analysis was performed to empirically determine whether business networking was a significant determinant of competitiveness of agro processing firms in Kenya. Table 4.34 shows coefficients of the regression analysis from which the following model for competitiveness as influenced by business networking was generated:

$Y = 10.115 + 0.557 X_2$, where Y was the dependent variable (competitiveness) while X_2 was an independent variable (business networking).

From the analysis it can be inferred that for every unit change in business networking, competitiveness changed by 0.557 when all the other factors were held constant. The influence of business networking on competitiveness was significant since P value of 0.000 was less than the level of significance $\alpha = 0.01$ (2 tailed).

Table 4.34: Regression Analysis for Business Networking and Competitiveness

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	10.115	1.146		8.830	.000
BUSINESS NETWORKING	.557	.036	.762	15.514	.000

Dependent Variable: competitiveness

Table 4.35 shows that the adjusted constant of determination, R^2 was equal to 0.578. It can be deduced that when all other factors were held constant, business networking explained 57.8% of variations of competitiveness of agro-processing firms in Kenya while 42.2% could have been attributable to other factors.

Table 4.35: Model Summary for Business Networking and Competitiveness

R	R^2	Adjusted R^2	Std. Error of the Estimate
.762	.580	.578	4.59609

Predictor (constant): Business Networking

Table 4.36 shows the results of analysis of Variance (ANOVA) for regression coefficients which revealed a P-value of 0.000. Since the P-value is less than $\alpha = 0.01$ then the model of good fit is significant at 1% level of significance which indicate that business networking significantly influenced competitiveness of agro processing firms.

Table 4.36: ANOVA of Business Networking and Competitiveness

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	5084.336	1	5084.336	240.690	.000
Residual	3675.582	174	21.124		
Total	8759.918	175			

a. Dependent Variable: Competitiveness b. Predictors: (Constant), Business Networking

To test the hypothesis, the decision rule was to reject the null hypothesis $H_{02}: \beta_2=0$ if the regression coefficient β_2 was significantly different from zero at 1% level of significance. The results of regression analysis and ANOVA indicated that the influence of business networking on competitiveness was statistically significant at 1% level of significance (P value = 0.000 < 0.01) and the coefficient β_2 was significantly different from zero ($\beta_2 = 0.557$). Based on the results, the null hypothesis H_{02} which hypothesized that business networking does not significantly influence the competitiveness of small and medium agro-processing firms in Kenya was rejected.

The finding was consistent with the findings of various studies. Powell et al. (1996) suggested that a network with superior knowledge sharing mechanisms between users, customers, suppliers and manufacturers will be able to ‘out-innovate’ competitors with less effective knowledge-sharing. The findings also resonate with Porter’s (1990) diamond theory of competitiveness that postulated that a set of strong related and supporting industries was important to the competitiveness of firms or

industries. It also concurred with Atkinson & Ezell (2012) who argued that one of the strategies open to SMEs who wanted to remain competitive in global markets was to actively participate in networks and cooperate with other SMEs, large enterprises, or a combination of both. Gulati, et al. (2000) postulated that business networks provided access to information, resources, markets, and technologies that had the potential to maintain or enhance the competitive advantage of the firms.

The finding was consistent with various other studies (Andersson & Floren, 2008; Clarke & Thorpe, 2006; Johnson, et al., 2005; and Fuller-Love & Thomas, 2004) that had shown the benefits of entering formal business networks, such as sharing resources, gaining knowledge, creating strategic alliances and internationalizing.

4.4.4 Technology and Competitiveness

The third objective of the study was to examine whether technology significantly influenced competitiveness of small and medium agro processing firms in Kenya. The study hypothesized that:

H₀₃: Technology does not significantly influence the competitiveness of small and medium agro-processing firms in Kenya

1. Correlation analysis of Technology and Competitiveness

The scatter diagram presented in Fig. 4.10 shows a positive linear relationship between technology and competitiveness from which it can be observed that an increase in one variable leads to a corresponding increase in the other variable.

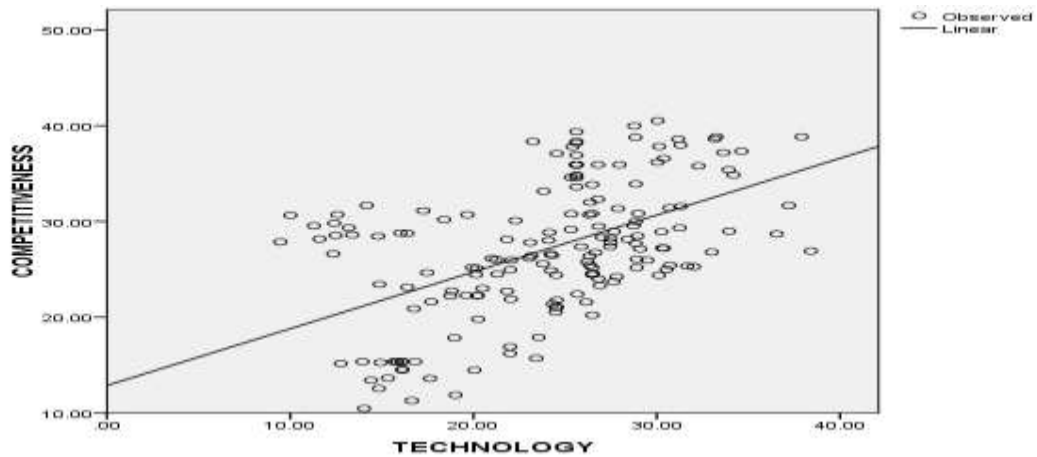


Figure. 4.10: Scatter Plot for Competitiveness against Technology

To establish the strength of the relationship between technology and competitiveness of firms, Pearson correlation coefficient was used. As shown in table 4.37 the correlation between technology and competitiveness was fairly positive ($r = 0.519$) and also significant since the P-value is shown as 0.000 which is less than the significant level $\alpha = 0.01$ (2 tailed).

Table 4.37: Correlation between Technology and Competitiveness

	COMPETITIVENESS	TECHNOLOGY
	Pearson	
	Correlation	1
COMPETITIVENESS	Sig. (2-tailed)	.000
	N	176
	Pearson	
	Correlation	.519
TECHNOLOGY	Sig. (2-tailed)	.000
	N	176

2. Regression Analysis

Simple linear analysis was performed to empirically determine whether technology significantly influences competitiveness of agro processing firms in Kenya. From table 4.38, a model for competitiveness as influenced by technology can be generated as:

$Y = 12.864 + 0.593 X_3$ where Y is the dependent variable, competitiveness and X_3 is an independent variable, technology.

From the analysis it can be inferred that for every unit change in technology, competitiveness changed by 0.593 when all the other factors were held constant. The influence of technology towards competitiveness was found to be significant since P-value of 0.000 is less than the level of significance $\alpha = 0.01$ (2 tailed).

Table 4.38: Regression Analysis for Technology versus Competitiveness

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	12.864	1.828		7.036	.000
TECHNOLOGY	.593	.074	.519	8.016	.000

Dependent Variable: Competitiveness

Table 4.39 shows that the adjusted constant of determination, $R^2 = 0.265$, meaning that when all other factors were held constant, technology contributed 26.5% of the variations of competitiveness of agro-processing firms in Kenya while 73.5% could be attributed to other factors.

Table 4.39: Model Summary for Technology and Competitiveness

R	R Square	Adjusted R Square	Std. Error of the Estimate
.519	.270	.265	6.06364

Predictor (constant): Technology

Table 4.40 shows the results of analysis of Variance (ANOVA) for regression coefficients which revealed a P-value of 0.000. Since the P-value is less than 0.01 then the model of good fit is significant at 1 % level of significance. The results indicate that technology significantly influenced competitiveness of agro processing firms.

Table 4.40: ANOVA of Technology and Competitiveness

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2362.343	1	2362.343	64.251	.000
Residual	6397.575	174	36.768		
Total	8759.918	175			

a. Dependent Variable: COMPETITIVENESS b. Predictors: (Constant), TECHNOLOGY

To test the third hypothesis, the decision rule was to reject the null hypothesis H_{03} : $\beta_3=0$ if the regression coefficient β_3 was significantly different from zero at 1% level of significance. The results of correlation analysis, regression analysis and ANOVA indicated that technology positively and significantly influenced competitiveness of firms (P-value = 0.000 < 0.01) and the regression coefficient β_3 was statistically different from zero ($\beta_3 = 0.593$). From the foregoing the null hypothesis H_{03} which hypothesized that technology has no significant influence on the competitiveness of small and medium agro-processing firms in Kenya was rejected.

The finding was consistent with the findings of other scholars. OECD (2007) posit that in a globally-competitive landscape, competitiveness is sustained through rising productivity originating from innovation, invention, R&D, technology and service provision. Chemengich (2014) found out that technology had a strong and positive influence on competitiveness of electrical and electronics subsector in Nairobi, Kenya. Sinngu and Antwii's (2014) study found out that the quality of technology was an enhancement to the industry's competitive success but the cost of acquiring the technology was a cause of concern for most firms in the citrus industry in South

Africa. Thomas et al. (2012) in their comparative study of technology and industry clusters of SMEs in India found out that in-house arrangements were used by 84 % of firms to solve technological problems both in the technology and industry clusters while the rest either hired experts for technological problem-solving or used a combination of collaboration, contractual outsourcing and technology buying.

4.4.5 Managerial Capability and Competitiveness

The fourth objective of the study was to analyze whether managerial capabilities significantly influenced competitiveness of small and medium agro processing firms in Kenya. The study hypothesized that:

H₀₄: Managerial capabilities do not significantly influence the competitiveness of small and medium agro-processing firms in Kenya

1. Correlation Analysis of Managerial Capability and Competitiveness

The scatter diagram presented in Fig. 4.11 shows a positive linear relationship between managerial capability and competitiveness from which it can be discerned that an increase in one variable led to a corresponding increase in the other variable.

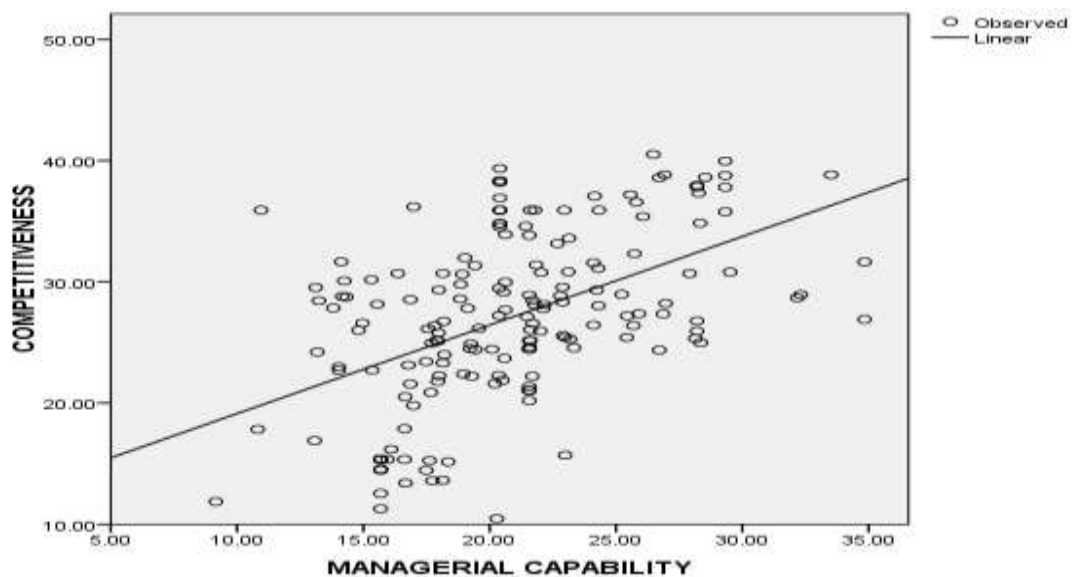


Figure. 4.11: Scatter Plot of Competitiveness against Managerial Capability

As shown in table 4.41 the correlation between managerial capability and competitiveness was fairly positive with the Pearson Correlation Coefficient, $r = 0.496$. The relationship was also found to be significant since the P-value = 0.000 which was less than the significant level $\alpha = 0.01$ (2- tailed).

Table 4.41: Correlation between Managerial Capability and Competitiveness

		COMPETITIVENESS	MANAGERIAL CAPABILITY
		Pearson Correlation	.496
COMPETITIVENESS		Sig. (2-tailed)	.000
		N	176
MANAGERIAL CAPABILITY		Pearson Correlation	.496
		Sig. (2-tailed)	.000
		N	176

2. Regression Analysis of Managerial Capability and Competitiveness

Simple linear regression analysis was performed to empirically determine whether managerial capability was a significant determinant of competitiveness of agro processing firms in Kenya. From table 4.42, a model for competitiveness as influenced by managerial capability can be generated as:

$Y = 11.831 + 0.730 X_4$, where Y is the dependent variable, competitiveness while X_4 is an independent variable, managerial capability.

From the analysis it can be inferred that for every unit change in managerial capability, competitiveness changed by 0.730 when all the other factors were held constant. The influence of managerial capability towards competitiveness was found to be significant since the P value of 0.000 was less than the level of significance $\alpha = 0.01$ (2 tailed).

Table 4.42: Regression Analysis for Managerial Capability versus Competitiveness

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	11.831	2.073		5.706	.000
MANAGERIAL CAPABILITY	.730	.097	.496	7.534	.000

Dependent Variable: competitiveness

Table 4.43 shows that the adjusted constant of determination, $R^2 = 0.242$, which meant that when all the other factors were held constant, managerial capability contributed 24.2% of competitiveness of agro-processing firms in Kenya while 75.8% could be attributed to other factors.

Table 4.43: Summary for Managerial Capability and Competitiveness

R	R Square	Adjusted R Square	Std. Error of the Estimate
.496	.246	.242	6.16122

Predictor (constant): Managerial Capability

Table 4.44 shows the result of analysis of Variance (ANOVA) for regression coefficients of managerial capability when regressed against competitiveness which revealed a P-value of 0.000. Since the P-value is less than $\alpha = 0.01$, then the model of good fit is significant. Therefore it can be inferred that managerial capability significantly influences competitiveness of agro processing firms at 1% level of significance.

Table 4.44: ANOVA of Managerial Capability and Competitiveness

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2154.767	1	2154.767	56.763	.000
Residual	6605.151	174	37.961		
Total	8759.918	175			

Dependent Variable: Competitiveness Predictors: (Constant), Managerial Capability

To test the fourth hypothesis, the decision rule was to reject the null hypothesis H_{O4} : $\beta_4=0$ if the regression coefficient β_4 was significantly different from zero at 1% level of significance and consequently fail to reject the alternate hypothesis H_{A4} : $\beta_4 \neq 0$. The results of correlation analysis, regression analysis and ANOVA indicated that managerial capability positively and significantly influenced competitiveness of firms (P value = 0.000 < 0.01) and the regression coefficient was statistically different from zero ($\beta_4 = 0.730$). Based on the results, the null hypothesis H_{O4} which hypothesized that managerial capability had no significant influence on the competitiveness of small and medium agro-processing firms in Kenya was rejected.

The finding corroborated the findings of other scholars. Van Rooyan, et al. (2000) in their study of competitive success of the agro-processing in South Africa found out that managerial capabilities were very important factors in the competitive success of the agro-food industry. Ehmke (2008) found out that over half of business failures were directly related to managerial incompetence. Mumford, et al. (2002) posited that in addition to interpersonal skills, communication skills and the ability to motivate others, a manager should also have the ability to analyze, synthesize, and solve problems if his enterprise was to improve on productivity and profitability. The finding can also be supported by Ohmae's 3Cs theory which posits that successful business strategy does not result from rigorous analysis but from a particular state of mind of the strategist with a sense of mission that fuels creativity.

4.4.6 Competitiveness Overall Model

The study used regression analysis to empirically determine whether the independent variables (Innovation; Business Networks; Technology; and Managerial Capability) jointly significantly influenced the dependent variable (Competitiveness).

Table 4.45 shows the adjusted coefficient of determination, R^2 to be equal to 0.629 which indicated that 62.9 % of variations in competitiveness of agro processing firms in Kenya could be explained jointly by innovation, business networks, technology and managerial capability while 37.1 % could be explained by other factors outside the model.

Table 4.45: Summary for Competitiveness Overall Model

R	R²	Adjusted R²	Std. Error of the Estimate
.798	.637	.629	4.31077

The analysis of variance shown in table 4.46 indicates that the overall model of competitiveness was significant (P-value = 0.000). It can be inferred that when the independent variables (Innovation; Business Networks; Technology; and Managerial Capability) were jointly regressed against the dependent variable (Competitiveness) their influence was significant at 1 % level of significance.

Table 4.46: ANOVA for Overall Model of Competitiveness

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	5582.268	4	1395.567	75.100	.000
Residual	3177.651	171	18.583		
Total	8759.918	175			

a. Dependent Variable: Competitiveness

b. Predictors: (Innovation; Business Networks; Technology; and Managerial Capability)

Table 4.47 shows the multiple regression coefficients for the overall model: $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4$; where β_0 is the Y- intercept, which is the value of competitiveness that is not explained by independent variables; $\beta_i(i= 1,2,3,4)$ are the partial regression coefficients that explain the influence of each independent variable ($X_1=$ Innovation; $X_2=$ Business Networking; $X_3=$ Technology; $X_4=$ Managerial Capability) on the dependent variable Y (Competitiveness). The model was generated as:

$$Y = 7.635 + 0.210 X_1 + 0.518 X_2 + 0.355 X_3 + 0.311 X_4$$

The optimal model can be summarized as follows:

$$\text{Competitiveness} = 7.635 + 0.210 * \text{Innovation} + 0.518 * \text{Business Networking} + 0.355 * \text{Technology} + 0.311 * \text{Managerial Capability}.$$

From the overall model, it can be discerned that business networking explained most of the variations in competitiveness at 0.518, followed by technology at 0.355, managerial capability at 0.311 and finally innovation at 0.210.

Table 4.47: Regression Analysis Coefficients for Overall Model

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	7.635	1.604		4.759	.000
INNOVATION	.210	.065	.228	3.245	.001
BUSINESS NETWORKS	.518	.067	.708	7.735	.000
TECHNOLOGY	.355	.099	.311	3.598	.000
MANAGERIAL CAPABILITY	.311	.099	.211	3.147	.002

Dependent Variable: COMPETITIVENESS

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study sought to analyze the determinants of competitiveness of small and medium agro-processing firms in Kenya. This chapter presents the summary of the major findings, conclusions and recommendations based on the four specific objectives of the study. It also covers areas for further study.

5.2 Summary of Findings

5.2.1 Preliminary Findings

Principal Component Analysis (PCA), which determines the least number of factors that can account for the common variance of variables, was done and it helped to expunge items that fell below a score of 0.4 and thus strengthened the content validity of the study. Reliability was examined using Cronbach's alpha coefficient. Cronbach's alpha values for the different variables of this study were well above 0.70 and therefore the results were within the acceptable range of between 0.7 and 1.0. The study found out that all managers of agro processing firms in Kenya were formally educated. The preliminary findings also revealed that a wide range of managers were involved in the study which helped to minimize bias and therefore the findings can be relied upon to make conclusions in regard to determinants of competitiveness of small and medium agro processing firms.

The study revealed that the agro-processing subsector was dominated by small firms that employed less than fifty workers. The study also revealed that a vast majority of agro-processing firms in Kenya were legally registered and they had competitive strategies in place. Domestic market constituted the major market for the products processed by agro processing firms and with only a fifth of the products being export bound. The findings indicated that although the firms were small and young a majority of the SMMEs had competitive strategies and they were willing to compete

within the laws of the land but faced constraints in accessing the more lucrative international markets.

5.2.2 Innovation and Competitiveness

Analysis of qualitative data found out that internet marketing and e-commerce; educational fairs and exhibitions; and setting up of more research stations were important sources of competitiveness for the agro processing firms in Kenya. The study also found out that timely introduction of innovation stimulated a firm's productivity and profitability to a great extent however timely introduction of innovation contributed to the value of brands in the market to a moderate extent. Applicability of innovation was found to contribute to productivity and value of brands to a great extent but had moderate contribution towards profitability. Regression and correlation analyses revealed that innovation positively and significantly influenced the competitiveness of small and medium agro-processing firms in Kenya.

5.2.3 Business Networking and Competitiveness

The study found out that knowledge sharing within business networks helped the firms to access useful information that helped them to improve the value of their brands; access critical capabilities that improved their productivity; and enhanced their existing capabilities that helped them to improve productivity and profitability. The study also found out that collaborative training of the employees enhanced productivity and that collective strategies of firms in a business network reduced transaction costs of the firms.

The analysis of qualitative data found out that Marketing and Sales Departments benefitted the most from business networking and that business networks helped the firms to reach even larger markets, acquire new manufacturing technology and modernize existing technologies. However, the business networks that agro processing firms engaged in were found to be based on trust and were not formally established. The influence of business networking on competitiveness of small and medium agro-processing firms was found to be positive and significant. Out of the

four independent variables of the study, business networking was found to have the greatest influence on the competitiveness of the small and medium agro processing firms.

5.2.4 Technology and Competitiveness

The study found out that locally available technology helped firms to stimulate productivity; improve long term profitability; and enhance brands value to a great extent. The study also found out that affordable technology helped the firms to enhance efficiency of resource utilization leading to greater productivity and profitability. The corresponding increase in profitability justified the cost of acquiring the technology. Environment friendly technology was found to enhance the brand image while functioning websites helped to improve brands' attractiveness. The results of correlation analysis, regression analysis and ANOVA indicated that technology positively and significantly influenced competitiveness. Analysis of qualitative data found that technology can enable firms to produce better packaging materials and grading discs that would in turn help them to improve their brands' value. However, the study also found out that despite the importance attached to technology in agro processing, most small and medium agro processing firms did not strategically prioritize the use of technology in production and did not have functioning websites.

5.2.5 Managerial Capability and Competitiveness

The study found out that strategic managerial posture and capability ensured sustainable profitability of small and medium agro processing firms. It further found out that strategic planning and operational capabilities like motivation skills and resourcefulness of managers helped to improve productivity; profitability; and brands' value. Other findings of the study were that staff training and skills improvement stimulated productivity and ensured long term profitability. Optimal allocation of resources and proactive change management skills were found to be stimulants of productivity, long term profitability and improved brand value. The analysis of qualitative data showed that continuous training and sensitization of managers on the customers' changing needs and preferences were important factors

that enabled managers to make their firms more competitive. The results of correlation analysis, regression analysis and ANOVA indicated that managerial capability positively and significantly influenced competitiveness of small and medium agro processing firms.

5.2.6 Overall Model of Competitiveness

The analysis of qualitative data found out that affordable credit; regulatory framework; supportive policies; and affordable energy were important in determining the competitiveness of small and medium agro processing firms in Kenya. The content analysis also found out that provision of: subsidies; guaranteed minimum returns; affordable and reliable electricity; reduced taxes and license fees; and better road infrastructure were considered to be important aspects of improving competitiveness of the firms. The study also found out that there were other factors that could influence competitiveness of firms which included: provision of environment conducive for business by the government; limiting the influence of middlemen; support of County Government to access new markets; and policies that encourage buying of locally processed products for use in the local hospitals, schools and offices.

The influence of all the independent variables when regressed jointly against the dependent variable (Competitiveness) was found to be significant. This study also found out that the independent variables of the study jointly explained 62.9 % of variations in competitiveness with other factors outside the model explaining 37.1 %. From the generated optimal model, business networking explained most of the variations in competitiveness, followed by technology, managerial capability and innovation in that order. The overall model was therefore summarized as follows:

$$\text{Competitiveness} = 7.635 + 0.210*\text{Innovation} + 0.518*\text{Business Networking} + 0.355*\text{Technology} + 0.311*\text{Managerial Capability}.$$

5.3 Conclusions

5.3.1. Innovation and Competitiveness

The study concluded that small and medium agro processing firms can gain a lot from innovative marketing opportunities presented by internet marketing and e-commerce. It also concluded that if more research institutions were to be set up then they could help innovators to develop new products and processes that will enable small and medium agro processing firms to be more competitive. Timely introduction of innovative products and processes helped to improve brands value, productivity and profitability of firms. Applicable innovation helped the agro processing firms to produce strong brands that strengthened market presence; improved profitability; and stimulated productivity. The findings of the study led to the conclusion that innovation positively and significantly influences the competitiveness of small and medium agro-processing firms in Kenya. It can therefore be deduced that innovation is a key determinant of competitiveness of small and medium agro-processing firms.

5.3.2 Business Networking and Competitiveness

Based on the findings of the study, it can be concluded that business networking can help small and medium agro processing firms in Kenya to access larger markets and acquire new manufacturing technology. The study also concluded that business networking positively and significantly influences the competitiveness of small and medium agro-processing firms in Kenya. When considered jointly with other independent variables, business networking was found to have the greatest influence on the competitiveness of the small and medium agro processing firms in Kenya. The study therefore concluded that business networking was a key determinant of competitiveness of small and medium agro processing firms in Kenya since it helped the firms to improve their brands' value, productivity and profitability.

5.3.3 Technology and Competitiveness

The study concluded that technology can enable small and medium agro processing firms in Kenya to produce better packaging materials that will improve their brands' image and therefore improve on their competitiveness. It also concluded that although technology was important in the improvement of brands' value; productivity; and profitability of the agro processing firms in Murang'a County, the firms did not strategically prioritize the use of technology in production and they had not fully embraced ICT. Many of the small and medium agro processing firms in Murang'a County were found to be small start ups that opted to use the locally available technology they could afford however rudimentary. The findings of the study led to the conclusion that technology had a positive and significant influence on competitiveness of small and medium agro processing firms in Kenya.

5.3.4 Managerial Capability and Competitiveness

The study revealed that managerial capabilities such as strategic planning skills, resourcefulness, motivation skills, ability to optimally allocate resources and strategic change management skills helped to stimulate productivity; improve long term profitability; and improve brand reputation of agro processing firms in Kenya. The study also concluded that staff skills improvement through continuous training and sensitization of managers about the changing needs and preferences of customers helped to continuously improve the competitiveness of the firms. Based on the findings of the regression analysis, the study concluded that managerial capability positively and significantly influences the competitiveness of small and medium agro-processing firms in Kenya.

5.3.5 Overall Model of Competitiveness

Based on the findings of the overall model of competitiveness, the study concluded that the four independent variables (innovation, business networking, technology and managerial capability) jointly had a significant influence on competitiveness of small and medium agro processing firms in Kenya. The study also concluded that although the four independent variables were found to be important determinants of

competitiveness, there were other factors that may also be important in the determination of competitiveness of small and medium agro processing firms in Kenya. These factors included affordable credit; regulatory framework; supportive policies like provision of subsidies; lower tax and license fees; guaranteed minimum returns; affordable energy; provision of conducive business environment by the government; limiting the influence of middlemen; and policies to encourage buying of locally processed products for use in the local hospitals, schools and offices.

5.4 Recommendations

5.4.1 Managerial Recommendations

The managers of SMMEs should encourage and reward entrepreneurial spirit among the staff. Meetings to discuss suggestions for product and process development should be mainstreamed in the management and reasonable budgets allocated for experimentation. The top managers of SMMEs should invest more resources in R & D with a view of coming up with innovative products and processes in order to survive in increasingly competitive environment. SMMEs should endeavor to recruit suitable managers to stimulate competitiveness of their firms because managerial capability has been found to be a key determinant of competitiveness. SMMEs should also invest time and financial resources in continuous training of staff in order to enrich and gain from their capabilities.

The managers of small and medium agro processing firms should seek to establish viable business networks that will help them to produce products that can compete not just regionally but globally. The managers of SMMEs should not only rely on business networks based on trust but engage in formal strategic business networks so as to gain from the synergy of the network and be able to influence policy making in their favor. The top managers of small and medium agro processing firms should strategically prioritize the use of technology in production, establish functioning websites and fully embrace ICT in their endeavor to become and remain competitive.

5.4.2 Policy Recommendations

In order to achieve the 10% economic growth envisioned in Kenya Vision 2030, it is critical to transform smallholder agriculture from subsistence to an innovative, commercially oriented and modern agricultural sector. Due to the importance attached to the SMEs in job creation and poverty alleviation in the Kenya vision 2030 blue print, the government should intervene to assist the local firms to procure up to date technology and set up incubation centers. The study recommends that in order to make small and medium agro processing firms competitive, the national and county governments in Kenya should formulate policies that will deliberately subsidize both the cost of acquisition of new manufacturing technologies and the corresponding requisite training of technical managers of the firms.

This study has revealed that innovation and technology were important determinants of competitiveness of agro processing firms. It therefore recommends that both the national and county governments in Kenya should offer subsidies that will encourage small and medium agro processing firms to invest more in R & D. County governments can spur the competitiveness of the agro processing firms in their counties by formulating policies that would create markets for goods manufactured within the county. Policies that will establish export processing zones (EPZ) in counties to manufacture goods that the counties have comparative advantage will also help to improve the competitiveness of the firms.

5.5 Areas for Further Studies

The general objective of the study was to establish the determinants of competitiveness of agro processing firms in Kenya. Although the study restricted itself to four determinants of competitiveness namely: Innovation; Business Networks; Technology; and Managerial Capability, the four determinants explained 62.9 % of variations in competitiveness of firms while 37.1 % could be explained by other factors outside the overall model of competitiveness of firms. The study also revealed other factors that influence competitiveness of agro processing firms in Kenya. Therefore, similar studies may be carried out to analyze the influence of other determinants like for example, affordable credit; regulatory framework; supportive

policies; road infrastructure; and affordable energy on the competitiveness of agro processing firms in Kenya.

Although business networks were found to explain the greatest variations in competitiveness of firms they were based on trust and not formally constituted. The study therefore recommends further research to establish how business networks can be formally institutionalized through supportive regulatory frameworks by both the national and county governments in Kenya. The study also recommends a research to investigate why small and medium agro processing firms do not strategically prioritize the use of technology in production although it has been established as an important determinant of firm level competitiveness.

The study adopted correlational survey research design. A similar study but using longitudinal research design will enrich the strategic management body of knowledge. Such a study will establish the influence of the determinants of competitiveness of agro processing firms under consideration over a longer period of time. A longitudinal study will also be of interest to the county governments in Kenya since they are relatively young and may benefit from the findings of the longitudinal study of small and medium agro processing firms as they formulate policies for SMMES in the counties.

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APPENDICES

Appendix I: Questionnaire

Determinants of Competitiveness of Small and Medium Agro-Processing Firms in Murang'a County, Kenya.

I am a doctoral student at Jomo Kenyatta University of Agriculture and Technology, Juja. The information sought here is purely for academic purposes and none of it will be disclosed to a competitor or any other third party. I will observe confidentiality and I will not disclose your name or that of your institution.

Please provide the information sought.

Part A: Organizational Background Information

1. What position do you hold in your company?
.....
2. What is your level of education?
Post Graduate Graduate Diploma Certificate Other
3. Which year was the firm established?
.....
4. Is the firm legally registered by the relevant agencies?
Yes No
5. How many people are employed in your company?
.....
6. What product(s) does your organization manufacture?
.....
.....
.....
7. Who are your main customers?
.....
8. Are your goods sold in the domestic markets only?
YES NO

9. If your answer in 8 above is NO please indicate the other market(s) your products are available in:

- i.
- ii.
- iii.

10. Does your firm have a competitive strategy?

YES NO

Part B

Section I: INNOVATION

In this section, kindly give responses about innovative activities and their influence on competitiveness of your firm.

1. What innovative product and/or process has your company introduced in the last three years?

.....
.....
.....

2. To what extent has applicable innovation contributed to the productivity of your firm in the last three years?

Very Great Extent Great Extent Moderate Little Extent No Extent at All

3. To what extent has timely introduction of innovation contributed to the profitability of your firm in the last three years?

Very Great Extent Great Extent Moderate Little Extent No Extent at All

4. To what extent has timely introduction of innovation contributed to the attractiveness of your firm's brands in the market?

Very Great Extent Great Extent Moderate Little Extent No Extent
at All

5. Please indicate your concurrence with the statements in the table below using a tick (✓) to show to what extent you agree with the aspects of innovation. Use the following scale to rate: **1-Strongly Agree. 2- Agree. 3- Neutral 4- Disagree 5- Strongly Disagree**

S/N	Questionnaire Item	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
i.	Timely introduction of innovative products has improved our productivity					
ii.	Innovative processing improves our brand value in the market					
iii.	We introduce innovative products ahead of competition					
iv.	We continually follow new developments in our industry					
v.	We reward staff members who suggest innovative ideas					
vi.	We collaborate with research institutions					
vii.	We have an innovation strategy					
viii.	Trade fairs/ science exhibitions are sources of innovations					
ix.	Innovations we can easily apply help to improve productivity					

6. What are your main sources of innovation? (e.g. universities, research stations, internal R&D, private R &D sources, etc)
- i.
.....
- ii.
.....
7. In your opinion, kindly mention other ways, other than the ones mentioned above, in which innovation can enhance competitiveness.
- i.
.....
- ii.
.....

Section II: Business Networking

In this section, kindly respond to the aspects of business networking and their influence on your firms’ productivity, brand value and profitability.

1. What kind of business networks does your firm engage in?

.....
.....
.....

2. To what extent has knowledge sharing within your business networks contributed to productivity of your firm?

Very Great Extent Great Extent Moderate Little Extent No Extent
at All

3. What percentage of your long term profitability is attributable to knowledge sharing within the networks you engage in?

0 - 20% 20 - 30% 30 - 40% 40 - 50% Over 50%

4. To what extent has knowledge sharing contributed to the strength of your brands in the market?

Very Great Extent Great Extent Moderate Little Extent No
Extent at All

5. To what extent has resource sharing within your network contributed to the value of your firm's brands in the market?

Very Great Extent Great Extent Moderate Little Extent No Extent at
All

6. Please indicate the extent to which you agree with the various statements relating to business networking in your organization using a tick (✓). Use the following scale to rate: **1-Strongly Agree. 2- Agree. 3- Neutral 4- Disagree 5- Strongly Disagree**

Item No.	Questionnaire Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
i.	We participate in business networks					
ii.	Our business networks are based on trust					
iii.	Our social business contacts provide useful information that improves the value of our brands					
iv.	Business networks help us to access critical capabilities and resources that aid productivity					

v.	Business networking enhances existing capabilities					
vi.	Shared information helps in increasing our profitability					
vii.	Shared resources have improved the firm's productivity					
Viii	Collective strategies reduce our transaction costs.					
Ix	We collaborate with NEMA and other Quality Assessors to build our reputation					
X	Collaborative training of our employees enhances productivity.					

7. In your opinion, which functions of your firm greatly benefit from the business networks you engage in?

i.

ii.

iii.

8. Kindly indicate how business networking can further improve the productivity of your firm.....

.....

Section III: Technology

This section seeks your opinions on aspects of Technology that either enhance or impede competitiveness of firms.

1. To what extent has your firm's strategic positioning prioritized the use of technology?

Very Great Extent Great Extent Moderate Little Extent No Extent at All

2. Please indicate the extent to which you agree with the various statements about technology and competitiveness in your organization using a tick (✓). Use the following scale to rate:

1-Strongly Agree. 2- Agree. 3- Neutral 4- Disagree 5- Strongly Disagree

S/No.	Questionnaire Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
i.	Specialised modern technology improves our productivity					
ii.	A functioning website improves our brands' attractiveness					
iii.	Long term profitability justifies cost of technology					
iv.	Locally available technology enhances our brands' value					

v.	Locally available technology improves our profitability					
vi.	Locally available technology stimulates productivity					
vii.	Environment friendly technology suits our long term profitability strategy					
viii.	Technology improves efficiency of resource utilisation					
ix.	We consider our future needs as we upgrade technology					
x.	Environment friendly technology enhances our brand image					

3. In your opinion, is the available technology suitable for production needs in your firm?

YES NO

4. If NO, suggest interventions that should be put in place so as to improve productivity of your firm?

.....

5. Kindly indicate how technology can further improve the value of your firm's brands

.....

Section IV: Managerial Capabilities

This section deals with managerial capabilities and competitiveness of agro-processing firms in Murang'a County, kindly respond to the various questions.

1. Please indicate the extent of your concurrence with the statements in the table below using a tick (√). Use the following scale to rate: **1-Strongly Agree. 2-Agree. 3- Neutral 4- Disagree 5-Strongly Disagree**

Item No.	Questionnaire Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
i.	Participative strategic planning improves value of our brands					
ii.	Motivation skills of managers improves productivity					
iii.	Resourcefulness of managers improves the brand image.					
iv.	Techno-management practices like TQM improves brand reputation					
v.	Staff training and skills improvement stimulates productivity					
vi.	Top managers possess requisite capabilities that ensure long term					

	profitability					
vii.	Managers' optimal allocation of resources stimulates productivity					
viii.	Proactive change management skills improve brand value					
ix.	Strategic management trainee programs stimulate long term profitability					
x.	Our strategic posture ensures sustainable profitability					

2. Kindly indicate aspects of managerial capabilities that are necessary for the improvement of competitiveness of firms but have not been mentioned above.

- i.
- ii.
- iii.

3. In your opinion, what else can be done to fully utilize the managerial capabilities of your firm in its endeavour to improve on its competitiveness?

.....

Section VI: Competitiveness of Firms

In this section, kindly respond to aspects of the overall competitiveness of agro-processing firms in Murang'a County.

1. What percentage of your firm's profitability is attributable to innovation?

- 0 - 20% 20 - 30% 30-40% 40 - 50% Over 50%

2. What percentage of your firm's profitability can be attributed to the business networks you engage in?

0 - 20% 20 - 30% 30 - 40% 40 - 50% Over 50%

3. What percentage of your firm's profitability is attributable to managerial capabilities?

0 - 20% 20 - 30% 30 - 40% 40 - 50% Over 50%

4. What percentage of your firm's profitability is attributable to technology?

0 - 20% 20 - 30% 30 - 40% 40 - 50% Over 50%

5. What percentage of your firm's productivity is attributable to technology?

0 - 20% 20 - 30% 30 - 40% 40 - 50% Over 50%

6. Kindly indicate the extent to which you concur with the statements in the table below using a tick (✓). Use the following scale to rate: **1-Strongly Agree. 2-Agree. 3- Neutral 4- Disagree 5-Strongly Disagree**

No.	Questionnaire Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	Innovation improves our productivity					
i	Business networks we engage in enhances productivity					
ii	Managerial capabilities have strengthened value of our brands					
iv	Productivity is enhanced by utilisation of unique managerial capabilities					
v	Innovation has improved our brand value					
vi	Technology in place has improved our brand value					

7. Kindly mention other determinants of competitiveness that you consider to be important but have been omitted in this questionnaire.

i.

ii.

iii.

8. In your opinion, what further can be done to improve your firm's competitiveness?

.....

.....

.....

THANK YOU FOR THE RESPONSES.

Appendix II: List of Agro Processing Firms in Murang'a County

A. Agro Processors in Murang'a County

1. Abysinia Limited
2. Afrimac Nut Company Ltd
3. Equatorial Nut Processers Ltd
4. Farm Nut Fortified Foods
5. Gatanga Industries Ltd
6. Jawaci Dairy Products Lld
7. Kakuzi Plc
8. Kambiti East Mango Farmers Association.
9. Keitt Exporters Ltd
10. Kenn Dairies Ltd
11. Kenya Nut Company
12. Malenge Tamu Enterprises
13. Mamwa Feeds ltd
14. Murang'a County Creameries Ltd
15. Ng'araria Avocado Farmers Self Help Group
16. Olivado (EPZ) ltd
17. Sky Blue Dairies
18. Thika Coffee Millers
19. Tuyas Freshy Yorghurt
20. Wama millers

B. Murang'a County Coffee Co-operative Societies			
No.	Sub County	No.	Farmers Co-op Society
1	Kangema	1	Iyego
		2	Kanyenyaine
		3	Kiriti
2	Mathioya	1	Kamacharia
		2	Kiru
		3	Kangunu
		4	Rwaikamba
		5	Kiwanduma
3	Kiharu	1	New Gatari
		2	Kigetuni
4	Kahuro	1	Murarandia
		2	Mugoiri Five
		3	Weithaga
		4	Kahuhia
		5	Kaganda
5	Muranga South	1	Karurumo
		2	Gikiuga
		3	Kamahuha
		4	Nginda
		5	Irembu
6	Kigumo	1	Thangaini
		2	Kangiri
		3	Marumi
		4	Muthithi
		5	Sabasaba
		6	Kariguini
7	Kandara	1	Kabati
		2	Gakayu
		3	Kamuga
		4	Karuhii Utheri
		5	Kioru
		6	Kariua
		7	Ruchu Gacharage
		8	Kandara
		9	Muruka
8	Gatanga	1	Gatunyu Kigio
		2	New Gatanga
		3	Kinogerama
		4	Kangoriaki
		5	Thika Giki