INFLUENCE OF STRATEGIC CAPABILITIES ON COMPETITIVE ADVANTAGE OF SUGAR COMPANIES IN WESTERN KENYA

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Influence of Strategic Capabilities on Competitive Advantage of Sugar Companies in Western Kenya

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DECLARATION

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

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DEDICATION

This thesis is dedicated to my late father Hezekiah Imbambi Kabayi, my caring mother Felika, my loving and supportive spouse Nyaroya and my adorable children Asachi, Mwanzu, Olinjo, Musoma and Kavai.

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ABBREVIATIONS AND ACRONYMS

AFFA	Agriculture, Fisheries and Food Authority
ANOVA	Analysis of Variance
CA	Competitive Advantage
COMESA	Common Market for Eastern and Southern Africa
DM	Previous Germany Currency before Euro replaced it
EAC	East African Community
FAO	Food and Agriculture Organization of the United Nations
FTE	Factory Time Efficiency
GDP	Gross Domestic Product
GLS	Generalized Least Squares
HR	Human Resource
ICUMSA	International Commission for Uniform Methods of Sugar Analysis
ISA	International Sugar Agreement
IT	Information Technology
KAM	Kenya Association of Manufacturers
KM	Knowledge Management
KPMG	Klynveld Peat Marwick Goerdeler (An accounting firm)
KSB	Kenya Sugar Board
KSI	Kenya Sugar Industry
lb	British pound
MSC	Mumias Sugar Company Limited
MT	Metric Tonnes
OTE	Overall Time Efficiency
R & D	Research and Development
RBV	Resource Base View Theory
RTAs	Regional Trade Agreements
SCM	Supply Chain Management
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for Social Science

SWOT	Strengths, Weaknesses, Opportunities and Threats
SYB	Sugar Year Book ISA - International Sugar Average
US/USA	United States of America
USD	United States of America currency called Dollars
USDA	United States Development Agency
VAT	Value Added Tax

DEFINITION OF TERMS

Capital Structure: Sheikh and Wang (2010) define Capital Structure as the way how to finance the business operation at optimum cost that will maximize the total value of the firm. It consists of the relative proportion of debt and equity used to finance the enterprise of the long-term sources of funds used by firms.

Competitive Advantage: Is when a firm has ability to do better than comparable firms in productivity, sales, market shares, or profitability (Lall, 2001).

Dynamic Capability: Dynamic Capabilities are those capabilities that help units extend, modify, and reconfigure their existing operational capabilities into new ones that better match the changing environment (Pavlou & El Sawy, 2011).

Financial capability: Combination of the human attitude, knowledge, understanding, motivation, confidence and skills that result in an organization having operational, managerial and financial stability to meet its purpose and deliver its outputs, in accordance with its strategic goals (Modified by researcher based on Adeyemi, 2011).

Human resource capability: Reliable access to the required people (quantity) with the skills, abilities, attributes and competencies (quality) that the organization needs to meet its purpose and deliver its outputs, in accordance with its strategic goals

Government regulatory policy: Government decisions that influence the level and stability of input and output prices, public investments affecting agricultural production, costs and revenues and allocation of resources (Alila & Atieno, 2006).

Material capability: The ability to plan and to continuously receive enough material for full factory capacity utilization over an extended period of time (Zimmermann & Zeddies, 2002).

Strategic Capability: Johnson, Scholes, and Whittington (2011) define Strategic Capability as the adequacy and suitability of the resources and competences of an organization for it to survive and prosper.

Technology capability: The capability needed to acquire, assimilate, use, adapt, change or create technology (Oruwari, Jev & Owei, 2002).

ABSTRACT

The sugar industry contributes about 15 percent to the country's agricultural GDP and supports an estimated 25 percent of the country's population. The general objective of the study was to assess the influence of strategic capabilities on competitive advantage of sugar companies in Western Kenya. The specific objectives of the study were: To assess the influence of human resource capability on competitive advantage of sugar companies in Western Kenya; To determine the influence of technology capability on competitive advantage of sugar companies in Western Kenya; To establish the influence of material capability on competitive advantage of sugar companies in Western Kenya; To assess the influence of financial capability on competitive advantage of sugar companies in Western Kenya; To establish the influence of strategic capabilities on competitive advantage of sugar companies in Western Kenya and to determine the moderating influence of Government regulatory policy on the relationship between the strategic capabilities and competitive advantage of sugar companies in Western Kenya. The target population was composed of six sugar companies; the respondents were 727 senior and middle level managers and the sample size consisted of 88 respondents. The primary data was collected using a questionnaire pretested for validity and reliability. The study adopted descriptive and correlation research designs and descriptive and inferential statistics were used to analyze the data. Out of 88 questionnaires sent out, 64 questionnaires were received giving a response rate of 73%. Logit, correlation and hypotheses analyses established a statistically significant positive relationship between technology capability, material capability and competitive advantage. Hypothesis testing established that Government regulatory policy statistically significantly moderates the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya. The conclusions drawn from the study findings are that technology and material capabilities which are within the control of the firms are critical for achieving competitive advantage and the Government regulatory policy determines the extent to which the sugar companies in Western Kenya enjoy competitive advantage. It is recommended that each firm pays more attention to sugarcane management, conducts effective and efficient factory maintenance, prioritizes its financial usage in areas that make a difference and introduces measures to reduce costs of production. The Government on the other hand should implement sugarcane area zoning, zero rate value added tax on sugar, provide subsidized fertilizers to farmers and privatize the state-owned sugar mills to provide the industry with competitive edge impetus in the COMESA region. Further research should be carried out on the Influence of strategic capabilities on competitive advantage of privately owned sugar companies in Kenya for the generalization of study results and research on the suitable ratios for total liabilities to total assets and total liabilities to net cash from operations for companies enjoying competitive advantage in COMESA region to provide benchmark for the region's sugar industry.

CHAPTER ONE

INTRODUCTION

This chapter presents the background of the study focusing on the concept of strategic capabilities and its role on the competitive advantage of sugar companies in western Kenya. The second section of this chapter presents the statement of the problem, the third section is the objectives of the study, the fourth section is the research hypotheses, the fifth section is justification of the study and lastly the section on the scope of the study.

1.1 Background to the Study

Companies today operate in an increasingly dynamic and challenging environment. Organizations must be able to act quickly in response to opportunities and barriers (Papulova & Papulova, 2006). How firms achieve and sustain competitive advantage is the most fundamental question in the field of strategic management (Rumelt, Schendel & Teece, 1994). Porter (1980) suggests that a company needs to develop a competitive strategy in order to achieve competitive advantage in a market economy. A firm's strategy selection is based on the careful evaluation of its resource and capability portfolios and reflects the market influence (Barney, 1991). Barney further argues that determinants or sources of competitive advantage of a firm are resources which are rare, valuable, inability to be imitated, and inability to be substituted. Effective strategic management requires an understanding of organizational resources and competencies as well as how each contributes to the formation of organizational strengths and ultimately to the development of a competitive advantage (Duncan, Gintei & Swayne, 1998).

Competitive advantage is often a single key element that gives an edge to a business beyond what the competition has or does. Strategic capabilities which directly contribute and improve the value perceived by the market/customers are core competencies. A core competence is a company-specific capability that distinguishes the company from its competitors, and defines the essence of the company's business

firm specific or core capabilities (distinctive capabilities) that provide the firm with competitive advantage. Capability is a firm's ability to execute (relevant) business processes and activities to transform process inputs into a required product (outputs) through the employment of the firm's resources. Top managers spend an inordinate amount of time analyzing, selecting, acquiring, or developing the necessary resources to enable their firm to gain competitive advantage. These resources and competitive advantage must be constantly upgraded. Masinde and Shitseswa (2013) research findings were positive correlation between organizational factors and performance of sugar manufacturing firms.

The source of sustained competitive advantage is the larger pool of human capital that constitutes the entire organization because they meet the criteria of being valuable, rare, inimitable and non-substitutable (Wright, McMahan & McWilliams, 1993; Chuang, Liu & Chen, 2014). The key to the performance and growth of today's enterprises resides in the capabilities of the organization, which in turn depend on the capabilities of its people. Argote and Ingram (2000) found out that knowledge embedded in the interactions of people, tools, and tasks provides a basis for competitive advantage in firms. Knowledge transfer in organizations manifests itself through changes in the performance of the recipient units.

Organizations are increasingly spending more money annually on training with the belief that it will give them a competitive advantage in the local and global market (Edralin, 2004). Batool and Batool (2012) research found a positive relation between training and development and competitive advantage. Training of employees promotes competitive advantage in context of job satisfaction and performance, decrease non-attendance and lower suspend intention. Faugoo (2009) empirical outcomes stressed that companies cope with the challenges posed by globalization, through the use of the RBV perspective, which regards employee skills, knowledge and experience as a source of competitive advantage through the use of Human Resource capabilities.

Challenges are forcing firms to seek the best management and marketing strategies (Jemaiyo, 2013a). Management capabilities include the skills and technological capabilities, marketing and human resource management, financial management, efficiency in forecasting earnings and revenues. Decisions by managers have a strategic impact and contribute to strategic change (Papulova & Papulova, 2006). Zoubi (2012) found out that leadership competences had a statistically significant impact on competitive advantage. Organizational performance is enhanced when the task is allocated to the members most qualified to perform them. Achieving competitive advantage through people involves achieving success by working with people, not by replacing them or limiting the scope of their activities and seeing the workforce as a source of strategic advantage, not just as a cost to be minimized or avoided (Pfeffer, 2005). A study by Moorthy, Tan, Choo, Wei, Ping, and Leong (2012) showed that there is a significant negative relationship between inappropriate human resource management (HRM) and the firm performance.

Employees are the backbone of any business success and therefore, they need to be motivated and maintained in organization at all cost to aid the organization to be globally competitive in terms of providing quality products and services to the society (Ongori, 2007). Bula (2012) found out that labour turnover is widespread in the Kenya sugar industry; affects all categories of staff, frustrates and impacts negatively on performance. If a skilled person leaves an organization the effects will be very high where as in case of a semiskilled or un-skilled person the effect will be less. Breznik (2014) research indicated that firms strongly committed to deploying human resource capability as a dynamic capability are more successful and hold the potential for a sustained competitive advantage. Plessis, Beaver, and Nel (2006) concluded that to achieve competitive advantage, organizations need to link Human Resource competencies to business strategy, be sensitive to internal and external change and the needs of the diverse workforce.

Khalaji (2014) study on relationship between technology and competitive advantage of sugar industry in India found out that technological developments play a prominent role to achieving better competitive advantage. Technology capabilities refer to skills necessary to convert inputs into outputs (Spanos & Lioukas, 2001).

Alizadeh (2012) puts that technological capabilities are implied in four categories; hardware and facilities, codified knowledge and information, human tacit knowledge and skills, and organization culture, routine and processes. Lall (1992) has cited Teece (1989) who said that need for specific technological effort to acquire technological capabilities rises with industrial development. Easy capabilities are acquired by brief training combined with learning-by-doing while more difficult capabilities require more training and technological effort to master. Teece is of the opinion that technological capabilities interventions carefully and selectively applied are necessary for industrial success. Utilizing technological capabilities, formulating strategies to enhance capabilities in technical and managerial fields and creating or maintaining the capabilities provide a firm with a competitive advantage (Aalizadeh 2014).

Technological innovation is in many industries the most important driver of competitive advantage (Rothaermel, 2008). Innovation is a source of competitive advantage for the firms and is achieved when firms possess or develop their technological capabilities (Lall, 1992). There are four building blocks of innovation capability: technology development capability, operations capability, management capability, and transaction capability that enable firms to reach Schumpeterian profits (Zawislak, Alves, Gamarra, Barbieux & Reichert, 2012). Innovation capability is the ability to absorb, adapt and transform a given technology into specific operational, managerial and transactional routines that lead a firm to Schumpeterian profits. Technology development capability is what the firm does to change what it knows. Transaction capability is the firm's routines, processes and decision rules undertaken to the best choice to minimize transaction costs. Operations capability is the ability to perform the given productive capacity through the collection of daily routines that are embedded in knowledge, skills and technical systems at a given time. Management capability is the mechanism that the firm will transform the technological outcome into an efficient operational process.

Excellent companies invest and nurture innovation capability leading to innovations in new products, services and processes, and superior business performance (Lawson & Samson, 2001). Innovation capability has seven aspects: vision and strategy, harnessing the competence base, organizational intelligence, creativity and idea management, organizational structure and systems, culture and climate, and the management of technology. The competitive advantage of a company strongly depends on its possibility to benefit from innovational activities (Zakić, Jovanović & Stamatović, 2008). Research by Moghli, Abdallah and Muala (2012) found out that innovation has a direct positive impact on competitive advantage. In their innovational efforts, companies can choose only product innovations, only process innovations or a combination of product and process innovations. Customer needs and expectations are essential for process innovations that improve process effectiveness.

Kenya sugar industry experiences technology capabilities challenges and this has remained a major limitation to the increased production of sugar and to the growing of more sugarcane (Obonyo, 2004). Imported sugar is cheaper than sugar produced in Kenya due to high production cost and inappropriate technology (Wanyande, 2001). The Kenya Sugar Industry Strategic Plan (2010-2014) noted that the Kenya sugar industry is facing technology capability challenges resulting into capacity underutilization, lack of regular factory maintenance, poor transport infrastructure and weak corporate governance making it uncompetitive in the COMESA region. Kenya factories operate at a capacity utilization of 55 to 60 percent because of technical and management limitations (KSB, 2010; KSI, 2009). Factory capacity utilization is low in comparison to world leaders like India where the sugar industry is operating at an average of 113% capacity utilization (Kumar and Arora, 2009). Factory time efficiency for the Kenya sugar industry dropped from 79.58% in 2006 to 74.91% in 2008 (Mwanaongoro & Imbambi, 2014). Factory Time Efficiency (FTE) in the 2013 calendar year was 82.29% and Overall Time Efficiency (OTE) was 73.57% over the same period. These results are however low compared to the industry standards of 92% and 82% for FTE and OTE respectively (KSB, 2013). In the year 2013, the mill white sugar from all the mills failed to meet the Kenya Bureau of Standards colour requirement of 400 ICUMSA units (KSB, 2013).

Supply chain management is viewed as a viable initiative to enhance sustainable competitive advantage under the increased national and international competition (Gargeya & Su, 2004). Gargeya and Su found out that strategic sourcing is a key contributor to firm's success. Strategic sourcing leads to low cost, high quality, reliable delivery, flexibility, and quick response time and also improve firm's financial performance. Ogbo, Onekanma and Ukpere (2014) state that organizations stand to gain a lot from effective inventory control management system by way of easy storage and retrieval of material, improved sales effectiveness and reduced operational cost. Value chain analysis can be used to formulate competitive strategies, understand the source(s) of competitive advantage, and identify and/or develop the linkages and interrelationships between activities that create value (Ensign, 2001). Unam (2012) findings indicate that there is a positive and statistically significant relationship between efficient Materials Management and firm profitability for bottling plants in Nigeria

Khushk, Memon and Saeed (2011) found out that one of the problems in Pakistan's sugar industry was low sugarcane yield per hectare. The vicious cycle of shortage and surplus of sugarcane, lower sugarcane yield, ever increasing production costs and mounting losses affect competitive advantage of the sugar firm (Pandey, 2007). Ortiz and Pacheco (2013) noted that decay in the potential of farms to provide sucrose that can be transformed into sugar is caused by the decline in the ability of land to produce larger volumes of the crop per hectare. Nazir, Jariko and Junejo (2013) found out that the high prices of inputs, low price of output, delay in payments and lack of scientific knowledge were the major problems in sugarcane production in Pakistan. Chidoko and Chimwai (2011) findings indicate that the low productivity of sugarcane in Zimbabwe is largely due to failure to plough out old cane, lack of equipment for operations, low prices paid for the harvested cane, high transport and haulage charges, limited training and unavailability of inputs.

The challenges facing Pakistan and Zimbabwe are similar to those facing the Kenya sugar sector. Baseline Study for Sugar Agribusiness in Kenya, Draft Report (2013) found out that Kenya's cost of sugar production is the highest among EAC and COMESA countries. High costs are owed to low sugarcane yields, capacity underutilization, lack of regular factory maintenance programs, poor transport infrastructure and weak corporate governance. Brazil increased sugarcane productivity by more than 50% in the last 30 years due to new sugarcane varieties breeding programs (Araujo, Goes, Marra and De Souza, 2010). Average sugarcane yield for the sugar industry in Kenya in 2013 was 54.67 tonnes per hectare compared to Zambia whose average yield is 113 tonnes per hectare and Malawi 105 tonnes per hectare (KSB, 2013). The uncoordinated sugarcane development, harvesting and transport to the mills affect the material (sugarcane) capability in Kenya leading to the vicious cycle of sugarcane shortage or surplus. KESREF (2012-2014) census report indicated that the industry had sugarcane deficit of over 295,000 tonnes in 2012/2013 financial year while the projection for 2013/2014 indicated sugarcane surplus of over 1.4 million tonnes. AFFA Year Book of Sugar Statistics (2014/15 – 2015/2016) projection report showed that Nzoia Sugar Company would have sugarcane surplus of over 760,000 tonnes after mill requirement of 840,000 tonnes.

Sherraden (2010) defines financial capability as a broad concept, encompassing people's knowledge, skills, confidence, and motivation and the opportunity to understand their own financial circumstances, along with the motivation to take action. This scenario can be related to the company level as knowledge, skills, confidence, and motivation of its employees to strategically, efficiently and effectively deploy the company's financial resources to achieve the company's goals and competitive advantage. Financial capability has four discrete aspects: managing money, planning ahead, making choices and getting help through internal help or external help through third parties. Gongera, Ouma and Were (2013) examined the effects of financial risks on profitability of sugar firms in Kenya. The findings indicated a significant negative correlation between firm's level of liquidity risk and firm's profitability; and a strong, positive correlation between firm's efficiency of risk management and profitability.

Financial risk management practices are therefore useful to sugar industry that operates in dynamic and competitive environments like Kenya. Liquidity risks have an effect on the profitability of sugar firms in Kenya and therefore the firms should ensure that they are financially stable so that there is smooth running of all operations. Odek, Kegode and Ochola (2003) indicate that the problems affecting millers in Kenya are due to, inefficient factory operations, inefficient agronomic practices, State intervention and debt burden. In 2009, sugar production costs in Kenya were the highest in the COMESA region at USD 415- 500 as compared to Egypt and Swaziland at USD 250-300; Zambia and Malawi at USD 200-260 and Uganda and Tanzania at USD 140-190 (KSI, 2009).

Sugar (specifically sucrose) has always been a "political" commodity (Tyler, 2007). "International agricultural markets are heavily distorted, with sugar being one of the worst affected. Distortions in world sugar trade stem largely from government policies in a small number of countries. The policies pursued in these countries impose substantial economic costs worldwide" (Sheales, Gordon, Hafi, & Toyne, 1999, Summary). Most large producers—China, the European Union, India, and the United States—all intervene in the sugar trade in ways that affect international prices. Many other countries intervene in domestic markets, and only the smaller market share of these countries keeps their individual interventions from statistically significantly affecting global markets (Larson & Borrell, 2001). Maloa (2001) found out that the support given by government in tariff protection, commodity access to compulsory levy and creation of an infrastructure and support services increases the competitive advantage of the sugar industry. The sugar industry is both strategic and political; it ensures food security; improves rural lives and provides sustainable livelihoods for millions of Kenyans but it also suffers heavy government intervention (Odek, Kegode & Ochola, 2003). Memon and Saeed (2011) found out that high rate of taxes and duties imposed by the government on the sugar industry in Pakistan affect it negatively. Implementations of agricultural policies that enhance productivity amongst small holder farmers present a viable strategy in promoting pro-poor growth.

Jalilian, Kirkpatrick and Parker (2006) showed a strong causal link between regulatory quality and economic performance. Alila and Atieno (2006) noted that Kenya policies for agriculture consist of government decisions that influence the level and stability of input and output prices, public investments affecting agricultural production, costs and revenues and allocation of resources. Wanyande (2001) states that Kenya government has been active in affecting the establishment of new sugar companies and also in directing and controlling various programs supposedly aimed at ensuring rapid development within the sugar industry. The Kenya sugar industry is dominated by the state and thus the competitiveness of the sugar sector is affected more by state involvement and intervention than by the practices of private firms (Ellis & Singh, 2010). Taxes and levies applicable are higher than other countries within the COMESA region (KPMG, 2010). Kenya Anti-Corruption Commission (2010) attributes the governance problems bedeviling the sugar industry to persistent political interference. Jemaiyo (2013b) recommends that Kenya sugar firms should collectively lobby the Government to remove taxes on domestic sugar.

Lokhande (2015) found out that the major problems in the Indian sugar firms were erratic supply of sugarcane, increasing arrears due to farmers, deteriorating per hectare yield, high cost of production, obsolete technology, lower capacity utilization, poor working capital management and lower or negative profit margins as a consequence of all these factors. Lokhande support Kaumbutho, Awiti and Some (1991) findings in Kenya where the rising costs for the processing of sugarcane are associated with: low quality of sugarcane; declining sugar recovery rates; under-utilization of factory capacities; rising maintenance and repair costs; inadequate research and extension support, services and inappropriately high costs of investment, financial structures and the falling value of the Kenya shilling. Kenya is a member of COMESA and EAC. The safeguard period Kenya has been given to make its sugar industry competitive will expire in February 2019. Kenya is expected to open up its markets to sugar from COMESA region at the expiry of this extension. A safeguard is a special dispensation granted for a specific period of time during which the beneficiary is expected to undertake measures to overcome the lack of competitive advantage.

1.1.1 Historical Perspective

Cultivation of sugarcane in India dates back to the Vedic period. The earliest mention of sugarcane cultivation is found in Indian writings of the period 1400 to 1000 B.C. The genus Saccharum has five important species Saccharum officinarum, S. Sinense, S. barberi, S. robustum, and S. spontanuem. It is now widely accepted that India is the original home of Saccharum species while New Guinea is the centre of origin of S. officinarum (Status Paper on Sugarcane, 2013). The history of sugarcane in Brazil is almost five centuries old, considering that the first Brazilian sugar mill was built in 1532 (Goes, Marra, Araujo, Alves, & De Souza, 2011). "The break on the Venetian sugar monopoly began in 1498, when Vasco de Gama introduced Indian sugar to Portugal, and Lisbon then began refining its own sugar. In 1502, the Portuguese planted sugarcane in Madeira and the Canary Islands and from there it traveled to the coast of Africa and in Brazil. Columbus introduced sugarcane to the West Indies in 1493, on his second voyage to the Americas, and by 1509, sugar was being produced in Haiti and the Dominican Republic" (Mescher, 2005, p. 2). According to the records by the Australian Government Department of Health and Ageing (2004); sugarcane has been grown in Australia for over 100 years.

Over 70% of sugar production in over 100 countries in the world is consumed domestically and the remaining is traded on the world market. The ten lowest cost sugar producer countries in the world for the period 2006 – 2010 were: Malawi, Brazil, Swaziland, South Africa, Zambia, Thailand, Australia, Tanzania, United Kingdom and Zimbabwe (World of Sugar, 2010). The sugar industry within the Southern and Eastern Africa region is a strategic sector, a major contributor to the rural economic activity and employment in the sugarcane growing areas (Maloa, 2001). The top nine major sugarcane producers in Africa for 2012 (in descending order) were South Africa, Egypt, Sudan, Kenya, Swaziland, Mauritius, Zambia, Zimbabwe and Mozambique (FAO). Zimbabwe, Malawi, Zambia, Swaziland and South Africa are able to produce sugar at an average operating cost of around US 8-11 cents/lb., compared with 7.5 cents/lb. in Brazil, the world's lowest cost producer. Swaziland, Ethiopia, Madagascar, Malawi, Mauritius, Swaziland, Zambia and Zimbabwe are net exporter of at least 25 percent of their yearly sugar production.

The development of the sugar industry in Kenya is inextricably linked to the history of Asian Agricultural Settlement in the country. The Asians first came to Kenya as labourers who were used by the British to build the railway line from Mombasa to Uganda during the initial years of the colonial period (Wanyande, 2001). "Sugarcane as a crop was introduced in Kenya in 1902. The first sugarcane factory was set up at Miwani near Kisumu in 1922 and later at Ramisi in the coast province in 1927. The Government of Kenya has been widely involved in the expansion of sugar production through investments in sugarcane growing schemes and factories" (Odek *et al*., 2003, p. 10). After independence, the Government explicitly expanded its vision of the role and importance of the sugar industry as set out in Sessional Paper No 10 of 1965 which sought, inter alia, to: accelerate socio-economic development, redress regional economic imbalances, promote indigenous entrepreneurship and promote foreign investment through joint ventures. In pursuit of the above goals, the Government established five additional factories in the 1960s and1970s: Muhoroni (1966), Chemelil (1968), Mumias (1973), Nzoia (1978), and South Nyanza (1979) (KSI Strategic Plan, 2010-2014). Later, several more sugar firms have come on stream: West Kenya (1981), Soin Sugar Factory (2006), Kibos Sugar & Allied Industries (2007), Butali (2011), Trans Mara Sugar (2011), and Sukari Industries (2012); bringing the total number of milling companies to thirteen (13). The two older factories ceased operations: Ramisi sugar factory collapsed in 1988 and Miwani sugar factory was put under receivership, though, Ramisi has been revived under a new name of Kwale Sugar Company Limited and factory operations begun late in the year 2015.

"The sugar industry in Kenya differs from the majority of its counterparts in other sugar producing countries in that it has been largely developed in response to the strategic and economic advantages of self-reliance with respect to domestic demand, rather than as a major export cash crop" (Kaumbutho *et al*., 1991, p. 5). The sugar industry plays a significant role in Kenya's rural economy, contributing about 15 percent to the country's agricultural GDP (KSI, 2009). Smallholder farmers supply over 92 percent of the sugarcane processed by sugar companies, while the remainder is supplied by factory-owned nucleus estates (KSI, 2009; KSB, 2010). An estimated 25 percent of the country's population depends directly or indirectly on the sugar

industry for their livelihood. The sugar firms are the "life-line" of surrounding towns such as Mumias, Muhoroni, Chemelil and Awendo and most farmers in Western part of Kenya rely on sugarcane as the only major source of income (ActionAid International Kenya, 2005). The industry saves Kenya in excess of USD 250 million in foreign exchange annually (KSB, 2010).

The main players in the sugar sub-sector are the Government of Kenya (GOK), Kenya Sugar Board (KSB) (now Sugar Directorate under Ministry of Agriculture), the millers organized under the umbrella of Kenya Sugar Manufacturers Association (KESMA), the suppliers of sugarcane organized under the Kenya Sugarcane Growers Association (KESGA) and customers who include sugar wholesalers, distributors and transporters, industrial users of sugar and molasses and retailers. The Kenya Sugar Research Foundation (KESREF) conducts research on production of various varieties of sugarcane and sugar processing. The Kenya Rural Roads Authority (KeRRA) is supervising and coordinating the maintenance of rural roads. The government of Kenya regulates the sugar industry under the Ministry of Agriculture through previously Kenya Sugar Board (KSB) and presently Sugar Directorate and previously Sugar Act (2005) and now Agriculture, Fisheries and Food Authority (Amendment) Act 37 (2013). Sugar Directorate acts as a technical unit to advise the Ministry of Agriculture in promoting all aspects of producing, processing and marketing of sugarcane, sugar and molasses.

1.2 Statement of the Problem

Barney (1991) argues that determinants or sources of competitive advantage of a firm are resources which are rare, valuable, inability to be imitated, and inability to be substituted. These resources include human, technology, material and financial. Several authors have researched on the importance of training and development, leadership and labour turnover in achieving competitive advantage. The source of sustained competitive advantage is the human capital that constitutes the entire organization (Wright, McMahan & McWilliams, 1993; Chuang, Liu & Chen, 2014). Batool and Batool (2012) research found a positive relation between training and development and competitive advantage. Zoubi (2012) found out that leadership

competences had a statistically significant impact on competitive advantage. Employees are the backbone of any business success and therefore, they need to be motivated and maintained in organization at all cost (Ongori, 2007). On the Kenyan side Bula (2012) found out that labour turnover frustrates and impacts negatively on sugar firm performance in Kenya.

Technological innovation is in many industries the most important driver of competitive advantage (Rothaermel, 2008). Moghli, Abdallah, Muala (2012) indicated that innovation has a direct positive impact on competitive advantage. In Kenya factories operate at an average capacity utilization of 50-60% due to technical and management limitations (KSB, 2010). Factory Time Efficiency (FTE) in 2013 was 82.29% and Overall Time Efficiency (OTE) was 73.57% in comparison to the country standards of 92% and 82% respectively (KSB, 2013). These Kenyan observations are based on firms' operation data and are not backed by empirical studies. Supply chain management is viewed as a viable initiative to enhance sustainable competitive advantage under the increased national and international competition (Gargeya & Su, 2004). Data on Kenyan sugar industry show that sugarcane yield is low and in 2013 the average yield was 54.67 tonnes per hectare compared to Zambia whose yield was 113 tonnes per hectare (KSB, 2013). Unam (2012) findings are that there is a positive and statistically significant relationship between efficient materials management and firm profitability. This finding makes the study of sustainable sugarcane supply to the Kenyan mills very important.

Gongera, Ouma and Were (2013) noted a strong, positive correlation between firm's efficiency of risk management and profitability. High production costs for sugarcane processing in Kenya is due to: low quality of sugarcane, low recovery rates, low capacity utilization, rising maintenance and repair costs, inadequate research and extension services, high costs of investment, financial structures and the falling value of the Kenya shilling (Kaumbutho *et al*., 1991). Ellis and Singh (2010) noted that competitive advantage of the Kenya sugar sector is affected by State intervention and higher taxes and levies than other COMESA countries (KPMG, 2010). These observations in Kenya are not supported by local empirical studies. Jalilian, Kirkpatrick and Parker (2006) research revealed a strong causal link between

regulatory quality and economic performance. The above mentioned challenges facing the Kenya sugar industry negatively affect its competitive advantage in the COMESA free market putting at risk 25% of the population that depends on the industry. Several authors in Kenya have written about the strategic issues facing the sugar industry in Kenya but there is limited local empirical researches linking these problems to the influence of strategic capabilities on competitive advantage of the Kenya sugar industry especially on technology, material and financial capabilities. Most of the studies addressing one aspect or another of the component of a strategic capability were either carried out in areas not related to the sugar industry or outside Kenya. Therefore, there is a gap which this study filled by assessing the influence of strategic capabilities on competitive advantage of sugar companies in western Kenya.

1.3 General Objective of the Study

The general objective of the study was to assess the influence of strategic capabilities on competitive advantage of sugar companies in Western Kenya.

1.3.1 Specific Objectives of the Study

The study was guided by the following specific objectives:

1. To assess the influence of human resource capability on competitive advantage of sugar companies in Western Kenya.
2. To determine the influence of technology capability on competitive advantage of sugar companies in Western Kenya.
3. To establish the influence of material capability on competitive advantage of sugar companies in Western Kenya.
4. To assess the influence of financial capability on competitive advantage of sugar companies in Western Kenya.
5. To establish the influence of strategic capabilities on competitive advantage of sugar companies in Western Kenya.
6. To determine the moderating influence of Government regulatory policy on the relationship between the strategic capabilities and competitive advantage of sugar companies in Western Kenya.

1.4 Research Hypotheses

This study sought and tested the following null hypotheses:

1. **H_{01}**: There is no statistically significant relationship between human resource capability and competitive advantage of sugar companies in Western Kenya.
2. **H_{02}**: There is no statistically significant relationship between technology capability and competitive advantage of sugar companies in Western Kenya.
3. **H_{03}**: There is no statistically significant relationship between material capability and competitive advantage of sugar companies in Western Kenya.
4. **H_{04}**: There is no statistically significant relationship between financial capability and competitive advantage of sugar companies in Western Kenya.
5. **H_{05}:** There is no statistically significant relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya.
6. **H_{06}:** The government regulatory policy does not moderate the relationship between the strategic capabilities and competitive advantage of sugar companies in Western Kenya.

1.5 Justification of the Study

Kenya currently is a high cost producer of sugar in comparison to other COMESA sugar producing countries. The effort to improve efficiency and effectiveness of the sugar firms will lower production costs, increase sugar production by the firms and make them survive in the post COMESA safe guards. The effort will enhance the security of the existing jobs in the sugarcane growing areas. Further, the output of this study is important to players in the sugar industry, government agencies, and other industries which draw their raw materials from sugar industry, individual farmers and out-grower companies. The justification of this study to management is that it offers insights and opportunities to make the local sugar industry viable and competitive in the COMESA region and create more jobs. The findings of the study will awaken the industry players to lobby the government to modify its policy and legal framework favourably towards the sugar industry. This research contributes to the body of knowledge by validating or otherwise the resource based view theory

(RBV), human capital theory, dynamic capabilities theory, competitive advantage of nations theory and financial theories by examining the relative magnitude of importance placed upon the organizational resources towards attaining competitive advantage of the firm. This research contributes to the literature by offering further understanding of the mentioned theories in the context of a sugar industry in a developing country. The study shall open up this area for further research.

1.6 Scope of the Study

The focus of the study was on the sugar companies in Western Kenya which were in operation by 2010. These sugar companies have been in operation long enough to provide the required information. The focus of the study was in Western and Nyanza provinces due to the economic importance of sugarcane in these two provinces. The population density is very high in these two provinces and the majorities depend on sugarcane. These provinces have nine operational sugar firms namely: Muhoroni, Chemelil, Mumias, Nzoia, South Nyanza, West Kenya, Kibos, Butali and Sukari Industries. Whenever there is sugar import, sugar belt suffers major shocks which could be attributed to the fact that sugarcane farming and milling factories are indeed the "life-line or heartbeat" of surrounding towns such as Mumias, Chemelil and Awendo (ActionAid International Kenya, 2005). These towns and the population in these sugarcane growing regions depend entirely on the income generated by the sugar industry and related activities. In addition, the industry saves Kenya in excess of USD 250 million (about Kshs. 20 billion) in foreign exchange annually and contributes tax revenues to the exchequer (VAT, Corporate Tax, personal income taxes) (KSB, 2010). Kenya is expected to open up its sugar markets under COMESA and EAC treaties when the safeguard period expires and this is likely to have profound effect on the local sugar companies and the population that depend on these firms for their livelihood. This explains the importance and relevance of this study on the Kenya sugar industry.

1.7 Limitation of the Study

The research was carried out using closed ended questionnaire. This limited the choice the respondents could make. This limitation was mitigated through pre-testing the questionnaire for validity and reliability to ensure that the Likert item contained the relevant options for each question. Questionnaires normally have poor response rate. To mitigate against this use of drop and pick method and personalized introduction letter were used to improve the response rate. Some respondents were reluctant in providing information due to the suspicion normally associated with any kind of a research study. This was resolved by assuring the respondents of utmost confidentiality by disclosing the academic purpose and intention of the study. The study was conducted in six sugar firms most of them being government owned, hence, limiting the generalization of the study results. Hence, the findings of this study are only directly applicable to Muhoroni, Chemelil, Mumias, Nzoia, South Nyanza and West Kenya sugar companies that were under study. The model needs to be replicated in private owned sugar firms in Kenya. These limitations, however, did not detract the study's authenticity.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed theoretical and empirical literature related to the study based on the following thematic areas: Human Resource Capability and Competitive Advantage of Sugar Companies; Technology Capability and Competitive Advantage of Sugar Companies; Material Capability and Competitive Advantage of Sugar Companies; Financial Capability and Competitive Advantage of Sugar Companies, The Relationship between Strategic Capabilities and Competitive Advantage of Sugar Companies and the Moderating Influence of Government Regulatory Policy on the Relationship between Strategic Capabilities and Competitive Advantage of Sugar Companies.

2.2 Theoretical Review

Theories are analytical tools for understanding, explaining and making predictions about a given subject matter (Hawking, 1996). A theoretical framework is a collection of interrelated ideas based on theories. The competitive advantage of a firm can be analyzed using Traditional trade theory, Industrial organization theory, Strategic management concept or financial theories. David Ricardo is the creator of the classical theory of International Trade. According to the Ricardian Trade Theory (Ricardo, 1891), trade occurs due to existing comparative advantage between countries. In this theory the crucial variable used to explain international trade patterns is technology. The theory holds that a difference in comparative costs of production is the necessary condition for the existence of international trade. Trade can only arise, and lead to mutual gains, if countries differ in their technologies or in their resources (Heckscher-Ohlin Theory).

Industrial organization theory focuses on understanding and evaluating the behavior of businesses, the markets that they participate in, and the interaction between the two. The goal is to increase the internal efficiency of the business so that it is poised to compete more effectively in the marketplace. This is managed by not only refining the structure and operating processes of the business, but also adapting them so they can more effectively address what is happening within the wider market.

Strategic management concept looks at the process and approach of specifying an organization's objectives, developing policies and plans to achieve and attain these objectives, and allocating resources so as to implement the policies and plans. The most commonly used finance theories are tradeoff, pecking order and free cash flow theories. The tradeoff theory says that firms seek debt levels that balance the tax advantages of additional debt against the costs of possible financial distress. The pecking order theory says that the firm will borrow, rather than issuing equity, when internal cash flow is not sufficient to fund capital expenditures. The free cash flow theory says that dangerously high debt levels will increase value, despite the threat of financial distress, when a firm's operating cash flow significantly exceeds its profitable investment opportunities. Porter's Diamond Theory, the Human capital theory, the Resource based view theory, Dynamic Capabilities theory and Finance theories are the theories that under-pin this study.

2.2.1 Strategic Management Thories

Andrews (1965) and Ansoff (1965) as cited by Elfring and Volberda (2001) were the first to give the discipline of strategic management a separate profile. Radua, Jegak, Haslinda, and Alimin (2009) state that strategic management thories stem mainly from the systems perspective, contingency approach and information technology approach. The underlying assumption here is that the environment can be analyzed and that a company's opportunities and threats can be distilled from it.

The sugar firms are able to analyze their capabilities, in this case, human resource, technology, material and financial and act appropriately in order to achieve competitive advantage. The common theories under the strategic management concept are the profit-maximizing and competition-based theory, contingency theory, Porter's Diamond theory, the Human capital theory, the Resource based view theory and the Dynamic Capabilities theory.

a) Porter's Diamond Theory

The model is an economical one developed by Porter (1990) in his book "The Competitive Advantage of Nations" where he published his theory of why particular industries become competitive in particular locations. In order to conceive this theory, Porter analyzed for four years, ten countries with important share in international commerce (Denmark, Germany, Italy, Japan, South Korea, Singapore, Sweden, Switzerland, Great Britain and USA), establishing the system of the determinants which determine the obtaining of the competitive advantage. Porter's model takes the industry structure (outside – in) as its starting point. This model of determining factors of national advantage has become known as Porter's Diamond Theory. It suggests that the national home base of an organization plays an important role in shaping the extent to which it is likely to achieve advantage on a global scale.

This model consists of four national determinants of competitive advantage: factor conditions (human resources, material resources, knowledge resources, capital resources, and infrastructure), demand conditions (home demand for products and services produced in a country), related and supporting industries (existence or non-existence of internationally competitive supplying industries and supporting industries) and firm's strategy, structure and rivalry (conditions in a country that determine how companies are established, organized and managed, and that determine the characteristics of domestic competition). Porter's theory is that these factors interact with each other to form conditions where innovation and competitiveness occurs. This explains the existence of so-called low cost- countries (low costs of labour) (Porter, 1990).

This theory is related to objective six of this study "To determine the moderating influence of Government regulatory policy on the relationship between the strategic capabilities and competitive advantage of sugar companies in Western Kenya". Kenya government sugar industry regulatory policy and regional treaties determine how sugar companies are established, organized, managed and their regional competitive advantage. The government influences the characteristics of domestic and regional competition of the sugar industry. Kenya is a member of the East African Community (EAC) and Common Market for Eastern and Southern Africa (COMESA) which are free trade areas. This is in line with Porter (1990) observation in his book "The Competitive Advantage of Nations" that the national home base of an organization plays an important role in shaping the extent to which it is likely to achieve advantage on a global scale.

b) Human Capital Theory

"Human capital" can be defined as knowledge, skills, attitudes, aptitudes, and other acquired traits contributing to production (Goode, 1959). Smith (1776), Sidgwick (1901), Say (1821), Mill (1909) and Roscher (1878) as cited by Kiker (1966), were the early contributors to the literature on human capital economics as an investment which generates a return. Human capital theory was initially developed by Becker (1964). Becker's view is that human capital is directly useful in the production process and increases productivity in a broad range of tasks. According to this theory, a more educated/skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training. Human capital is grounded in individual talents, training, and experience. Because it is an intangible asset involving employee competencies, attitudes, values, and commitment; human capital is more likely than tangible assets to provide a competitive advantage through increased operational efficiency.

Becker (1964) delineates that human capital is categorized into general and specific one. The general human capital holds 'transferable' characteristic across jobs, firms and industry. It is relatively easy that the general human capital embedded in an individual transfers to different industries. Contrast to the general human capital,

firm/task specific human capital is usually accumulated through education, training, working experience on 'knowledge specific to a firm/task'. The specific human capital is rarely transferable to be applied to other jobs, firm, and industry, and thus it is impossible to transfer much income in the labor market. Empirical studies by Barro (1991), Baumol, Blackman, and Wolf (1989) and Mankiw, Romer, and Well (1992) provide evidence supporting the aggregate effects of education and training. According to Izushi and Huggins (2004); a more educated/skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training. Human capital signifies the combined intelligence and experience of staff as a source of competitive edge. Human Resource Management (HRM) practices are an organization's source of competitive edge. Therefore, the theory has significance in HRM practices such as recruitment and selection, training and development and human resource planning that are meant to help organizations achieve their goals.

Melike, Melda, Seckin and Elcin (2005) have criticized human capital theory from three different points of view in time. One of the criticisms is that the theory is difficult to be tested, quality of education is not considered and those who take investment decisions cannot calculate its possible rates of return. Another point criticized is the problem of skills. Finally, another criticism of the theory is the dual job market in the context that education will not be sufficient in eliminating income inequality.

This theory is related to objective one of this study "To assess the influence of human resource capability on competitive advantage of sugar companies in Western Kenya". This theory looks at human resource of a firm, how it is moulded to achieve the strategic objectives of an organization and its importance to a firm's competitive advantage. According to this theory, a more educated/skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training. The training and development of employees are some of the factors being looked at in this study which are in line with this theory.

c) Resource Based View Theory

The origins of the Resource-based view theory (RBV) can be traced back to earlier works by Penrose (1959). Penrose recognized the importance of resources to a firm's competitive position. She suggested that these resources may only contribute to a firm's competitive position to the extent that they are exploited in such a manner that their potentially valuable services are made available to the firm. Barney and Wernerfelt are the major proponents of the RBV theory. Wernerfelt (1984) defined resources as those tangible and intangible assets which are tied semi- permanently to the firm. This model underlines the importance of enterprise internal resources in order to reach a competitive advantage. A central premise of the resource-based view is that firms compete on the basis of their resources and capabilities. A holder of a resource is able to maintain a relative position vis-à-vis other holders as long as these act rationally (Wernerfelt, 1984).

Barney (1991) paper on Firm resources and sustained competitive advantage is widely regarded as the first formalization of the then fragmented resource based literature into a comprehensive (and thus empirically testable) theoretical framework. As duly noted by Barney (1991), firm's resources include all assets, capabilities, organizational processes, firm's attributes, information and knowledge, controlled by a firm that enable the firm to conceive and implement strategies that improve its efficiency and effectiveness. Different kinds of resources such as physical, human and financial resources give various contributions to the achievement of a sustained competitive advantage depending on how they are organized. The theory describes firm's internal characteristics and performance and assumes that firms have idiosyncratic, not identical strategic resources. Resources are not perfectly mobile and therefore heterogeneous. While resources are the source of a firm's capabilities, capabilities are the main source of its competitive advantage (Grant, 1991). The RBV of strategy asserts that the competitive advantage and superior performance of an organization is explained by the distinctiveness of its capabilities. Capabilities refer to a company's skills at coordinating its resources and putting them to productive use (Hill & Jones, 2010).

The RBV has emerged in recent years as a popular theory of competitive advantage (Barney, 1991; Wernerfelt, 1989). Newbert (2007) indicates that in 2001, Barney and Arikan published an assessment of 166 empirical articles that tested the RBV in one form or another. Newbert further states that the authors concluded from this study that of these 166 studies, only four (2%) results were at least partially inconsistent with RBV logic. Barney(1986; 1991; 2001a;), Conner(1991), Mills, Peteraf, and Bergen(2003) and Platts and Bourne(2003) as cited by Ismail, Rose, Abdullah, and Uli (2010) stipulate that the fundamental sources and drivers of competitive advantage and superior performance are chiefly associated with the attributes of resources and capabilities, which are valuable and costly-to-copy. These resources are classified as physical (plant, equipment, geographical locations, finances), organizational (structure, Planning and coordinating, social relations, and HR systems), and human (experiences, skills, judgments, and knowledge of employees). The resource based view deals with the competitive environment facing the organization and takes an "inside - out" approach, that is, its starting point is the organization's internal environment. The resource- based view emphasizes the internal capabilities of the organization in formulating strategy to achieve a sustainable competitive advantage in its markets and industries.

This theory has been criticized from the perspective of modern strategic management, the early (Penrose, 1959) understanding of competitive advantage was missing a dimension in that she didn't address the question of how enterprises develop sustainable superior competitive advantage, but instead implicitly adopted a profit-seeking framework. Second, it is regarded as a static theory because it fails to address the fundamental issue as to how future resources can be created (Barney, 2001a, b). Thirdly, RBV does not account for competitive advantage for enterprises in highly dynamic markets. Additionally, the model does not specifically address how future valuable resources could be created or how the current stock of valuable, rare, imperfectly imitable and imperfectly sustainable resources can be refreshed in an unstable environment. Notwithstanding, scholars have tested basic tenets of RBV and culminated in consistent results and such criticisms have been regarded as academic (Lahiri, 2013; Schroeder, Bates, & Junttila, 2002). This theory is related to objectives one, two, three, four and five of this study. The RBV of strategy asserts

that the competitive advantage and superior performance of an organization is explained by the distinctiveness of its capabilities. This research focuses on the strategic capabilities (resources, capabilities and systems) of the organization towards attaining competitive advantage which are defined by the resource based view theory. These attributes are capability of human, technology, materials and financial.

d) Dynamic Capabilities Theory

According to Pavlou and El Sawy, (2011), the dynamic capabilities view originates from Schumpeter's innovation-based competition where competitive advantage is based on the creative destruction of existing resources and novel recombination into new operational capabilities. Schumpeter's contribution to theoretical development of dynamic capability was the recognition of the need to reconfigure resources in order to effectively respond to environmental dynamism. The concept of dynamic capabilities (DCs) is also the extension of resource-based view (RBV) for its ability to respond to rapidly technological change (Teece, 2007). Dynamic capabilities have lent value to the RBV arguments as they transform what is essentially a static view into one that can encompass competitive advantage in a dynamic context (Barney, 2001a, b). The concept of DCs exists because of dynamics interactions between firms' capability building and environment, and the needs to sustain competitive advantage through capability building. Teece, Pisano and Shuen (1997) developed the notion of dynamic capabilities as the capacity of the firms to renew competencies so as to achieve congruence with the changing business environment by adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competencies.

The dynamic capabilities theory suggests that in order to compete successfully in their markets, firms need two types of capabilities: 'Ordinary' capabilities allow organizations to operate their chosen lines of business efficiently and effectively, while 'dynamic capabilities' help them to upgrade their ordinary capabilities, or to create new ones (Winter, 2003). The six DCs functions is to renew, recombine, redeploy, replicate, retrench, and retiring the resources/capabilities (Helfat & Peteraf,

2003). In other words, DCs is not just to create resources, it also can be used to eliminate resources when situation arise. Even if the strategic capabilities are built from resources; simply possessing resources does not guarantee capabilities building as the resources and capabilities systems of the firm are dynamic in nature and their relationships are always changing (Grobler, 2007). Empirical researches suggest that the use of DCs is better under rapidly changing environment (Wu, 2010). The firm who possess DCs is capable of meeting the change that is necessary to build competitive advantage. Dynamic Capability is the key for sustained success under rapid change (Nelson & Winter, 2002). Different DCs exists between firms because each firms is facing different environments and strategic importance of change (Zollo & Winter, 2002). DCs is different between firms because the same capabilities that are distinctive (imperative) to one firm can be nothing more than just a normal operating capabilities to the others (Winter, 2003). Augier and Teece (2009) concluded that dynamic capabilities have a tripartite structure: the capability to sense opportunities; the capacity to seize opportunities and the capacity to manage threats through combination, recombination and reconfiguration of assets inside and outside the enterprise's boundaries.

The impact of dynamic capabilities on ultimate firm performance may be negative, the dynamic capabilities may change the resource base but this renewal may not be in line with the environment. Zahra, Sapienza and Davidsson (2006) noted that while regenerative dynamic capabilities may allow a firm to change its dynamic capabilities, it does not ensure that the organization will be successful or even survive. The performance of dynamic capabilities would not in itself lead to performance improvements; these improvements would occur only where there was a matching of perceived dynamism and the "real" degree of dynamism, and only where the firm actually had the required order of dynamic capability, would result in a positive performance outcome (Ambrosini, Bowman & Collier, 2009). This theory is related to objectives one, two, three, four and five of this study. This study looked at how human, technology, material (sugarcane availability) and financial capabilities are derived from dynamic resources which are moulded through competences to achieve competitive advantage of the firm. Dynamic capability theory explains the capacity of an organization to identify new resources, extend or

modify its resource base to achieve competitive advantage. Dynamic capability is strongly related to raw material (sugarcane) availability which is heavily affected by external factors such as land sub – division and diminishing soil conditions for good sugarcane husbandry. Hence, the firm has to renew, recombine, redeploy, replicate, retrench and retire the dynamic capabilities in order to sustain full factory capacity utilization.

2.2.2 Finance Theories

Sheikh and Wang (2010) define Capital structure as the way a firm finances the business operation at optimum cost that will maximize the total value of the firm. A firm funds its operation with capital raised from varied sources. It consists of the relative proportion of debt and equity used to finance the enterprise. A mix of these various sources is generally referred to as capital structure (CS). The study of capital structure attempts to explain how listed firms utilize the mix of various forms of securities in order to finance investment. Awan and Amin (2014) identified two schools of thought on capital structure. The first school of thought on capital structure received much attention after Modigliani and Miller (1958) demonstrated in their paper that the choice between debt and equity does not have any material effects on the value of the firm. The second school of thought says that value of a firm is dependent of its capital structure. It means that a firm whatever the combination of securities; it has effect on its value. Capital structure decision consists of mix of debt and equity and this is a crucial decision because false decision may lead to financial distress and even to bankruptcy. The key issue here is the relationship between CS and firm's value. The firm's value is maximized when cost of capital is minimized. Therefore, they are inversely related. The capital structure is influenced by bankruptcy, taxes, agency costs, Corporate Governance, Ownership structure, macro-economic variables, direct costs and Government regulations.

Among the key factors the first is the benefits and cost associated with various financing choices. The trade -off between the benefits and cost leads to well-defined target debt ratio. The second is the existence of shocks that cause firms to deviate, at least temporarily, from their targets. The third is the presence of factors that prevent firms from immediately making CS changes that offset the effect of the shocks or financial distress that move them away from their targets.

The most commonly used finance theories are tradeoff, pecking order and free cash flow theories. The tradeoff theory says that firms seek debt levels that balance the tax advantages of additional debt against the costs of possible financial distress. The tradeoff theory predicts moderate borrowing by tax-paying firms. The pecking order theory says that the firm will borrow, rather than issuing equity, when internal cash flow is not sufficient to fund capital expenditures. Thus the amount of debt will reflect the firm's cumulative need for external funds. The free cash flow theory says that dangerously high debt levels will increase value, despite the threat of financial distress, when a firm's operating cash flow significantly exceeds its profitable investment opportunities. The free cash flow theory is designed for mature firms that are prone to overinvestment.

a) Trade-off Theory

One of the prominent Capital Structure theories is Trade Off theory. Trade-Off theory suggested by Myers (1984) emphasize a balance between tax saving arising from debt, decrease in agent cost and bankruptcy and financial distress costs. The Trade-Off theory is the oldest theory and is connected to the theory from Miller and Modigliani on capital structure that emphasize on optimal capital structure. Sheikh and Wang (2010) stated that Trade Off theory expected to choose a target capital structure that maximizes the firm value by minimizing the costs of prevailing market imperfections. The existence of an optimal level of debt implies that firms should appear to have a fairly stable level of debt which reflects an optimal target level (Optimal Debt/ Equity Ratio).

Nevertheless, when the debt levels deviate from this target, the management of a given firm should take actions in order to adjust leverage to the optimal level. The theory assumes each source of money has its own cost and return and these are associated with the firm's earning capacity and its business and insolvency risks (Awan & Amin, 2014). The companies which have high cost of financial distress would have less debt in their capital structure.

b) Pecking Order Theory

Trade Off theory did not consider the information asymmetry. This matter was later introduced by Pecking Order theory which discussed the conflict between insider and outsider due to information asymmetry. However, Pecking Order theory does not take into consideration optimal capital structure (or there is no target capital structure) (Luigi & Sorin, 2009; Mostafa & Boregowda, 2014). Companies maximize their value by choosing to finance new investments with cheapest available sources (Sheikh & Wang, 2010). For example, if internal funds are not enough to finance investment opportunities, firms may or may not acquire external financing, and if they do, they will choose among the different external finance sources in such a way as to minimize additional costs of asymmetric information (Luigi & Sorin, 2009). Pecking order theory argues that firms first choose to employ internal sources like reserves and retain earnings to finance a project instead of arranging new debt, or prefer debt to issuance of new shares. This theory assumed firms with more profitability will issue less debt and more likely finance their activities with internal funds.

c) Free Cash Flow Theory

According to the Free Cash Flow Theory of Jensen (1986), managers prefer to hold high cash level to enhance the volume of total assets in their control. Free cash flow is defined as the amount of cash flow in excess of that required for investments in profitable projects or those with positive net present values when discounted at the relevant cost of capital (Jensen, 1986). Free cash flow is internally generated capital, which can be used when companies are unable to obtain external funds (Myers & Majluf, 1984). The excess cash may also be used to balance price

fluctuation, which maintains the investment financing, particularly when the generated funds are in decline. Free cash flow may result in an increase or a decrease of the firm value depending on its utilization (McCabe & Yook, 1997). Free cash flow creates the desire among managers to use the available funds for various activities that may or may not contribute to an increase in the firm's value (Jensen, 1986). Jensen, further, states that high free cash flow motivates managers to engage themselves in unprofitable projects that may reduce asset utilization and use high free cash flow to benefit themselves by sacrificing the interest of the principal.

The Tradeoff, Pecking order and Free Cash Flow theories underpin objective four "To assess the influence of financial capability on competitive advantage of sugar companies in Western Kenya". The theories explain the Capital Structure, Debt – Equity ratio and Cash flow ratio which are used to analyze the financial capability or health of the company.

2.3 Conceptual Framework

This study looked at the Influence of Strategic Capabilities on Competitive Advantage of Sugar Companies in Western Kenya. The independent variables were human resource, technology, material and financial capabilities. The dependent variable was the competitive advantage and the moderating variable was the Government regulatory policy. The indicators for each variable are clearly shown in the conceptual framework under the respective variable. Figure 2.1 represents the relationship between the independent, moderating and dependent variables.

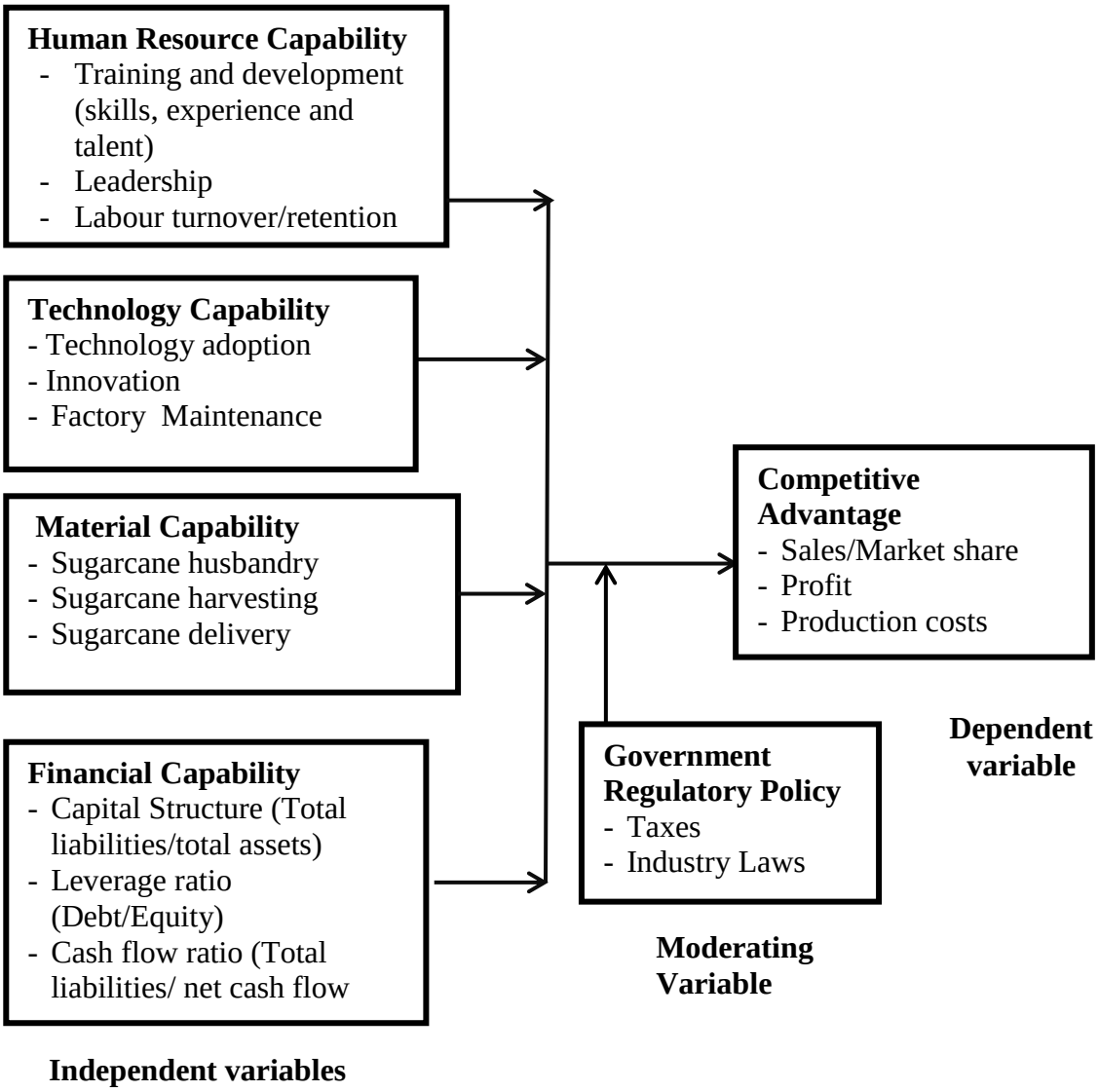

Figure 2.1: Conceptual Framework

2.4 Empirical Literature Review

Understanding sources of competitive advantage for firms has become a major area of research in the field of strategic management. Since the 1960's a single framework, traditionally known as SWOT analysis, has been dominantly present in this research area. This model suggests that firms which use their internal strengths in exploiting environmental opportunities and neutralizing external threats, while

avoiding internal weaknesses, are more likely to gain competitive advantage than other firms (Barney, 1995). The Resource Based View theory suggests that the resources possessed by a firm are the primary determinants of its performance, and these may contribute to a sustainable competitive advantage of the firm (Wernerfelt, 1984).

The success of any organization depends on its human resources, its technology and the adequacy and sustainability of material. Technology and material cannot operate in isolation; they need the human touch and hands to make an organization perform effectively and efficiently. It is against this background that workers are very critical to the success or failure of any organization and the Sugar industry is not left out (Bula, 2012). In addition, the primary objective of the firm is to maximize the shareholders wealth by selecting an appropriate mix of the sources of finance for a firm including retained earnings, proceeds from the issue of ordinary shares, preference shares and debt (Afza & Hussain, 2011). The strategic capabilities for the organization looked at in this study were human resource capability, technology capability, material capability and financial capability. The moderating variable was the government regulatory policy and the dependent variable was the competitive advantage.

2.4.1 Strategic Capabilities

Spanos and Lioukas (2001) listed types of strategic capabilities that can be identified and are common to businesses: technological, product development, production process, manufacturing, and logistics capabilities; production efficiency; market sensing, channel and customer linking, and technology-monitoring capabilities; marketing capabilities, such as skills in segmentation, targeting, pricing, and advertising. Aldridge (2007) defines Strategic capability as the ability to develop soundly based strategies and the ability to apply strategic thinking and manage an organization strategically. Johnson, Whittington, and Scholes (2011) define Strategic Capability as the adequacy and suitability of the resources and competences of an organization for it to survive and prosper. Capabilities are those things that the company can do well repetitively such as production, logistics, daily human resource

management (Smith, 2008). According to Day (1994) as cited by Almeida, Lisboa, Augusto, and Batista (2013) capabilities are a complex bundle of skills and accumulated knowledge that enable firms to coordinate activities and make use of their assets to create economic value and sustain competitive advantage. Components of Strategic capabilities are resources and competencies. Resources are the assets that organizations have and competencies are the ways those assets are deployed effectively, that is, 'what the organization does well' (Johnson, Scholes, & Whittington, 2011). Competence means a skill and the standard of performance, whilst competency refers to behavior by which it is achieved. The dependence of assets, capabilities, competencies and competitive advantage are shown below:

Resources→ Competencies → Capabilities →Competitive Advantage

The human resources in this study are managers and employees and their competencies are experience, skills, knowledge and building relationships which combine to produce human resource capability. Material (sugarcane) is handled in such a way as to consistently achieve full utilization of plant giving rise to material capability. Similarly, machines (Technology) are handled in such a way that plant efficiency and productivity is increased giving rise to technology capability. Finally, financial resources managed and deployed strategically giving rise to financial capability. These strategic capabilities of a firm play a crucial role as a source of competitive advantage

2.4.2 Human Resource Capability

The Human Resource Capability of an organization consists of reliable access to the required people (quantity) with the skills, abilities, attributes and competencies (quality) that the organization needs to meet its purpose and deliver its outputs, in accordance with its strategic goals (State Services Commission, 1999). Hiring competent employees and developing those competencies through effective human resource practices, underpins organizational capability (Ulrich & Lake, 1991). Theorists focus on the need to develop a pool of human capital that has either higher levels of skills or achieving a better alignment between the skills represented in the firm and those required by its strategic intent (Wricht, Dunford, & Snell, 2001). A

pool of human capital refers to the stock of employee skills that exist within a firm at any given point in time. Organization for Economic Co-Operation and Development (2001) define human capital as the knowledge, skills, competencies, and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being. People possess knowledge, skills and abilities (KSAs) that are of economic value to the firm and hence a firm should invest to increase these KSAs.

Human resources are one of the most valuable resources of an organization and indeed an organization is nothing without human resources (Wesonga, Kombo, Murumba, & Makworo, 2011). Collins (2009) avers that no company can consistently grow revenues faster than its ability to get enough of the right people to implement that growth and still become a great company. Boxall (1998) notes that the fundamental priority of HR strategy in a firm is to secure and maintain the kind of human resources that are necessary for the firm's viability and how to develop the resources for sustained competitive advantage. Building on the resource-based (Barney, 1991; Wernerfelt, 1984) and knowledge based view (Grant, 1996), the learning approach uses organizational learning theories to provide insight into how organizations can acquire, interpret, distribute, and incorporate strategically important new knowledge to facilitate and continuously re-create competitive advantage. Park, Gardner, and Wright (2004) noted that consistent utilization of HR capabilities is the most consistent step toward developing and maintaining competitive advantage.

Training of employees is one of the factors contributing to human resource capability. Edralin (2004) defines organizational training as a well thought of set of activities aimed at facilitating learning of knowledge, attitude and skills among its' employees to improve their current job performance and contribute to the achievement of organizational goals. Training increases organizational commitment, improves job performance, reduces employee turnover, help retain competent and efficient workforce, develops creativity and problem solving skills and helps reduce costs. According to Bontis and Serenko (2007) employee capabilities depend on their training and development as well as job satisfaction levels. Job satisfaction in turn is affected by training and development, pay satisfaction, supervisor satisfaction and

job security. These relationships are moderated by employee perceptions of human capital management practices. Deloitte Development LLC. (2014) notes that critical new skills are scarce and their uneven distribution around the world is forcing companies to innovative new ways to find people, develop capabilities, and share expertise.

Leadership is another factor that contributes to human resource capability. Leadership is a process whereby an individual influences a group of individuals to achieve a common goal. Leadership style is the manner and approach of providing direction, implementing plans, and motivating people. Wricht, Dunford, and Snell (2001) state that knowledge, skills and ability of employees, employee relation and people management practices such as staffing, training, rewards, appraisal, work design, participation, recognition and communication affect the human resource capability. Firms may have access to valuable human capital but either through the poor design of work or the mismanagement of people may not adequately deploy it to achieve strategic impact. Nowadays senior leaders are facing tough decisions that have far reaching consequences; they are looking to grow and expand by improving the organization's leadership capabilities, thinking and planning (Zoubi, 2012). Competent leaders with deep visionary exerting their abilities to bring out capabilities in others and realizing their utmost potential is one sure way of measuring efficient leadership. Successful companies work hard to execute the strategies that lead for good leadership development. They create enterprise wide standards, practices, and metrics for recruiting talented leadership.

Additionally, labour turnover affect the pool of human resource capability. Labour turnover is expressed as the number of employees who left the organization within the year divided by the total number of employees at the beginning of the same year times one hundred percent. Productivity of an organization depends on the skills or expertise of its workforce. A skilled worker may be an asset for any organization. If a skilled person leaves an organization the effects will be very high where as in case of a semi-skilled or un-skilled person the effect will be less. Bula (2012) found out that labour turnover led to low productivity, increased costs of recruitment of new personnel, high maintenance and operating costs as firms resort to using

inexperienced staff and paying more in overtime because the remaining workers have to go an extra mile to cover for their colleagues who have left working in these organizations. The indicators of human resource capability looked at in this study were: training and development, leadership and labour turnover.

2.4.3 Technology Capability

Oruwari, Jev, and Owei (2002) define technology capability as the capability needed to acquire, assimilate, use, adapt, change or create technology. Kim (2002) on the other hand refers to technological capabilities as the ability to make effective use of technological knowledge in production, engineering, and innovation in order to sustain competitiveness in price and quality. Such capability enables a firm to assimilate, use, adapt, and change existing technologies. It also enables a firm to create new technologies and to develop new products and processes in response to the changing economic environment. Of all the factors contributing to achieving better competitive position, technological developments play the most prominent role (Khalaji, 2014). Academic research on technology capabilities of the firm has led to a better understanding of the technical change process.

To continue operating in a chosen environment, the firm must produce some different solution, which is recognized as such by the consumer. Technological learning is increasingly based on a combination of internal and external learning: internal learning comes about by the internal development of new products and through internal Research and Development (R&D) processes, external learning thrives on technology acquired through technology alliances. According to Kotha and Swamidass (1998) investments are made each year in advanced manufacturing technology because practitioners perceive a number of benefits attributed directly to their use namely reduced cycle-time, market share growth, progress towards zero-defects, return on investment and focused production.

Firms invest heavily in the building of technology capabilities that offer the skills and abilities to deploy and utilize various resources and know-how. According to Afuah (2002) and Zhou and Wu (2010) when a firm builds its technology capability, it invests substantial resources in research and development (R&D), which involves the discovery of new products, the accumulation of knowledge stores, and the training of technical personnel. A firm's technology capability is developed over time and accumulated through its past experience.

It is widely recognized in the theoretical literature that firms are required to use both internal and external sources of innovation in order to achieve competitive advantage. Cabral (2010) suggests that the sustainability of competitive advantage will depend on the extent to which the firm is able to develop capabilities for innovation. Sustainability of innovations reflects not only the economic aspect, but also the social and environmental concerns embedded on innovation, whilst innovation capability indicates the sources of knowledge to achieve that sustainability. Baark, Lau, Lo, and Sharif (2011) survey of 200 manufacturing firms in Hong Kong and the Pearl River Delta region found out that internal sources constitute a major source of innovations that firms use to build technological innovation capabilities, although external sources can be fruitful when mediated by proficiency in resource allocation, marketing, and organization. The technology development capability of the firm leads to technical change that allows for a successful innovation process (Zawislak, Alves, Gamarra, Barbieux, & Reichert, 2012).

2.4.4 Material Capability

Material capability may be defined as the ability to plan and to continuously receive enough material for full factory capacity utilization over an extended period of time (Zimmermann & Zeddies, 2002). This definition may be extended to refer to the planning of sugarcane growing, harvesting and transport to meet the factory requirement over an extended period that is material capability. Sugarcane which is the main material requirement in the sugar industry is determined by the sugarcane husbandry practices, harvesting practices and delivery practices. A substantial part

of the sugar production costs results from the material costs, which amount to 40 to 70 % of the whole production costs and range from 120 DM per ton of sugar in Brazil to around 720 DM in Germany (Zimmermann & Zeddies, 2002). A well-integrated supply chain can generate economies of scale and scope and therefore increase the operating efficiency and profitability of all actors in the supply chain.

Sugarcane is a labour intensive type of crop as almost half of the costs are spent on labour. Machine labour is ranked second while fertilizers manure and seed have statistically significant demands on the farmer's coffers. The rate of return on sugarcane is determined by the husbandry practice and timeliness of input application on the crop. In sugar growing country settings, farmers and processors establish interlinked contract and this enables farmers to access credit, inputs and guaranteed purchases. Such agreements benefit the processing companies through guaranteeing higher quality and quantity of sugarcane and timely delivery. However, such agreements call for efficient co-ordination in order to manage the quality and quantity of sugarcane both being delivered to the mills and in the field in order to avoid lack of sugarcane or sugarcane glut and downstream chain partners for sugar distribution. The sugarcane supplier development program leads to continuous improvement in the performance of sugarcane supply. The continuous increase in the importance of contract farming has largely been due to the changing global environment, where competition, consumer demands, technology, government policies and agricultural systems have been taking the centre stage (Kokeyo, 2013).

Government exercises some control on the supply chain and hence the sugar firm must develop its supply chain strategies to stay competitive in the changing environment (Chidoko & Chimwai, 2011). Chidoko and Chimwai continue that if farmers do not receive good extension services they are likely to incur very high costs of production and lower output per unit of land area. Sugar yield per ton sugarcane is dependent on mill efficiencies and sugarcane quality. Sugarcane quality is influenced by good agricultural practices (sugarcane husbandry and harvesting practices), timely delivery to sugar mills and weather conditions aside from the application of the right quantity of fertilizer and pest/disease infestations. The above conditions contribute toward the competitive advantage of the firm. The supply of

sugarcane to the factory is affected by sugarcane production costs, funding of the industry, research and extension services to support the industry and tons sugarcane per hectare. A study carried out on sugarcane farming in Lake Victoria basin by Waswa, Onyango, and Mcharo (2012) found out that yield appears to be a key determinant of gross income to farmers though the net income was statistically significantly depressed by company-driven deductions for which farmers had no control. Hence availability of sugarcane is determined by factors that motivate or demotivate the small scale growers who supply the bulk of sugarcane to millers in Kenya.

The sugarcane harvesting consists of cutting the sugarcane stalk (near the ground) and cleaning the vegetal excess (trash). Manual sugarcane harvesting consists of human being cutting the sugarcane stalk utilizing a "cane knife". The sugarcane may be harvested green or burnt. Sugarcane harvest management frequently leads to co-ordination problems between the different operations being carried out and the different stakeholders who are involved, such as cutters, growers, service providers and millers (Le Gal, & Requis, 2002). Sugarcane transportation operation consists of taking the harvested sugarcane to the sugar mill, where it will be processed.

According to Wasike (2001) development and maintenance of physical infrastructure are prerequisites for rapid economic growth and poverty reduction, as they influence production costs, employment creation, access to markets, and investment. The Sugar Industry in Kenya faces challenges of poor or non- existent transport and road infrastructure (Odek, Kegode, & Ochola, 2003). Poor road network infrastructure lead to high fleet maintenance costs and less fleet productivity which results in transporters demanding higher transportation rates. High transportation costs increase the cost of sugarcane production and hence uncompetitive sugar market price. Proper planning and agronomic practices of sugarcane production, controlled sugarcane harvesting and well managed sugarcane transport system ensures consistent factory full capacity utilization. This results in adequate amount of sugarcane delivery to the factory eliminating periods of sugarcane scarcity and glut. This result in material capability, optimal cash generation and enhances the competitive advantage of the sugar company.

2.4.5 Financial Capability

Financial capability was identified by Oliver, Howard and Goussevskaia (2008) as a strong fit in corporate level strategy. Various researchers on strategy implementation recognize the need for financial resources. It is however inadequately articulated whether the strategist should assess the financial capability to implement strategic plans before formulating the strategy. Many studies have only focused on financial capacity as a dependent variable to strategic elements and less as a determining factor to the strategic planning process (Bagire, &Namada, 2013). Achieving financial outcomes requires an organization to accurately balance its expenditure within the limitations of its income stream. Effective governance and financial operational management – to forecast income and expenditure and monitor and highlight emerging financial issues - is essential. Financial plans and budgets must be flexible enough to allow for spending patterns to be adjusted as needed and be fully aligned to the organization's strategic and service planning.

Memba and Nyanumba, (2013) established that the main causes of financial distress in firms are variables within the control of the firms as compared to factors external to the firms. Financial Structure (Total liabilities/total assets), leverage ratio (Debt/Equity), cash flow ratio (Total liabilities/ net cash flow from operations) affect the financial performance of the firm and can be used as indicators of financial capability of a firm. Financial capability is the opposite of financial distress. Adeyemi (2011) as cited by Memba and Nyanumba (2013) defines financial distress as a situation in which an institution is having operational, managerial and financial difficulties.

According to Chartered Institute of Management Accountants (2009) magazine, enlightened companies are transforming their finance functions to be more efficient and to better support decision making by developing their finance professionals. The magazine continues that developing people with the combination of finance competencies and business capabilities required for this important role is a challenge. Deloitte study of over 1,100 businesses across the globe found that financial

management was evolving from an uninspiring, albeit necessary, function of doing business to one of the most promising levers of business transformation. In fact, without support from the finance function in improving strategy and operations, companies face an uphill and often losing battle in transforming their business. The finance masters have not only invested in strong core finance capabilities, they have gone further by building much better business capabilities to support business improvement and transformation (Chartered Institute of Management Accountants, 2009).

A firm's capital structure simply refers to its combination of debt and equity (Calabrese, 2011). The optimum capital structure may be defined as combination of both debt and equity that leads to maximum value of the firm and overall cost of capital being minimized. An appropriate capital structure is a critical decision for any business organization because of the impact such a decision has on an organization's ability to deal with its competitive environment. The prevailing capital structure is one of the factors affecting the financial capability of a firm and is tightly related to the ability of firms to fulfill the needs of various stakeholders. Management of debt performs a very vital part in the performance of firms in sugar industry. Efficient management of debt ensures that a firm has enough cash to pay all their suppliers on time. Suppliers of raw material and other supplies are paid on time and hence enable the organization to achieve its goals.

The ratio of the fixed- charge sources of funds, such as debt and preference shares to owners' equity in the capital structure is described as financial leverage or gearing (Pandey, 2004). Whenever an entity's assets exceed its equity base, its balance sheet is said to be leveraged. Financial leverage is a measure of how much a firm uses equity and debt to finance its assets. As debt increases, financial leverage increases. It has been seen in different studies that financial leverage has the relationship with firm's financial performance (Rehman, 2013). Leverage sometimes referred to as gearing allows an institution to increase the potential gains or losses on a position or investment beyond what would be possible through a direct investment of its own funds. Most often it involves buying more of an asset by using borrowed funds, with the belief that the income from the asset or asset price appreciation will be more than

the cost of borrowing. While leverage magnifies profits when the returns from the asset more than offset the costs of borrowing, losses are magnified when the opposite is true. Excessive leverage is a common denominator in most economic crises. A corporation that borrows too much money might face bankruptcy or default during a business downturn, while a less-leveraged corporation might survive.

When it comes to liquidity analysis, cash flow information is more reliable than balance sheet or income statement information. According to Everingham, Kleynhans, and Posthumus (2003) operating cash flow ratios are indicators of performance. They determine the extent to which a company has generated sufficient funds to repay loans; to maintain operating capabilities; to pay dividends and to make new investments without using external financing. Cash flow ratios allow an analyst to examine a company's financial health, and how the company is managing its operations, investment and financing cash flows (Palepu, Healy, & Bernard, 2000). Cash flow from Operations is generated from the organization's normal activities. Cash flow related to investing reflect how an organization's cash is used to provide securities and Cash flow related to financing are amount received by borrowing or from issuing stock as well as payment made to retire debt, repurchase stock and provide dividends to owners, example increasing its financing through debt and equity.

Cash is the most important factor that can affect the profitability and survival of an organization. Positive cash flow from operations indicates that a company's liquid assets are increasing enabling it to settle debt, relevant in its business, return money to shareholders, pay expenses and provide a buffer against future financial challenges. Negative cash flow indicates that a company's liquid assets are decreasing. Balance sheet data are static; measuring a single point in time; while the income statement contains many arbitrary noncash allocations such as pension contributions, depreciation and amortization. In contrast, the cash flow statement records the changes in the other statements and nets out the bookkeeping artifice, focusing on what shareholders really care about: cash available for operations and investments.

Mills and Yamamura (1998) state that the cash flow ratios most useful fall into two general categories: ratios to test for solvency and liquidity and those that indicate the viability of a company as a going concern. In the first, liquidity indicators, the most useful ratios are operating cash flow (OCF), funds flow coverage (FFC), cash interest coverage (CIC) and cash debt coverage (CDC). In the second category, ratios used to assess a company's strength on an ongoing basis are total free cash (TFC), cash flow adequacy (CFA), cash to capital expenditures and cash to total debt. Traditional working capital ratios indicate how much cash the company had available on a single date in the past. Cash flow ratios, on the other hand, test how much cash was generated over a period of time and compare that to near-term obligations, giving a dynamic picture of what resources the company can muster to meet its commitments. Cash Flow Ratio measures the company's ability to generate resources to meet its current liabilities.

2.4.6 Government Regulatory Policy

A policy is a plan or course of action, as of a government, political party, or business, intended to influence and determine decisions, actions, and other matters. Policies for agriculture consist of government decisions that influence the level and stability of input and output prices, public investments affecting agricultural production, costs and revenues and allocation of resources (Alila & Atieno, 2006). Dollery and Worthington (1996) state that: public policymakers have long enjoyed the benefits of the theory of market failure. This theory facilitates the identification of undesirable market outcomes and assists in the prescription and implementation of corrective government intervention. For example, taxing the commodity raises its price above the level that would have been attained in a competitive market and subsidizing the commodity lowers its price below the market level. The policy formulation environment for the Kenya sugar sub-sector has not been favourable to speedy resolution of the problems identified in many stakeholders' forums.

Regulations can be described using many different labels: constitutions, statutes, legislation, standards or rules (Coglianese, 2012). A regulation is a rule or law designed to control or govern conduct. Regulation creates limits, constrains a right, creates or limits a duty, or allocates a responsibility. Regulation is necessary because social and private costs and benefits, and hence incentives, are misaligned. While no regulatory system is perfect, economies with well-designed regulations can perform far better than those with inadequate regulation. Regulations can both enhance markets and protect those who might otherwise suffer in unregulated markets (Stiglitz, 2009). Regulation is also subject to "political capture"; indeed, political capture may be a much greater threat than capture by producer groups outside of the political system. Where political capture occurs, the regulatory goals are distorted to pursue political ends (Jalilian, Kirkpatrick, & Parker, 2006). The outcome of a regulatory system can be assessed against the yardsticks of effectiveness and efficiency. Effective regulation achieves the goals set down by the government for the regulatory authority. Efficient regulation achieves the goals at minimum economic costs.

Taxes levied and labour laws play an important role in the performance of the sugar industry. Lymer and Oats (2009) as cited by Palil (2010) define tax as 'a compulsory levy, imposed by government or other tax raising body, on income, expenditure, or capital assets, for which the taxpayer receives nothing specific in return. The main objective of imposing certain taxes on the public is to generate revenues for the government for public expenditure. Taxes are also expected to ensure economic goals through the ability of the local goods competing with the imported goods. Taxes can be classified into two main types: direct and indirect taxes. Direct taxes mean the burden (incidence) of tax is borne entirely by the entity that pays it, and cannot be passed on to another entity; for example, corporation tax and individual income tax.

Indirect taxes are typically the charges that are levied on goods and services (consumptions). The indirect tax raises the price of the goods and the customer purchase by paying more for that product. Government policy, taxation and levies as well as middlemen costs such as Out- grower Company deductions contribute towards raising the domestic cost of production of sugar in Kenya (Odek *et al*., 2003). Monitoring African Food and Agricultural Policies (2013) noted sugar in Kenya is not classified as a basic food, so it is subject to a 16 percent VAT. GOK has imposed 4% Sugar Development Levy (SDL) on both domestic and imported sugar up to 2015.

The fundamental principle of labour legislation is to guarantee the weaker party in the labour market protection and basic rights in order to be in a fair position when negotiating salary and working conditions. The International Labour Organization (ILO) entire standard-setting activity aims to point national labour law towards the goal of promoting social justice through rules that protect dignity at work. The Labour Laws are also influenced by important human rights and the conventions and standards that have emerged from the United Nations. These include right to work of one's choice, right against discrimination, prohibition of child labour, just and humane conditions of work, social security, protection of wages, redress of grievances, right to organize and form trade unions, collective bargaining and participation in management. For example, it is well established in the international literature that minimum wage increases compress the wages distribution and firms respond to these higher labour costs by reducing employment, reducing profits, or raising prices (Lemos, 2004).

The Kenya Constitution of 2010 enshrines several rights including the freedom of association, independence of social partners, a fair remuneration, reasonable working conditions and the right to strike. Further the constitution enshrines several labour laws such as: The Employment Act of 2007; The Labour Institutions Act of 2007; The Labour Relations Act of 2007; The Occupational Health and Safety Act of 2007; The National Gender and Equality Commission Act of 2011 and The National Social Security Fund Act of 2013.

2.4.7 Competitive Advantage

A firm has a competitive advantage when it is able to create more economic value than its rivals (Rothaermel, 2008). The three traditional means of gaining competitive advantage are financial, strategic and technological capabilities (Ulrich & Lake, 1991). The authors, further state that organizational capability which is composed of financial, marketing and technological capabilities leads to competitive advantage. Rumelt (2003) cites the definition of competitive advantage by various authors as follows: According to Porter (1980), competitive advantage means having low costs, differentiation advantage, or a successful focus strategy; Peteraf (1993) defines competitive advantage as "sustained above normal returns"; To Barney (2002) a firm experiences competitive advantage when its actions in an industry or market create economic value and when few competing firms are engaging in similar actions. A firm has a competitive advantage when it has ability to do better than comparable firms in productivity, sales, market shares, or profitability (Lall, 2001).

A company is said to have a competitive advantage over its rivals when its profitability is greater than the average profitability of all other companies competing for the same set of customers. Competitive advantage is only achieved if a company manages to sustain its edge over its rivals over time. The higher its profitability relative to rivals, the greater its competitive advantage will be. A firm's competitive advantage evolves from the resources available to the firm. The success of a competitive firm can be measured by both objective and subjective criteria. Objective criteria include return on investment, market share, profit and sales revenue, while subjective criteria include enhanced reputation with customers, suppliers, and competitors, and improved quality of delivered services (Barney, 2002).

The international competitive advantage of sugar industry expresses the ability of domestic firms to compete with foreign firms. Technology attributes of purchased inputs, product differentiation, production economies and external factors are the primary source of competitive advantage. Each of these factors affects a firm's costs and degree to which it can differentiate its products. These factors also affect profits and market share. Low Product pricing, sales/Market share, profitability ratio (Net profit/ net sales) play an important role in the competitive advantage of a firm.

2.4.8 Human Resource Capability and Competitive Advantage of Sugar Companies

Nguyen, Neck, and Nguyen (2009) researched on the relationship between Knowledge Management (KM) and Sustaining Organizational Competitive Advantage in the construction industry in Vietnam basing on Resource based theory. Three main constructs were technical knowledge management capability, social knowledge management capability and competitive advantage (CA) and were measured using seven point Likert type scales. Multiple linear regression analysis was performed and the findings showed that cultural and technological KM dimensions made a unique statistically significant contribution to a firm's CA. The study recommends for further research to be conducted in other sectors.

Zoubi (2012) study found out that leadership competences had a statistically significant impact at level of $p \leq 0.05$ on competitive advantage in the Jordan Telecommunications industry. A simple random sampling technique was used to select two working companies out of three. Data was collected through a five-point weighted Likert questionnaire and analyzed in order to fully investigate the effect of leadership competencies on competitive advantage. Descriptive analysis frequencies, means and standard deviation were calculated while one way ANOVA was used to test the hypothesis, and finally simple regression analysis was calculated to assess the impact of leadership competences on competitive advantage in the JTI.

The research on Achieving competitive advantage through empowering employees by Kahreh, Ahmadi, and Hashemi (2011) established that internal processes largely rely on how capabilities are harnessed for competitive advantage. Data was gathered from 55 academicians and experts in the field of financial services by means of a questionnaire. Statistical analysis showed that empowering employees is positively affected on the three main dimensions of competitive advantage (responsiveness, innovation, and efficiency) for the organizations in the financial services sector in Iran.

In the Kenyan context, Bula (2012) researched on the influence of Labour Turnover in the Sugar Industry in Kenya and found out that labour turnover was spread throughout the year and that it frustrated and impacted negatively on the sugar firms. The study showed that employee commitment is not an independent factor, but it depends on other factors such as salary, promotion, training, leadership style and other human resource practices. Salary was a major factor causing labour turnover followed by training, promotion, performance appraisal and work condition. A sample of three sugar firms was used and 120 questionnaires were distributed with a responds rate of 94.17%.

Mutunga, Minja, and Gachanja (2014) found out that Executive and Management competencies at innovation are critical success factors in food and beverage companies in Kenya. The population of the study consisted of 138 food and beverage manufacturing firms in Kenya registered with the Kenya Association of Manufacturers (KAM) by 2011 from which 95 companies located in Nairobi, Mombasa and their environs were chosen as the sample. A questionnaire on a 5 point Likert type scale was sent to all the 95 members where only one executive represented each company and 32 questionnaires were received back.

2.4.9 Technology Capability and Competitive Advantage of Sugar Companies

Hermelo and Vassolo (2007) study indicated that financial resources, investment in newer technology and diversification by geographic markets were the factors explaining the firm's growth on the small and medium sized firms of Tucumán, Argentina. The survey design was used and questionnaires were mailed to 87 firms and usable responses were collected from 34 firms. The sample included firms from the sugar processing, textiles, grain mills, food and beverages, dairy products, paper, meat processing, citrus processing, truck assembling and machinery manufacturing. This information was complemented with information from the National Economic Census of 1993-1994. Regression analysis was used to analyze the data.

Amaeshi, Okorocha, and Akujor (2015) looked at Effects of Production Facilities Maintenance on Competitive Advantage in Nigeria and established that it is more costly to carry out maintenance on a failed system than to prevent the system from failing, owing to repair cost, downtime of equipment, loss of production, customers, market and profit. The study results showed that maintenance of production facilities can improve competitive advantage of manufacturing firms. The study adopted the descriptive survey method and five points Likert scale questionnaire were used to obtain data from 30 respondents. Integration of maintenance function into production and manufacturing operations and its efficient and effective implementation is critical for a manufacturing firm to enjoy competitive advantage.

Maletic, Maletic, Al-Najjar, and Gomiscek (2014) research on the role of maintenance in improving company's competitiveness and profitability in Slovenian textile company established that around 3 % of additional profit could be generated if all unplanned stoppages and loss of quality due to decrease in the productivity would be prevented. The findings represent the economic result of an effective maintenance due to its impact on productivity and profitability of a manufacturing process. A gap analysis was used in order to address the research problem and to identify potential improvement areas. A five point Likert scale questionnaire was used to gather the required information.

Khalaji (2014) research on The Analysis of Technological Capabilities in Sugarcane Industries in India established that of all the factors contributing to achieving better competitive position, technological developments played the most prominent role. Implementation and absorption of technology had a score of 39.69 % and technology strategy had a score of 52.71 %. A survey method was used and statistical population was composed of 32 senior experts having at least 6 years of job experience at technology units of Salman Farsi Company.

In the Kenyan context, Bulitia, Obonyo, and Ojera (2014) study on Moderating Effect of Technology Innovation on the Human Resource Management Practices and Firm Performance established that 82% of the respondents perceived that the firm's improvement was attributed to technological innovation. Respondents from both indigenous and multinational firms affirmed that good performance could be associated with technological improvement with a mean score of 4.56 and 4.05 out of the best score of 5.0 respectively. A census survey of medium and large manufacturing firms involved in production and marketing of edible oils, soaps and detergents, beverages or sugar registered by the Kenya Association of Manufacturers directory 2012 was used. Data was collected through self-administered questionnaires sent out to 68 firms, of which 50 responded.

2.4.10 Material Capability and Competitive Advantage of Sugar Companies

Unam (2012) study on the Nigerian Bottling Company concluded that for manufacturing industries to experience remarkable success in their performance, priority must be given to Materials Management as a total concept. Data was collected through a structured questionnaire, supported by interview. Using Chi-square ($\chi 2$) test of independence, the results provided evidence of a positive statistically significant relationship between efficient Materials Management and firm success. The implication of this is that through efficient management of materials, a manufacturing firm can achieve statistically significant cost saving, improvement in production efficiency, and increase in profitability.

Miguel and Brito (2011) found out that there was a positive relationship between Supply Chain Management (SCM) implementation and operational performance in terms of cost, flexibility, quality and delivery. A convenience sample of Brazilian companies was used and a survey research design was used to collect data. The respondents were asked to evaluate their performance compared to their competitors on a five point Likert scale. 140 responses were obtained, 103 were considered valid and complete. Answers of the four groups were compared using ANOVA. The findings were that SCM can be thought of as a source of competitive advantage, reducing costs and improving flexibility, delivery and quality simultaneously.

Chellaswamy and Revathi (2013) established that the relationship between materials and other independent variables i.e. the Capital, Labour and Sales contributed 99 percent on dependent variable of the companies which started after green revolution period. 34 Indian sugar companies having financial data available for a continuous period of 10 years from 2001-2002 to 2010-2011 were included in the study. Multiple Regression analysis was used to ascertain relationship of variables at 5% level of significance. Material accounts for nearly 80 percent of cost of production and, therefore, proper planning, purchasing, handling and accounting of material are of great importance. Researchers recommend further research to be carried out to find out the influence of political and legal framework on growth of the sugar industry in India.

Akpan, Akpan, Udoka, and John (2013) research looked at factors which affect the physical capacity utilization of the Sugar Industry in Nigeria. The study analyzed the physical capacity utilization rates in the sugar industry in the period 1970 to 2010. Empirical results revealed that the physical capacity utilization rates in the sugar industry was influenced by the industry's labour productivity, per capita real GDP, sugar import, federal government expenditure on the sugar industry and the quantity of domestic sugarcane used in sugar production. The result of the regression analysis showed that Capacity utilization has an important bearing on the financial performance of any firm.

Bushuru, Namusonge, Oteki, and Wandera (2014) study sought to evaluate the effect of technology adoption, early supplier involvement, low-cost sourcing and backward integration on supply chain performance in the public sugar sector. Purposive sampling was used to select a target population of 60 respondents. Questionnaires were used as the main data collection instruments. Descriptive and inferential statistics were used in data analysis. From their findings, technology adoption is critical in improving effectiveness of the supply chain function and early suppliers' involvement was found to be positively correlated to supply chain performance.

2.4.11 Financial Capability and Competitive Advantage of Sugar Companies

Suryani, Iramani and Awati (2016) objective was to identify financial capability within Small and Medium Enterprises (SMEs) in Indonesia and design application tools to facilitate their financial management. Questionnaires were used to measure SME business performance and financial capability. The study found out that growth in sales and profit growth was positively correlated with financial capability. The study concluded that business decisions, especially regarding funding, profits, and investments can be optimized if these aspects are supported by sufficient financial capabilities.

Kochhar (1997) looked at the role of financial management in generating superior performance for a firm and concluded that to ensure sustained competitive advantage, capabilities concerning the financing structure of a firm are necessary to extract rents from idiosyncratic resources. Firms cannot earn returns inherent in their resources if the capital structure is not consistent with strategy. Consequently, it is not sufficient for a firm to possess resources that generate sustained competitive advantages; its financial policies are important in realizing the potential rents.

Shubita and Alsawalhah (2012) studied the relationship between capital structure and profitability of 39 Industrial Jordanian companies during a six-year period (2004-2009). Correlations and multiple regression analysis of data revealed significantly negative relation between short debt to total assets and profitability and total debt to total assets and profitability. This suggests that profitable firms depend more on equity as their main financing option. The higher the debt ratio, the greater the risk

and thus, the higher the interest rate. The capital structure decision is crucial because of the impact such a decision has on an organization's ability to deal with its competitive environment.

Velnampy and Niresh (2012) studied the relationship between capital structure and profitability of ten Srilankan banks over the 8 year period from 2002 to 2009. The data was analyzed by using descriptive statistics and correlation analysis. Results of the analysis showed that there is a negative association between capital structure and profitability. The researchers established that the debt/equity ratio is safe up to 2.

Abubakar (2015) looked at the relationship between financial leverage and financial performance with specific reference to how debt- equity ratio and debt ratio affect return on equity of 11 deposit money banks in Nigeria. The study covered 9 years from 2005 to 2013 and adopted both descriptive and correlation analysis. The results showed a significant negative relationship between debt-equity ratio and financial performance. A debt- equity value of 2 according to Velnampy and Niresh (2012) is considered normal and safe as cited by Abubakar.

Rehman (2013) research showed negative relationship of debt equity ratio with earning per share, net profit margin and return on equity. The objective of the study was to investigate the influence of financial leverage on financial performance by taking evidence from the period 2006-2011 for 35 listed sugar companies of Pakistan. The dependent variable was the financial performance while the independent variable was the financial leverage which was measured by using debt to equity ratio. Descriptive statistics and correlation analysis were used.

Amuzu (2010) looked at cash flow ratio as a measure of performance of listed Companies in Ghana. The research project relied on a qualitative methodology and findings were that Cash Flow Ratios are better tools in assessing a company's financial performance and a credible indicator on the strength, or riskiness, of a particular company. Cash Flow Statements and Ratios should be used in the decision for investments as this would dictate activity. Cash Flow is the lifeblood of any corporate. If, the inward flow is less than the outflow then the sustainment of corporate life will be in peril.

The ratio of total liabilities to net cash from operations estimates the number of years the firm will take to repay debt at the current level of net cash from operations and is called debt cover. Giacomino and Mielke (1993) performed an empirical analysis for the periods 1986 to 1988 of the US industries chosen amongst the Fortune 500. The three-year averages were: chemical industry, 5.62 years; food industry, 6.06 years and for electronic industry 6.5 years. Jooste (1999) did a similar evaluation for companies in the same industries in South Africa (SA). The industry ratios were calculated over a three-year period 1994 to 1996 and results were 2.52 years for chemical industry, 3.27 years food industry and 3.18 years for electronics industry.

2.4.12 Government Regulatory Policy and Competitive Advantage of Sugar Companies

Arjchariyaartong (2006) found out that the analysis of problems and obstructions of the sugar industry in Thailand was divided into economic problems, processing problems, market problems, regulation problems, and management problems. Both the primary data for the crop year of 2003/04 and secondary data from 1982 to 2006 were used. Sample selection employed purposive sampling, stratified sampling and random sampling methods.

Ellis and Singh (2010) compared the policy framework and economic performance of four product markets (sugar, cement, beer and mobile phone services) across five countries (Zambia, Kenya, Ghana, Vietnam and Bangladesh) through primary research conducted in each country. The state is heavily involved in the sugar industry in the three of the case study countries, Kenya, Vietnam and Bangladesh. The state led sugar industries exhibit low productivity and poor performance. They required substantial levels of costly government subsidization, which is unlikely to be sustainable in the long run, thus jeopardizing many livelihoods. In stark contrast, privately owned sugar producing companies in Zambia, produce the highest amounts of sugar per hectare, (three times higher than Vietnam) and are very profitable and internationally competitive. This suggests that private sector incentives and management expertise are important for creating a successful, efficient and internationally competitive sugar industry.

Emam and Musa (2010) measured the competitiveness of sugarcane in Kenana Sugar Company covering the seasons 2004/05, 2005/06, and 2006/07. The study revealed that, sugar production appeared highly competitive in the national and international level under study period and government policies are taxing sugarcane production. The study depended mainly on secondary data. The study recommended that, the government should exempt sugarcane production from taxes, induce incentives to encourage sugar industry production and secure sustainable and steadiness foreign exchange.

Ogolla (2012) employed a comparative case study of smallholder farmers in the sugar belt region of Kenya. The purpose of the study was to examine how privatization and liberalization has affected farmers. This was in response to the Kenyan government adopting privatization and liberalization policies. A combination of secondary and primary data was used. Findings revealed that the relevance of neo-patrimonialism in the implementation of Structural Adjustment Programmes is difficult to ignore as it intricately defines development outcomes for smallholder farmers in the sugar-subsector. With the withdrawal of government support inform of subsidies and tariffs, competition has driven and shaped the markets rendering ill equipped smallholder farmers disadvantaged in facing resulting pressures.

Jemaiyo (2013b) found out that appropriate policies are crucial to create the conditions within which competition can thrive, and authorities can help to build a culture of competition, and increase awareness of competition issues amongst policy-makers and the public. The study targeted 357 managers of MSC from whom a sample of 112 respondents was selected. Sample selection methods used were, stratified sampling, purposive sampling and random sampling. The research found out that in the year 2008, MSC adopted diversification strategy to counter the effects of the Regional Trade Agreements (RTAs) resulting in cheap sugar imports.

2.5 Critique of Existing Literature Relevant to the Study

Majority of the empirical literature reviewed have been carried out in firms other than the sugar industry and in settings mostly outside Kenya. In all the studies the assumption was that for all the variables applicability is universal, but different regions of the world view and react to each of the studies variables in a completely different way and more so, the African context. The findings may not relate directly to the sugar industry and conditions in Kenya. Despite the relevance of some of these researches, several researchers have also recommended that more empirical researches are required to expound in areas not covered or unclear in their researches.

Nguyen *et al*. (2009) theoretical model constructs were technical knowledge management capability (collaboration, distributed learning, and knowledge mapping), social knowledge management capability (structure, culture, and people) and competitive advantage and did not look at other aspects of human resource capability such as leadership and labour turnover. Influence of culture in Kenya may be different from that in Vietnam. This research was carried out in the construction industries which operate differently from the sugar industry and hence need to be replicated in the sugar industry. Knowledge management may not result in competitive advantage unless it is relevant and aligned to the strategy of the company. Zoubi (2012) research was carried out in the Jordan Telecommunications whose setting and operation is different from operations in the sugar industry in Kenya. The research looked at only one aspect of human resource capability between leadership competencies and competitive advantage. Leadership competencies are only effective if they cover the whole spectrum of employees involved in leading various functions in the company and not the upper echelon only. However, Kahreh *et al*. (2011) study did not look at the effect of employees' empowerment at other areas of competitive advantage such as product flexibility, product pricing and delivery speed. Bula (2012) research on labour turnover may be insignificant to competitive advantage. Its effect depends on how the company manages the employee succession planning through proper training and development of employees.

Hermelo and Vassolo (2007), Bulitia *et al.* (2014) and Khalaji (2014) findings were that investment in technology was the most important factor determining competitive advantage of a company. This may not be so considering that technology must be appropriate for the region and environment in which the industry is operating and this technology has to be managed by employees. If employees are not competent, then the investment in the new technology may not determine the competitive advantage of the firm. Maletic *et al*. (2014) and Amaeshi *et al*. (2015) on their part found out that maintenance of production facilities play an important role in increasing production and hence competitive advantage. This is true only if the human factor is well trained, developed and motivated and supported by appropriate maintenance strategies.

Unam (2012) found out that through efficient management of materials, a manufacturing firm can achieve statistically significant cost saving, improvement in production efficiency, and increase in profitability. Miguel and Brito (2011) determined that efficient supply chain management is a source of competitive advantage, reducing costs and improving flexibility, delivery and quality simultaneously. Chellaswamy and Revathi (2013) established that material in the sugar industry accounts for nearly 80 percent of cost of production and, therefore, proper planning, purchasing, handling and accounting of material are of great importance. While, Akpan *et al*. (2013) found out that capacity utilization has an important bearing on the financial performance of any firm and this is only possible when raw material is supplied as per demand. Bushuru *et al.* (2014) established that early suppliers' involvement was found to be positively correlated to supply chain performance. In all these studies material management has been established as critical to firm performance. This is only so if the human or employee aspect is addressed. It is the human beings who make this happen. In these studies, environmental factors which may affect material management have been ignored. In Kenya, issues such as population growth, land sub-division, government regulations and behaviours of other sugar industries may affect material management and hence firm performance.

The study on financial capability and its influence on competitive advantage has not been well researched and this is an area further studies should focus on for better understanding. Suryani *et al*. (2016) established that business decisions, especially regarding funding, profits, and investments can be optimized if these aspects are supported by sufficient financial capabilities. Velnampy and Niresh (2012 found negative association between capital structure and profitability and Shubita and Alsawalhah (2012) showed negative relation between short debt to total assets and profitability and total debt to total assets and profitability. These researchers did not relate financial capability directly to competitive advantage of a firm. Kochhar (1997) established that to ensure sustained competitive advantage financial management capability concerning the financing structure of a firm are necessary. Abubakar (2015) found a significant negative relationship between debt-equity ratio and financial performance. Rehman (2013) study showed negative relationship of debt equity ratio with net profit margin. Amuzu (2010) found out that cash flow ratios are better tools in assessing a company's financial performance. Amuzu failed to provide a range of ratios and their interpretation in relation to firm performance. Giacomino and Mielke (1993) and Jooste (1999) determined that ratio of total liabilities to net cash from operations estimates the number of years the firm will take to repay debt at the current level of net cash from operations and is called debt cover. Most of these studies were done outside Kenya and there is need to replicate these studies in Kenya and the results compared. Future researches are necessary for better understanding of financial capability and competitive advantage in the Kenya sugar industry.

2.6 Research Gaps

Literature review on influence of human resource capability on competitive advantage came up with Knowledge management (KM) and sustaining Organizational competitive advantage (Nguyen *et al*. ,2009); leadership competences on competitive advantage (Zoubi, 2012); Achieving competitive advantage through empowering employees (Kahreh *et al*. , 2011); influence of Labour turnover in the Sugar Industry in Kenya (Bula, 2012) and innovative adaptation and operational efficiency on sustainable competitive advantage (Mutunga *et al*. , 2014). Each of

these studies looked at only one aspect of constructs contributing towards human resource capability. The literature reviewed does not cover the whole spectrum of human resource capability which is concerned with reliable access to the required people with the skills, abilities, attributes and competencies to deliver the firm's competitive advantage. This study addressed this research gap.

Only the study by Khalaji (2014) on Analysis of Technological Capabilities in Sugarcane Industries in India looked at what this research is addressing in Kenya Sugar industry. Other studies focused on financial resources, investment in newer technology and diversification explaining the firm's growth (Hermelo & Vassolo, 2007); Effects of production facilities maintenance on competitive advantage (Amaeshi *et al.* , 2015); Role of maintenance in improving company's competitiveness and profitability (Maletic *et al.* , 2014) and Moderating effect of technology innovation on the human resource management practices and firm performance (Bulitia *et al.* , 2014). Each of these studies addressed one aspect or the other of the technology capability constructs. This study has addressed all the three constructs of the technology capability needed to acquire, use, change or create technology in ways of achieving full utilization of plant and improving efficiency and productivity and hence competitive advantage.

The empirical studies on material capability and competitive advantage of sugar companies are scanty and do not address the area exhaustively. Various scholars over the past few years have carried out researches having a bearing on material management. Unam (2012) looked at materials management for business success; Supply chain management (SCM) measurement and operational performance (Miguel & Brito, 2011); Growth and productivity (Chellaswamy & Revathi, 2013); Akpan *et al.* (2013) looked on physical capacity utilization and Bushuru *et al.* (2014) studied the effect of technology adoption, early supplier involvement, low-cost sourcing and backward integration on supply chain performance. The studies have not specifically zeroed in on material capability which involves proper planning for production of sugarcane, its harvesting and delivery to the mills to consistently meet the factory demand over an extended period. This study has addressed this gap.

Empirical studies on financial capability and competitive advantage of sugar firms are rare and almost non – existence. Suryani *et al* (2016) study did not specifically address the relationship between financial capability and competitive advantage in the sugar industry. It addressed financial capability within Small and Medium Enterprises. Some of the studies reviewed looked at the relationship between capital structure and profitability (Velnampy & Niresh, 2012; Shubita & Alsawalhah, 2012; Kochhar (1997). Abubakar (2015) looked at the relationship between financial leverage and financial performance; Rehman (2013) studied influence of financial leverage on financial performance and Amuzu (2010) looked at cash flow and firm performance. The reviewed literature has left a gap on the relationship between Capital Structure, Leverage and Cash Flow ratios and competitive advantage of sugar industry in Kenya.

From the review of literature, it is evident that studies on the influence of strategic capabilities on competitive advantage of sugar companies in Kenya are scanty. Literature review provides evidence that much research needs to be conducted in relation to strategic capabilities and competitive advantage. Considering the empirical reviews, it can be seen that not much works have been done on the influence of human resource capability, technology capability, material capability and financial capability and competitive advantage in sugar companies in Kenya. The studies reviewed on financial capability have not linked the strategic management concept and financial theories. Gaps have emerged from the empirical studies and these gaps have been addressed in this research. It is recommended that future researches could investigate the various aspects of strategic capabilities and competitive advantage in various industries in Kenya to provide more empirical knowledge in this area.

2.7 Summary of Literature

The chapter reviewed the theories related to the study which are Porter's Diamond Theory, Human Capital Theory, Resource Based View Theory, Dynamic Capabilities Theory, Trade-off Theory, Pecking order Theory and Free Cash Flow Theory. It also reviewed literature in the area of various strategic capabilities and their influence on competitive advantage of sugar companies in Western Kenya. The conceptualized strategic capabilities of the sugar industry are human resource, technology, material and financial capabilities. The linkages among the variables were determined and a conceptual framework was hypothesized and relevant gaps explained. The next chapter discusses the research methodology that was used in the analysis of the research objectives and testing of the research hypotheses.

2.8 Summary of Empirical Literature Review

Variables	Researcher (year)	Title of the Study	Findings	Knowledge gap
	Nguyen, Neck, & Nguyen (2009)	The Critical Role of Knowledge Management in Achieving and Sustaining Organizational Competitive Advantage (Vietnam).	Cultural and technological KM dimensions contribute to a firm's CA with culture having a major influence.	Research was in construction firms in Vietnam and a study in sugar industry in Kenya is necessary.
	Zoubi (2012)	Leadership Competencies and Competitive Advantage - Empirical Study on Jordan Telecommunications.	Leadership competences had a statistically significant impact on competitive advantage in the Jordanian telecommunication companies.	Research was in Telecommunication Industry in Jordan. A study needs to be done in the Kenyan sugar industry.
Human Resource Capability	Kahreh, Ahmadi, & Hashemi(2011)	Achieving competitive advantage through empowering employees: An empirical study. (Financial services in Iran).	Dimensions of employees' empowerment are positively affected on gaining sustainable competitive advantage for organizations.	Study was in financial sector in Iran as opposed to this study in Kenya sugar industry.
	Bula (2012)	Labour Turnover in the Sugar Industry in Kenya.	Salary is a major factor causing labour turnover followed by training, promotion, performance appraisal and work condition.	Study looked at labour turnover in sugar firms in Kenya. Competitive advantage as a dependent variable was not addressed in this study.
	Mutunga, Minja, & Gachanja (2014)	Innovative Adaptation and Operational Efficiency on Sustainable Competitive Advantage of Food and Beverage Firms in Kenya.	Executive and management competencies at innovation are critical success factors to competitiveness in food and beverage companies in Kenya.	The research was carried out in the Food and Beverage industry. Study should be carried out in the Kenya sugar industry and results compared to findings in food and beverage firms.

Variables	Researcher (year)	Title of the Study	Findings	Knowledge gap
	Hermelo & Vassolo (2007)	The Determinants of Firm's Growth: An Empirical Examination. Small and medium sized firms (Argentina).	Financial resources, investment in newer technology and diversification by geographic markets proved to be the factors explaining firm's growth.	Study looked at determinants of firm's growth while in this study in Kenya sugar firms it is technology and competitive advantage.
	Amaeshi, Okorocha, & Akujor (2015)	Effects of Production Facilities Maintenance on Competitive Advantage of Selected Firms in Nigeria.	Is costly to carry out maintenance on a failed system than to prevent the system from failing.	Replication of this study in Kenya sugar industry should be carried out to validate the findings in Nigeria.
Technology Capability	Maletic, Maletic, Al-Najjar, & Gomiscek (2014)	The role of maintenance in improving company's competitiveness and profitability: a case study in a textile company.	Around 3 % of additional profit could be generated if all unplanned stoppages and loss of quality due to decrease in the productivity would be prevented.	Study done on a Slovenian textile company. Present study involves influence of technology on competitive advantage of Kenya sugar firms.
	Khalaji (2014)	The Analysis of Technological Capabilities in Sugarcane Industries: Case Study of Salman Farsi Cultivation and Industry Company (India).	Of all the factors to achieving better competitive position, technological developments play the most prominent role.	Study done on one Sugar firm in India. Present study is in Kenya involving sugar firms in Western Kenya.
	Bulitia, Obonyo, & Ojera. (2014)	Moderating Effect of Technology Innovation on the Human Resource Management Practices and Firm Performance: A Study of Manufacturing Firms in Kenya.	82% of the respondents perceived that 80% of the firm's improvement was attributed to technological innovation.	Technology is moderating variable in their study while in the present study technology is independent variable.

Variables	Researcher (year)	Title of the Study	Findings	Knowledge gap
	Unam (2012)	Materials Management for Business Success: The Case of the Nigerian Bottling Company Plc.	There is a positive and statistically significant relationship between efficient Materials Management and firm profitability.	Study done on one bottling plant in Nigeria. This study looks at material capability and competitive advantage in sugar industry in Kenya.
Material Capability	Miguel & Brito (2011)	Supply Chain Management (SCM) measurement and its influence on Operational Performance (Brazil).	There is positive relationship between SCM implementation and operational performance in terms of cost, flexibility, quality and delivery.	Study related supply chain management to cost, quality, delivery and flexibility. In this study material capability is independent and competitive advantage is dependent variable.
	Chellaswamy & Revathi (2013)	A Study on Growth and Productivity of Indian Sugar Companies.	Relationship between Raw Materials and other independent variables contributed 99 percent on dependent variable.	Study looked at growth and productivity. This study looks at material capability and competitive advantage.
	Akpan, Akpan, Udoka, & John (2013).	Analysis of the Physical Capacity Utilization in the Sugar Industry in Nigeria.	Capacity utilization is influenced by industry's labour productivity, per capita real GDP, sugar import, federal government expenditure on the sugar industry and quantity of sugarcane used in sugar production.	Study looked at factors affecting physical capacity utilization in the Sugar Industry in Nigeria. This study looks at material capability and competitive advantage in sugar industry in Kenya.
	Bushuru, Namusonge, Oteki, & Wandera (2014).	Factors Influencing Supply Chain Performance in the Public Sugar Sector - A Case of Nzoia Sugar Company Limited.	Technology adoption is critical in improving effectiveness of the supply chain function and early suppliers' involvement is positively correlated to supply chain performance.	Study looked at technology and supply chain performance. This study looks at material capability and competitive advantage

Variables	Researcher (year)	Title of the Study	Findings	Knowledge gap
	Suryani *et al*. (2012)	Exploring Financial Capability of SMEs and Improving Financial Management Performance using Financial Application	Financial capability plays an important role in performance of SMEs.	Study carried out in SMEs. This study is in sugar industries on financial capability on competitive advantage.
	Velnampy & Niresh (2012)	The Relationship between Capital Structure & Profitability	There is a negative association between capital structure and profitability.	Researches to be carried out in the sugar industry to compare with results in the banking industry.
	Shubita & Alsawalhah (2012)	The Relationship between Capital Structure and Profitability	Significantly negative relation between debt and profitability.	Study done in Jordan providing a gap for research to be done in the Kenya sugar industry.
Financial Capability	Kochhar (1997)	Strategic Assets, Capital Structure, and Firm Performance.	Financing Structure capabilities promote competitive advantage..	Kochhar's study was based on desk top literature review. This study is an empirical research on sugar companies in Kenya.
	Abubakar (2015)	Relationship between Financial Leverage and Financial Performance of Deposit Money Banks in Nigeria	There is significant negative relationship between debt-equity ratio and financial performance.	Study was on banks in Nigeria. This study is on sugar companies in Kenya.
	Rehman (2013)	Relationship between Financial Leverage and Financial Performance: Empirical Evidence of Listed Sugar Companies of Pakistan.	There is negative relationship of debt equity ratio with earning per share, net profit margin and return on equity.	Study was in sugar industries in Parkistan. This study is on sugar companies in Kenya.

Variables	Researcher (year)	Title of the Study	Findings	Knowledge gap
	Amuzu (2010)	Cash Flow Ratio as a Measure of Performance of Listed Companies in Emerging Economies: The Ghana Example.	Cash Flow Ratios are better tools in assessing a company's financial performance.	Study done in Ghana. This study has been carried out in sugar industries in Kenya.
Financial Capability	Giacomino & Mielke(1993)	Cash flows: another approach to ratio Analysis.	The three-year averages debt coverage ratio was 6.06 for the US food.	Develop benchmark ratios by using uncompetitive and competitive sugar firms in Kenya.
	Jooste (1999)	An evaluation of listed companies by means of cash flow ratios.	The three-year averages debt coverage ratio was 3.27 for the SA food industry.	Develop benchmark ratios by using uncompetitive and competitive sugar firms in Kenya.

		Title of the Study	Findings	Knowledge gap
	Arjchariyaartong (2006)	The Competitiveness of the Sugar Industry in Thailand.	Problems and obstructions of the sugar industry in Thailand are divided into economic problems, processing problems, market problems, regulation problems, and management problems.	Regulatory policies may be different in Thailand. Hence need to replicate the study in Kenya sugar industry to validate these results.
	Ellis &Singh (2010)	The Economic Impact of Competition(Zambia, Kenya, Ghana and Bangladesh)	Private sector incentives and management expertise are important for creating a successful, efficient and internationally competitive sugar industry.	This was a desk top research. Quantitative research should be carried out in Kenya sugar firms to validate these findings.
Government Regulatory Policy	Emam & Musa (2010)	The Competitiveness of Sugarcane Production: A Study of Kenana Sugar Company, Sudan.	Kenana Sugar at the national and international level is competitive. Sugar is taxed by government.	Research to be carried out in Kenya to gauge influence of government regulatory policy on sugar companies.
	Ogolla (2012)	Politicizing Structural Adjustment Policies in Kenya's Sugar Industry: Effects on pro-poor development outcomes.	Relevance of neo-patrimonialism in the implementation of SAPs is difficult to ignore as it intricately defines development outcomes for smallholder farmers in the sugar-subsector.	Research to be carried out on more sugar companies under prevailing regional trade agreements.
	Jemaiyo (2013a)	The Impact of East African Regional Integration on the Market Leadership of Kenya's Mumias Sugar Company (MSC)	MSC adopted diversification strategy to counter the effects of the Regional Trade Agreements (RTAs) resulting in cheap sugar imports.	Research to be carried out on influence of government regulatory policy on more sugar companies in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology that was used to conduct this study. These include: Research paradigm, research design, target population, sample size and sampling procedure, research instrument, data collection procedure, data analysis techniques, the methodology for testing the hypotheses and operationalization of research variables. Further, reliability and validity procedures used for testing the research instrument are discussed.

3.2 Research Paradigm

There are two main research paradigms, the positivist paradigm and phenomenological paradigm. Positivist studies use quantitative methods for empirical testing of formulated hypothesis. These studies involve obtaining data through surveys and analyzing the structured data using statistical methods to determine the linkages between variables. Quantitative approaches are based on the logic of deduction, beginning from accepted theories or premises and testing them rationally. Phenomenology takes more or less the opposite approach, positing a view of reality as wholly constructed, subjective and social in nature. The phenomenological paradigm is concerned with the understanding and exploration of the phenomenon from participant's own frame of reference (Hussey & Hussey, 1997). The research is based on unstructured data obtained through mainly qualitative methods like field work studies and case research methods. Qualitative research tends to focus on subjective experience. In the present study, a positivism paradigm and quantitative research method was used as it relied mainly on secondary and primary quantitative data.

Primary data are the data collected specifically for the study in question. In contrast secondary data are not originally collected for the specific purpose of study at hand, but rather for a different purpose. Primary data was obtained by survey using a structured questionnaire and secondary data was obtained from financial statements of the firms, Kenya Sugar Board and AFFA Year Book of Sugar Statistics reports.

3.2.1 Research Design

According to Shukla (2010) a research design is a framework or a blue print for conducting a research. It provides a clear plan on how the research will be conducted and helps the researcher in sticking to the plan. There are two approaches to research: qualitative and quantitative researches. Often the distinction between qualitative and quantitative research is framed in terms of using words (qualitative) rather than numbers (Quantitative), or using closed-ended questions (quantitative hypotheses) rather than open-ended questions (qualitative interview questions). Quantitative research is based on the theory of positivism, which postulates that only meaningful phenomena are those which are observable. Qualitative research is based on post-positivism philosophy which postulates that there is no single objective reality.

There are two primary types of quantitative research, descriptive and explanatory (Hair et al., 2003). There are two types of descriptive studies: Longitudinal designs include the study of a population over a period of time. Cross sectional designs include the study of individuals (usually an attitude or belief) at one point in time. The cross-sectional design is perhaps the most predominant design employed in the social sciences and is identified with survey research, a method of data collection common in many social science fields (Nachmias & Nachmias, 2005). In a cross-sectional study all the measurements are made at about the same time, with no follow-up period. Cross-sectional designs are well suited to the goal of describing variables and their distribution patterns.

The present research is a descriptive cross section and correlation designs and used a purposive sample survey to obtain the empirical data to determine the linkages between variables. This method was used because it allows statistical inferences to broader population and permits them to generalize their findings to real – life situations, thereby increasing the external validity of the study (Nachmias & Nachmias, 2005).

3.3 Target Population

Mugenda and Mugenda (2003) assert that, the target population is the population to which a researcher wants to generalize the results of the study. The target population of this study was the sugar companies in Kenya. The sample consisted of six sugar companies namely: Muhoroni, Chemelil, Mumias, Nzoia, South Nyanza and West Kenya and the respondents were 727 senior and middle level managers working in these companies. The information on the number of senior and middle level managers for each sugar firm was provided by the respective Head of Human Resource. Table 3.1 provides the details of the senior and middle level managers.

Table 3.1: Breakdown of Senior and Middle Level Managers

Company	Senior Management	Middle level Management	Total Number of Managers
Muhoroni	14	50	64
SonySugar	27	113	140
Mumias	40	160	200
Nzoia	52	174	226
Chemelil	30	37	67
West Kenya	12	18	30
Totals	**175**	**552**	**727**

Source: Respective Sugar companies (2016)

3.4 Sample Size and Sampling Procedures

This section describes the sample size and sampling procedure that was used in the study.

3.4.1 Sample Size

The respondents were 88 drawn from 727 senior and middle level managers working in the six sugar companies in western Kenya namely: Muhoroni, Chemelil, Mumias, Nzoia, South Nyanza and West Kenya sugar companies. Yamane (1967) provides a simplified formula for calculating the sample size of the respondents. A 95% confidence level and precision level, e= ±10% is assumed for the equation below:

$$n= \frac{N}{1+N(e^2)}= \frac{727}{1+727(0.1^2)}= 88$$

Where n is the sample size and N is the respondents' size.

Table 3.2: Total Number of Samples of Managers per Company

Company	Senior Managers	Middle level Managers	Total Number of Managers
Muhoroni	2	6	8
SonySugar	3	14	17
Mumias	5	19	24
Nzoia	6	21	27
Chemelil	4	4	8
West Kenya	2	2	4
Totals	**22**	**66**	**88**

3.4.2 Sampling Procedures

In the present study non probability purposive sampling for middle and senior managers was used. Sampling proportionate to size was undertaken to come up with the total number of middle and senior-level managers in each company. Out of the 88 respondents, 22 were senior managers while 66 were middle level managers. Mugenda and Mugenda (2003) refers to purposive sampling as a technique that allows a researcher to use cases that have the required information with respect to the

objectives of his or her study. Cases of subjects are therefore hand-picked because they are informative or they possess the required characteristics. Convenience sampling was used during data collection targeting respondents from senior and middle level managers who had the required information. Convenience sampling is selecting cases based on their availability during data collection for the study.

3.5 Research Instrument

The instrument for primary data collection in this research was a numerical 5-point Likert scale questionnaire and it applied to the 88 sampled respondents. Questionnaire has advantages of low cost, reduction in biasing error, greater anonymity, considered answers and consultations and finally accessibility to a wide geographical contact at minimal cost (Nachmias & Nachmias, 2005). The questionnaire method was selected as it allowed the researcher to collect data systematically and address the research issues in the standardized and economical way. In addition the questionnaire was chosen because of the nature of this study which may have required consultation. A well-structured questionnaire was developed and used during primary data collection phase to gather information from the senior and middle level managers of the sugar companies identified by the researcher.

The research instrument was developed based on the constructs identified in the conceptual framework. The questionnaire was organized into seven sections in order to bring out the information required: Section 1 elicited Personal information; section 2 provided Human Resource Capability; section 3 brought out Technology Capability; section 4 elicited Material Capability; section 5 provided Financial Capability; section 6 looked at Government Regulatory Policy and section 7 the Competitive Advantage.

Secondary data was obtained from the company's human resource records, factory operating plans, agriculture records, audited financial statements, company litigation records, relevant Kenya Sugar Board and AFFA Year Book of Sugar Statistics and sugar industry cane census reports. Secondary data collection form was prepared where companies unable to provide their printed records could provide the required secondary data by one senior manager from relevant department filling the respective section in the form.

3.6 Data Collection Procedure

An introduction letter from Jomo Kenyatta University of Agriculture and Technology and a research permit from the National Commission for Science, Technology and Innovation were obtained. In order to increase the response rate, the researcher included a semi-personal covering letter to each of the firms detailing who was conducting the study; the purpose of the study; why it was important that the respondents answered the questionnaires and assuring the respondents that their responses would be held in strict confidence and used only for the intended purpose.

The data sources that were employed in this study consisted of both primary and secondary data. Primary data is the data which is collected a fresh and for the first time and thus happen to be original in character (Kothari, 2004). The primary data was collected by the use of a well-structured questionnaire pre-tested for validity and reliability. Secondary data was collected using secondary data collection form and was obtained from the relevant documents of the firms, Kenya Sugar Board and AFFA Year Book of Sugar Statistics. Secondary data involves the data collected using information from other published sources (Dawson, 2009). A form was also prepared where companies unable to provide their records could still provide the required secondary data by one senior manager from each department filling the respective section in the form.

Quantitative data was collected to offer an opportunity to probe, further, into the research issues. Data was collected on the company's personnel profile, human, technology, material and financial capability and government role in the sugar industry. The analysis of the secondary data was to shed more light on influence of strategic capabilities on the competitive advantage of the sugar industry in Western Kenya. The questionnaires were administered by the researcher to the respondents in Muhoroni, Chemelil, Mumias, Nzoia, South Nyanza and West Kenya sugar companies who filled the questionnaires. The researcher made an appointment with the respondents to collect the questionnaires at an appropriate agreed time.

3.7 Pilot Testing

A pilot study represents a cornerstone of a good research design. In fact, a pilot study is an essential initial step in a research. The term of pilot study, however, is defined as "a small-scale test of the methods and procedures to be used on a large scale" (Porta, 2008). The Researcher carried out the pilot testing of the questionnaire for validity and reliability on a small and similar group to the one that was used in the research at South Nyanza Sugar Company Limited. A sample size of 9 participants was used in the pilot study which is almost 10% of the sample size of 88 respondents for the actual study. Baker (1994) found out that a sample size of 10% of the sample size for the actual study is a reasonable number of participants to consider enrolling in a pilot study. Pretesting the questionnaire was important because: ambiguous and vague questions were revealed as respondents interpreted them differently; comments and suggestions made by the respondents were used to improve the questionnaire; deficiencies in questionnaire were revealed and in pilot study researcher analyzed the questionnaires to see if the methods of analysis were appropriate. Fink and Kosekoff (1985) suggested that when pilot-testing the questionnaire look out for failure to answer questions, respondents giving several answers to the same question and written comments; these maybe indicators that the instrument is unreliable and needs revision. The questionnaire which incorporated all the suggestions observed was again pre-tested by the researcher on another similar group to confirm its validity and reliability. The researcher accepted the instrument as suitable for the research once it met the set conditions.

3.7.1 Validity of Research Instrument

Validity is defined as the extent to which the instrument measures what it purports to measure. Construct validity and content validity were relevant in this study. Construct validity is a measure of the degree to which data obtained from an instrument meaningfully and accurately reflects or represent a theoretical concept. While content validity is a measure of the degree to which data collected using a particular instrument represents a specific domain of indicators or content of a particular concept (Mugenda & Mugenda, 2003). Construct validity assesses whether a questionnaire has been designed in a manner that will elicit the required information from the respondents. This process allows weaknesses in the questionnaire to be detected so that they can be removed before the final questionnaire is prepared.

3.7.2 Reliability of Research Instrument

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials. Reliability can be internal or external. Internal reliability is the extent to which data collection, analysis and interpretation are consistent. If multiple data collectors are used, they should agree. External reliability is the extent to which the results can be replicated. It is ensured by the quality of the researcher. The researcher ensured that there were no inaccurate coding, ambiguous instructions by using a research process that minimized the random error and examining and appraising the questionnaire critically to enhance the reliability of the instrument.

Each measurement consists of two components: a true component and an error component. Reliability can be defined as the ratio of the true-score variance to observed-score variance and can be expressed as:

$$\text{Reliability } = \frac{\sigma_t^2}{\sigma_x^2} = \frac{\sigma_x^2 - \sigma_e^2}{\sigma_x^2}$$

Where; σ_x^2= Variance of observed scores

σ_t^2= Variance of true scores

σ_e^2= Variance of errors

When; $\sigma_x^2 = \sigma_e^2$, the reliability is zero and when there is no variable error at all,

$\sigma_e^2 = 0$, and the ratio defined as reliability becomes; $\frac{\sigma_x^2}{\sigma_x^2} = 1$

Therefore, the reliability measure varies on a scale from 0 to 1, having former value when the measurement involves nothing but error and reaching 1 when there is no variable error at all in the measurement. There are four common ways of estimating reliability: the test - retest method, the parallel (equivalent) - form technique, the split - half method and the internal consistency. The researcher used the split-half reliability test and calculated the reliability of the questionnaire using the Cronbach's Coefficient Alpha. Alpha should be at least 0.70 or higher to retain an item in an adequate scale (Hair, Black, Babin, Anderson, & Tatham, 2006).

3.8 Data Analysis Techniques

Analysis of data in a general way involves a number of closely related operations which are performed with the purpose of summarizing the collected data and organizing these in such a manner that they answer the research question(s) (Kothari, 2004). After completing the field survey, the collected data was edited for accuracy, uniformity, consistency and completeness, organized, summarized, coded and tabulated before final analysis. The data was transferred from the questionnaires into the worksheet as a data base file. The variable names within the data base file referred to the numbers of each question in the questionnaire. The data was divided into several sub-topics in accordance with the structure of the questionnaire. The measure of competitive advantage of the sugar Industry was based on the analysis of the production cost, sales/market share and profits. Descriptive statistics and inferential statistics were used to analyze the data.

3.8.1 Descriptive Statistics

Descriptive statistics was used to summarize both the primary and the secondary data to enable meaningful interpretation and description. Descriptive statistical analysis limits generalization to the particular group of individuals observed. The descriptive analysis technics that were used in this study were: percentages, means, overall mean and standard deviation. Standard Deviation (SD) provides an indication of how far the individual responses to a question vary or "deviate" from the mean. The distribution of responses is important to consider and the SD provides a valuable descriptive measure of this. Likert item means and overall mean were analyzed despite the ordinal nature of Likert items. Baggaley and Hull (1983), Maurer and Pierce (1998), Allen and Seaman (1997) and Vickers (1999) as cited by Brown (2011) have argued that Likert scales can indeed be analyzed effectively as interval scales. Likert-type items are individual questions on the construct while scores derived from a Likert scale are summated scores determined by a composite of responses to multiple items rather than responses to single items (Warmbrod, 2014).

3.8.2 Inferential Statistics

Inferential statistics was used in the study to enable the researcher to reach conclusions about the relationship between the variables. Drawing conclusions about populations based on observations of samples is the purpose of inferential analysis. A statistic is a measure based on observations of the characteristics of a sample. A statistic computed from a sample may be used to estimate a parameter, the corresponding value in the population from which the sample is selected (Best & Kahn, 1998). Logit regression was used to help answer the objectives and find out if the research could be generalized from the sample to the population. A correlation analysis was performed to determine if any variables were correlated. Further, correlation analysis was used to find out the strength and the direction of the relationship between the variables. Chi- square statistic was used for hypotheses testing to determine the relationships and predictions between the independent and dependent variables. The hypotheses were tested within 95 per cent level of confidence interval or 5 per cent level of significance. Logit regression analysis was

used to predict the value or influence of the independent variables on the dependent variable when the moderating variable is applied. Statistical Package for Social Science (SPSS) program was used in the analysis of data where it was required. The independent variables were human, technology, material and financial capabilities and the dependent variable was the competitive advantage. The moderating variable was the government regulatory policy. The models that applied in this research are explained in the following subsequent sub - themes.

a) Logit Models for Objectives Testing

Probit and logit models are among the most widely used members of the family of generalized linear models in the case of binary dependent variables. Logit and probit models are basically the same, the difference are in the distribution:

Logit – Cumulative standard logistic distribution (F)

Probit – Cumulative standard normal distribution (Φ)

Both models provide similar results.

Logit models are used whenever dependent variable is binary (also called dummy) which takes values 0 or 1 and are nonlinear regression models that forces the output (predicted values) to be either 0 or 1. Logit models estimate the probability of dependent variable to be 1 (Y=1). This is the probability that some event happens. This study used the logit model for testing of the objectives and determining the relationship between the dependent variable and the independent variables. Competitive advantage (Y) is a dependent or unobserved variable. This model was used because a company can only be competitive or non- competitive and this takes a value of 0 or 1. Independent or observable variables were human resource capability (X_1), technology capability (X_2), material capability (X_3) and financial capability (X_4). Data for the independent variables was also made categorical. For Likert scale values of 1 to 3 was categorized as weak or 0 and values above 3.0 to 5 was categorized as strong or 1 for analysis purposes. From the conceptual framework competitive advantage (Y) is a function of the variables; human resource capability (X_1), technology capability (X_2), material capability (X_3) and financial capability (X_4).

$Y = F(X_1, X_2, X_3, X_4)$ ---------- 3.1

Competitive advantage, Y was categorized as in formula 3.2:

$$Y = \begin{cases} 0 & if\ No \\ 1 & if\ Yes \end{cases} \quad \text{.....3.2}$$

From Stock and Watson (2007), the general Logit model takes the form:

$$\Pr(Y=1|X_1,X_2,...X_K) = \frac{1}{1+\frac{1}{1+e^{-\{\beta_0+\beta_1X_1+\beta_2X_2+....+\beta_kX_{k+}\varepsilon\}}}} \quad \text{.....3.3}$$

where β is a vector of parameters. $\Pr(Y=1|X_K)$ = is the probability of success at X_K

β_0 is the y intercept, β_k is the first order logit regression coefficient for the kth predictor.

x_k is the value of the kth predictor and ε is the error term. The general Logit model was simplified to provide the log linear model of Logit regression for this study as shown below.

$$\text{Ln}(Y_i) = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

b) Spearman's Correlation Analysis for Relationship Strength and Direction

Spearman's Correlation Coefficient is also referred to as Spearman Rank Correlation or Spearman's rho. It is often used as a statistical method to aid with either proving or disapproving a hypothesis. It is typically denoted either with the Greek letter *rho* (ρ), or r_s. Spearman's rho measures the strength of association and direction of two variables in a single value between -1 and +1. This value is called the correlation coefficient. A positive correlation coefficient indicates a positive relationship between the two variables while negative correlation coefficient expresses a negative relationship. A correlation coefficient of 0 indicates that no relationship between the variables exists at all.

The Spearman Correlation requires ordinal or ranked data; therefore, it is very important that measurement levels are correctly defined in SPSS. SPSS was used to calculate the Spearman's correlation coefficient. Correlation analysis was carried out to gauge if there was any relationship between each independent variable (human, technology, material and financial) and competitive advantage; the direction of this relation and the strength of this relation. The correlation strengths were interpreted using Cohen (1988) decision rules where r values from 0.1 to 0.3 indicate weak correlation, 0.31 to 0.5 indicate moderate correlation strength and greater than 0.5 indicate a strong correlation between the variables. Correlation is statistically significant at 0.05 level if p values are 0.05 and below and statistically insignificant if p values are more than 0.05.

c) The Chi-Square Statistic Test of Independence for Hypothesis Testing

Hypothesis testing is the method in which we select samples to learn more about characteristics in a given population. The Chi Square statistic is commonly used for testing statistical significance between categorical variables. The Chi-Square statistic Test was used for the fit of the model and hypothesis testing. Chi-square statistic test examined the magnitude of discrepancy between observed frequencies (obs) and expected frequencies (exp). It measured the significance of the relationship between the two categorical variables.

Ho: The two (categorical) variables are independent. The test statistic is defined in equation 3.4 below:

$$\chi^2 = \sum \{(\text{observed-expected})^2/\text{expected}\}, \quad \text{.....3.4}$$

with degrees of freedom (r-1) (c-1)

If $p<0.05$, reject the hypothesis of independence; i.e. the two (categorical) variables are statistically significantly related.

The steps that were followed in the process of testing the hypotheses are listed below:

Step 1. Set up the hypothesis and determine level of significance.

H_0= There is no relationship between the independent and the dependent variables.

Level of significance is set at 5% and refers to a criterion of judgment upon which a decision is made regarding the value stated in a null hypothesis. The criterion is based on the probability of obtaining a statistic measured in a sample if the value stated in the null hypothesis were true. When the probability of obtaining a sample mean is less than 5% if the null hypothesis were true, then reject value stated in the null hypothesis.

Step 2. Select the appropriate test statistic.

Chi- square statistic

Step 3. Set up a decision rule.

Chi-square calculated value is less than the chi-square critical value i.e. $p<0.05$

Step 4. Compute the test statistic.

If chi-square calculated value is greater than the chi-square critical value, then reject null hypothesis. If chi-square calculated value is less than the chi-square critical value, then "fail to reject" the null hypothesis.

d) Moderating Variable Model

Interaction terms are extensively used in nonlinear models, such as logit and probit models. An interaction means that the effect of X on Y depends on the level of a third variable, M. Government regulatory policy (M) is the moderating variable. The test for the statistical significance of the interaction effect must be based on the estimated cross-partial derivative, not on the coefficient of the interaction term (Norton, Wang, & Ai, 2004). Keppel and Zedeck (1989) as cited by Njuguna, Muathe, and Kerre (2014) suggest that moderation is captured by formula 3.5

$$Y_i = \frac{\exp(\beta_0+\beta_1 X_1 M_1+\beta_2 X_2 M_2+\ \beta_3 X_3 M_3+\beta_4 X_4 M_4+\varepsilon)}{1+exp(\beta_0+\beta_1 X_1 M_1+\beta_2 X_2 M_2+\ \beta_3 X_3 M_3+\beta_4 X_4 M_4+\varepsilon)} \text{----------3.5}$$

Taking the natural log of Y for the purpose of this study the formula reduces to:

Ln (Y_i) = $\beta_0 + \beta_1 X_1 M_1 + \beta_2 X_2 M_2 + \beta_3 X_3 M_3 + \beta_4 X_4 M_4 + \varepsilon$

Where, Human resource capability = X_1,

Technology capability = X_2,

Material capability = X_3

Financial capability = X_4

Government regulatory policy = M

and ε is the error term.

This formula provides the odds of competitive advantage where Y= 1

3.9 Measurement of Variables

Panneerselvam (2006) defines measurement as the assignment of a number to an object which reflects the degree of possession of a characteristic by that object. This study used closed-ended questions for independent and moderating variables and so the Likert scale was the most suitable. The respondents were asked to rate the extent to which the independent variables influenced the dependent variable and also how the moderating variable influenced the relationship between the independent and the dependent variables. The Likert scale, developed by Rensis Likert, which is essentially an interval scale, was designed to examine how strongly subjects agree or disagree with the statement. Chimi and Russel (2009) elucidated that Likert scale is used in nearly all fields of scholarly and business research: when the value sought is a belief, opinion or effect; when the value sought cannot be asked or answered definitely and with precision; and when the value sought is considered to be of such a sensitive nature that respondents would not answer except categorically in large ranges.

The 5-point Likert scale ranged from “Strongly disagree” which was represented by 1 to “Strongly agree” which was represented by 5. Zoubi (2012) and Mutunga, Minja, and Gachanja (2014) used a 5 point Likert type scale. Competitive advantage is a dependent variable and based on this a dichotomous scale was used. This model was used because a company can only be competitive or non- competitive. The researcher interpreted the mean and related it to the degree of agreement of the

question asked or reality in the company such that a mean below 1.5 represent to a very less extent; mean of 1.5 to 2.4 represent less extend; mean of 2.5 to 3.4 represent moderate; mean of 3.5 to 4.4 represent to a large extend and above 4.4 represent to a very large extend. On the other hand, the deviation of the standard deviation from the mean represent level of convergence of the respondents on the question asked. Standard deviation below 0.7 represent most convergence; 0.7 to below 0.9 represent more convergence; 0.9 to below 1.1 represent moderate convergence; 1.1 to below 1.3 represent less convergence and 1.3 and above represent least convergence.

3.9.1 Operationalization of the Variables

Objective	Variables	Indicators	Measurement	Scale	Research Approach	Tools of Analysis	Types of Data Analysis
1) Influence of human resource capability on competitive advantage of sugar Companies in Western Kenya.	Human resource Capability Competitive Advantage	Training and development, Leadership, Labour turnover Sales/Market share, Profits, Production costs	Extend of agreement (strongly disagree to strongly agree), Competitive or not Competitive	Nominal Ordinal	. Quantitative	Descriptive statistics, Logit Regression, Correlation, Chi-square statistic,	Descriptive and Inferential
2) Influence of Technology Capability on Competitive Advantage of Sugar Companies in Western Kenya.	Technology Capability Competitive Advantage	Technology adoption, Innovation, Factory Maintenance Sales/Market share, Profits, Production costs	Extend of agreement (strongly disagree to strongly agree), Competitive or not Competitive	Ordinal	Quantitative	Descriptive statistics, Logit Regression, Correlation,Chi-square statistic	Descriptive and Inferential
3) Influence of Material Capability on Competitive Advantage of Sugar Companies in Western Kenya.	Material Capability Competitive Advantage	Sugarcane husbandry Sugarcane harvesting Sugarcane delivery Sales/Market share, Profits, Production costs	Extend of agreement (strongly disagree to strongly agree), Competitive or not Competitive	Ordinal	Quantitative .	Descriptive statistics, Logit Regression, Correlation, Chi-square statistic	Descriptive and Inferential

Objective	Variables	Indicators	Measurement	Scale	Research Approach	Tools of Analysis	Types of Data
4) Influence of Financial Capability on Competitive Advantage of Sugar Companies in Western Kenya	Financial Capability Competitive Advantage	Capital Structure ratio, Leverage ratio(Debt/Equity ratio),Cash flow ratio Sales/Market share, Profits, Production costs	Extend of agreement (strongly disagree to strongly agree), Competitive or not competitive	Ordinal	Quantitative	Descriptive statistics, Logit Regression, Correlation, Chi-square statistic	Descriptive and Inferential
5) To establish the Influence of Strategic Capabilities on Competitive Advantage of Sugar Companies in Western Kenya	Strategic capabilities Competitive Advantage	Human resource, Technology, Material and Financial Capabilities Sales/Market share, Profits, Production costs	Extend of agreement (strongly disagree to strongly agree), Competitive or not Competitive	Ordinal	Quantitative	Logit Regression, Correlation, Chi-square statistic.	Descriptive and Inferential
6) To determine the Moderating Influence of Government Regulatory Policy on Strategic Capabilities and Competitive Advantage of Sugar Companies in Western Kenya.	Government regulatory policy Strategic Capabilities and Competitive Advantage	Taxes, Labour Laws, Industry laws Human resource, Technology, Material and Financial Capabilities and Competitive Advantage	Extend of agreement (strongly disagree to strongly agree), Competitive or not Competitive	Ordinal	Quantitative	Descriptive statistics, Logit Regression, Chi-square statistic	Descriptive and Inferential

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the study results and discussions which were analyzed in line with the study objectives in the following areas; Response rate, reliability and validity of the research instrument, Bio data of the companies and the respondents, descriptive statistics, logit regression, correlation analysis and hypotheses tests. Percentages, means and standard deviations were used to analyze the descriptive data, while inferential statistics was used for the logit regression analysis, correlation analysis and the testing of the hypotheses using Chi – square statistic and predicting the relationship between the dependent and independent variables.

4.2 Response Rate

A total of 88 questionnaires were distributed to the senior and middle level managers of the target population. The population consisted of six sugar companies namely: Muhoroni, Chemelil, Mumias, Nzoia, South Nyanza and West Kenya. Those respondents who filled and returned usable questionnaires were 64 making a response rate of 73%. The 27% of the respondents failed to fill the questionnaires even after several follow up or filled them badly making them unusable. This response rate was in line with previous researches (Zoubi, 2012; Bula, 2012 and Bulitia, Obonyo, & Ojera, 2014). According to Mugenda and Mugenda (2003), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This meant that the response rate of 73% was excellent and therefore enough for the study to proceed to the data analysis, presentation, interpretation and discussion.

Table 4.1: Response Rate

Questionnaires	Frequency	Percent (%)
Response	64	73%
Non-response	24	27%
Total	**88**	**100%**

4.3 Reliability and Validity Tests of Research Instrument

Reliability and validity tests of the research instrument were carried out. The questionnaires used had 5 point Likert scale items that were responded to. The study involved questionnaires from 9 respondents, who were purposively selected to participate in the pilot study.

4.3.1 Reliability Test Results

For reliability analysis Cronbach's alpha was calculated by application of SPSS. The value of the alpha coefficient ranges from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales (i.e., rating scale: 1 = strongly disagree, 5 = strongly agree). A higher value shows a more reliable generated scale. Hair et al, (2006) indicate 0.7 to be the minimum acceptable reliability coefficient. The study involved questionnaires from 9 respondents, who were selected to participate in the pilot study. Since, the alpha coefficients were all greater than 0.7, a conclusion was drawn that the instrument had an acceptable reliability coefficient and was appropriate for the study to proceed. Table 4.1 shows the results of the reliability tests.

Table 4.2: Reliability Tests Results

Variable	Cronbach's Alpha
Human resource capability	0.845
Technology capability	0.770
Material capability	0.742
Financial capability	0.790
Government regulatory policy	0.733
Competitive advantage	0.741
Average	**0.770**

4.3.2 Validity Test Results

Construct validity was established by finding out whether the questions were correctly phrased in terms of clarity and ambiguity. Content validity was tested by use of experts and supervisors in the relevant area. They looked at the research objectives to see whether the questions in the questionnaires achieved the objectives. The research instrument was given to 9 experts who were experienced in the relevant area of influence of strategic capabilities on competitive advantage of sugar companies in western Kenya to evaluate the relevance of each item in the instrument in relation to the objectives. The same were rated on the scale of 1 (least relevant) to 4 (very relevant). Validity was determined by use of the Content Validity Index (CVI). CVI was obtained by adding up the items rated 3 and 4 by the experts and dividing this sum by the total number of items in the questionnaire. A CVI of 0.747 was obtained. Oso and Onen (2009), state that a validity coefficient of at least 0.70 is acceptable as a valid research instrument hence the adoption of the instrument for the study.

4.4 Bio Data

The study was interested in the background information about the companies and also the background of the respondents in the areas of the position held by the manager in the organization (management level), age, highest level of education and length of service of the manager with the organization in order to determine whether the respondents were capable of interpreting the information in relation to its implication on competitive advantage of sugar companies in Western Kenya.

4.4.1 Companies Profiles

Year of incorporation, country of incorporation, ownership structure, scope of operation, factory capacity, number of employees and current products were used to describe each of the targeted companies. Each of these aspects has implications on the way the organizations conduct their business. Age indicates an organization's stage of development and experience and is indicated by the year of incorporation; factory capacity indicates the economies of scale and indirectly production costs; number of employees' shows the size of the fixed costs; ownership structure dictates how the firm operates and country of incorporation has political implications on the firm's operations and competitive advantage. Scope of operation for sugar companies shows the presence of their products geographically either regionally, nationally or internationally. Ownership structure indicates the level of partnership and shareholding which show the level at which key decisions are made and which subsequently affect performance. The larger the company the lower its fixed costs are expected to be and more probable it is in terms of survival than the smaller company. The products offered by the target companies have implications on the competitive advantage of the firm locally and regionally because it maximizes products from the raw material (sugarcane). Production of diverse products translates into extra revenue and this should enhance the competitive advantage of the sugar firm. Mumias Sugar Company Limited was the only firm which had diversified into Co-generation, ethanol and water production when the study was being carried out.

Table 4.3: Profiles of Companies as at 2014

Company's name	Incorporation year	Ownership	Operation scope	Factory capacity/tonnes per day	number of employees	current products
Muhoroni	1966	Government of Kenya	Kenya	2,200	1,033	Sugar Molases Bagasse
Chemelil	1968	Government of Kenya	Kenya	3,000	1,058	Sugar Molases Bagasse
Mumias	1973	Local Corporates 44.9% Local Individuals 50.5% Foreign Investors 4.6%	Kenya	8,000	2,038	Sugar Molasses Ethanol Electric Power (Co-generation) Water bottling
Nzoia	1978	Government of Kenya 98% Foreign Investors 2%	Kenya	2,700	3,173	Sugar Molases Bagasse
South Nyanza	1979	Government of Kenya 98.8% Foreign Investors1.2%	Kenya	3,000	1,960	Sugar Molases Bagasse
West Kenya	1981	Privately owned	Kenya	3,200	1,189	Sugar Molases Bagasse

Table 4.4: Bio Data of the Respondents

Variable	Category	Frequency	Percentage (%)
Management level	Senior Management	47	73.4
	Middle Management	17	26.6
Total		**64**	**100**
Age bracket	Above 50 years	10	15.6
	41-50 years	21	32.8
	31-40 years	21	32.8
	21-30 years	11	17.2
	Under 21	1	1.6
Total		**64**	**100**
Highest level of education	PHD Degree	0	0.0
	Master's Degree	22	34.4
	Bachelor's Degree	29	45.3
	Diploma	13	20.3
	Secondary Certificate	0	0.0
	Primary certificate	0	0.0
Total		**64**	**100**
Length of service in the Organization	Above 20 years	13	20.3
	16-20 years	11	17.2
	11-15 years	8	12.5
	6-10 years	11	17.2
	5 years and below	21	32.8
Total		**64**	**100**

4.4.2 Distribution of Respondents by Level of Management

Out of the 64 questionnaires received, 47 (73.4%) were from the middle level managers and 17(26.6%) from the senior level managers which in percentage form are 73.4% and 26.6% respectively as shown in Table 4.4. These percentages are not very far from the target population of 175 senior managers and 552 middle level managers out of the total population of 727 senior and middle level managers as tabulated in Table 3.1. This translates to 24% and 76% respectively. This indicates that the two levels of management staffs were well represented in the questionnaires received back. Hence the study provided views of both levels of management adequately.

4.4.3 Distribution of Respondents by Age

The study sought to determine the age distribution of the respondents in order to gauge the effect of retirement on loss of skill, experience, institutional memory and employee succession. The rate of loss or retention of these factors has an impact on competitive advantage of the sugar companies. High percentage of young people means the company lacks experienced people but is well endowed with energetic people to drive the company forward. High percentage of old staffs mean that the company lacks energetic staff to drive its mission and also the organization will lose experienced people at once which may lead to lose of many experienced people and institutional memory.

The figures from Table 4.4 showed that 10 (15.6%) of the respondents were aged above 50 years, 21(32.8%) were aged from 41 to 50 years, 21(32.8%) were aged from 31 to 40 years, 11(17.2%) were aged from 21 to 30 years and 1(1.6%) was under 21 years. The population of managers was well distributed and that all age groups were well represented. Moreover, 42(65.6%) of the employees were from the age brackets of 31 to 50 years as presented in Table 4.4. These employees were both youthful and mature, had many more years to work for the companies and retirement of staff was not a threat in the sugar companies under study. In addition, 21(32.8%) of the managers were from 41 to 50 years, mature, expected to be stable in work environment, experienced, had seen it all in the industry and were expected to be capable of helping the organizations to face competition in the market environment where the companies operate. Furthermore, 21(32.8%) of the managers were 31 to 40 years, youthful employees, had grasped the necessary industry experience, energetic, were likely to be information, communication and technology savvy and capable of being innovative to spearhead industry growth and expected wave of change of the companies in the dynamic competitive environment. Lastly, 12(18.8%) of the employees were below 30 years, inexperienced, dynamic in the job market as they belonged to the millennial generation and they could be nurtured by the organizations to the required Organization standards and culture.

4.4.4 Distribution of Respondents by Highest Level of Education

The study sought to determine the educational level of the respondents. The findings are presented in Table 4.4. The results showed that none of the respondents had a PHD Degree though two managers indicated that they were undertaking the PhD study, 22(34.4%) had Master's Degree, 29(45.3%) had Bachelor's Degree, and 13(20.3%) had Diploma while none had Secondary Certificate and Primary certificate as their highest level of education. The education level of the respondents was ideal because the respondents could read, interpret and answer questionnaires appropriately. The study indicated that majority of the respondents had bachelor's degree as shown by 29(45.3%) out of 64 of the respondents. Also, 51(79.7%) of the managers had either a bachelor's degree or master's degree. Becker (1964) states that a more educated/skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training.

Hence, the companies under study had most of their managers well educated to articulate the policies of the company, formulate the strategic plans of the company, scan both internal and external environment in which the industry operates and interpret the results in order to gain competitive advantage over their rivals. Collins (2009) avers that no company can consistently grow revenues faster than its ability to get enough of the right people to implement that growth and still become a great company. This implies that if the sugar industry does not enjoy competitive advantage, then something else could be influencing it other than the level of education of its staff.

4.4.5 Distribution of Respondents by Length of Service with the Organization

The study sought to establish for how long the respondents have been working with the same organisation in order to gauge the level of skills acquired, work experience in the company and the institutional memory stored; the findings are presented in Table 4.4. The results showed that 13(20.3%) of the respondents had worked for the organisation for more than 20 years, 11(17.2%) had worked from 16 to 20 years, 8(12.5%) had worked from 11 to 15 years, and 11(17.2%) had worked from 6 to 10 years while 21(32.8%) had worked for 5 years and below. The study showed that out

of the 64(100%) respondents, majority of the respondents 43(67.2%) had worked for the organisations for six years and above which insinuated experienced employees with good understanding of the organisations' vision, mission, values and dynamics. In addition, 32(50%) of the respondents had worked for the companies for ten years or less and the other 32(50%) for more than ten years.

According to Boxall (1998) the fundamental priority of HR strategy in a firm is to secure and maintain the kind of human resources that are necessary for the firm's viability. The Human Resource department has to work on strategies to reduce on the number of employees whose length of service is below 10 years through better staff retention methods. The results indicated that the labour turnover of managers in the sugar industry was a matter which needed to be looked at critically as indicated by 21(32.8%) of the managers who had worked for five years and less in the organisations. This result supports Bula (2012) who found out that labour turnover frustrated and impacted negatively on the Kenya sugar firms. The labour turnover interferes with total employees' experience, working relationships built over the period and institutional memory. This hinders effective, efficient and smooth implementation of strategic plans and running of the organisation to enhance competitive advantage due to frequent change of Managers.

4.5 Human Resource Capability and Competitive Advantage of Sugar Companies

The first objective and null hypothesis the study was to achieve are "To assess the influence of human resource capability on competitive advantage of sugar companies in Western Kenya" and **H_{01}:** There is no statistically significant relationship between human resource capability and competitive advantage of sugar companies in Western Kenya respectively. The study used both the primary and the secondary data and the descriptive statistics were used to analyse the data and interpretations made from them. Chi square statistics was used for hypothesis testing and logit regression and correlation analyses were used to establish the relationship between human resource capability and competitive advantage of Sugar Companies. The results are presented in sub- thematic areas.

4.5.1 Descriptive Statistics

The study examined Human Resource Capability indicators which were training and development of staff, company leadership and labour turnover in regard to how they influenced the competitive advantage of the sugar companies in Western Kenya. The study was interested on information about training and development of staff because several studies have concluded that it is one of the most important aspects that determine the company's competitive advantage. As such respondents were asked to state their views on how training and development of staff was carried out in their company. The study was also interested on information about company leadership culture because it influences the firm's competitive advantage. As such respondents were asked to state their views on aspects of leadership in their firm. Lastly, the researcher was interested on the information about the organization concerning the satisfaction and dissatisfaction of employees that led to labour turnover. The researcher raised questions that probed employees to provide information on their level of job satisfaction and dissatisfaction because this affected firm's competitive advantage. The research results are shown in Table 4.5 to Table 4.7 using a Likert scale of 1-5 where 5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 = Strongly disagree, M= Mean, SD.= standard deviation and % = Percentage of Respondents.

Table 4.5: Training and Development

S/N	Statement		5	4	3	2	1	M	SD
a)	Training needs of employees are assessed on the basis of their performance appraisal.	%	15.6	31.3	12.5	25.0	15.6	3.06	1.36
b)	Intrapreneurship and entrepreneurship training approach is used.	%	6.3	29.7	14.1	25	25	2.67	1.33
c)	Performance Appraisal needs training approach is used.	%	20.3	42.2	7.8	21.9	7.8	3.45	1.26
d)	Strategic Plan needs training approach is used.	%	18.8	45.3	12.5	17.2	6.2	3.53	1.17
e)	Management trainee and Apprenticeship training approach is used.	%	20.3	54.7	4.7	14.1	6.3	3.69	1.14
f)	Ad Hoc training method is used.	%	12.5	42.2	23.4	15.6	6.3	3.39	1.10
g)	Coaching and mentoring training approach is used.	%	20.3	28.1	15.6	28.1	7.8	3.25	1.29
	Overall mean							**3.29**	**1.23**

From table 4.5, the most favoured staff training and development method used in the sugar industries under study was the management trainee and apprenticeship training. Accordingly, 75% of the managers agreed that management trainee and apprenticeship training approaches were used within their firms, 20.3% of the managers felt that they were not used and 4.7% of the managers were neutral. The mean of the Likert item was 3.69 showing that this method of training was practiced to a large extend in the sugar industry. The standard deviation was 1.14 indicating that individual responses deviated from the mean by an average of 1.14 units indicating less convergence of the respondents on this question. Wricht, Dunford, and Snell (2001) aver that training is important in achieving a better alignment between the skills represented in the firm and those required by its strategic intent. The second most used method for manpower training and development within the firms was the strategic plan training approach. Therefore, 64.1% of the managers were in agreement that strategic plan training approach was used, 23.4% felt that it was not used and 12.5% were neutral. The mean for the Likert item for this type of training approach was 3.53 showing that this method of training was practiced to a large extend in the sugar industry. Ad Hoc training method had the deviation of 1.10

units from the mean of 3.39 showing less convergence by the respondents on this particular issue. Training of employees based on the Organization's Strategic plan ensures that the right cadres of employees are prepared in advance to effectively implement the Strategy when implementation time falls due.

Nguyen, Neck, and Nguyen (2009) noted that technological knowledge management made a unique statistically significant contribution to a firm's competitive advantage. Bontis and Serenko (2007) found out that employee capabilities depend on his or her training and development and Batool and Batool (2012) research found a positive relation between training and development and competitive advantage. The overall mean (Likert scale) for training and development of staff was 3.29 with a standard deviation of 1.23 showing less convergence of respondents on how training is perceived in the organizations. The Likert scale of 3.29 indicated that training and development of employees was given moderate consideration in the sugar firms. Hence, training and Development of employees is not treated as a critical issue among the companies' key requirements. The firms have narrowed down to a few training approaches missing the benefits offered by the other methods of training such as mentoring and coaching. This type of approach is likely to lead to knowledge depletion in areas not covered by methods of training favoured by the firms. According to Bontis and Serenko (2007) and Batool and Batool (2012) the sugar industries under study are expected not to perform well and enjoy competitive advantage due to limited investment and in narrow areas of training and development of their employees.

Table 4.6: Company Leadership

S/N	Statement		5	4	3	2	1	M	SD
h)	I am empowered to make decisions that ensure optimal performance of my job.	%	28.1	57.8	4.7	1.6	7.8	3.96	1.05
i)	Our organization promotes feedback from employees.	%	26.6	45.3	9.4	10.9	7.8	3.71	1.20
j)	My manager is able to influence others to commit to his/her vision.	%	43.8	48.4	6.3	0	1.6	4.33	0.74
k)	My manager encourages innovative thinking.	%	40.6	39.1	15.6	3.1	1.6	4.14	0.90
l)	My manager recognizes good performance.	%	40.6	37.5	15.6	1.6	4.7	4.08	1.00
m)	Managers and employees of our firm have relevant experience in their jobs.	%	40.6	42.2	10.9	3.1	3.1	4.14	0.96
n)	My manager has a clear understanding of the company and functional goals.	%	57.8	34.4	6.3	0	1.6	4.47	0.76
o)	The Chief Executive Officer (CEO) provides enabling leadership.	%	37.5	31.3	21.9	6.3	3.1	3.94	1.07
	Overall mean							**4.10**	**0.96**

Table 4.6 provides the results for the study on leadership and competitive advantage. Leadership overall mean of 4.10 point to the fact that leadership in the organizations to a large extend provided conducive and enabling environment for the operations of the sugar industries under study and standard deviation of 0.96 indicated that there was moderate convergence of respondents on leadership. On all aspects of leadership in the questionnaire the Likert item mean scores were high. The lowest Likert item mean was 3.71, where, 71.9% of the managers agreed that their firms promoted feedback from employees, 18.7% managers disagreed while 9.4% of the managers were neutral. The Likert item question "My manager has a clear understanding of the company and functional goals" had the least standard deviation of 0.76 which meant more convergence of the respondents on this point. If the firms are not enjoying competitive advantage, then it is due to other factors other than leadership. The result support observation by Kahreh, Ahmadi, and Hashemi (2011) that empowering employees is positively affected on the three main dimensions of competitive advantage—responsiveness, innovation, and efficiency. Recognition of

employees motivates them to perform even better and to be more dedicated to their work. The findings in this research brought out clearly the importance of good leadership in the firms. Zoubi (2012) established that leadership competences had a statistically significant impact on competitive advantage. Moorthy *et al.* (2012) showed that there is a significant negative relationship between inappropriate human resource management (HRM) and the firm performance.

Table 4.7: Labour Turnover

S/N	Statement		5	4	3	2	1	M	SD
p)	Our organization has an effective employee succession plan in place.	%	4.7	26.6	18.8	26.6	23.4	2.63	1.24
q)	I am very happy to spend the rest of my career with this Organization.	%	12.5	42.2	29.7	12.5	3.1	3.48	1.19
r)	The Organization cares for employees' general satisfaction at work.	%	15.6	45.3	15.6	15.6	7.8	3.45	1.17
s)	Promotion is done on merit.	%	10.9	40.1	25	14.1	9.4	3.30	1.14
t)	The company rewards employees fairly.	%	14.1	29.7	25	18.8	12.5	3.14	1.25
u)	Continuous efforts are made in our organization to create a sense of belonging and team spirit among employees.	%	18.8	35.9	25	17.2	3.1	3.50	1.08
Overall mean								**3.25**	**1.16**

For labour turnover only three Likert item means were 3.45 and above. From Table 4.7, 60.9% of the managers were satisfied with the company's welfare of employees, 23.4% were not satisfied while 15.6% were neutral with Likert item mean of 3.45. However, 54.7% of the managers were happy and willing to spend all their working lives with their present employer, 29.7% were neutral and 15.6% were not willing to spend all their working lives with the present employer with the Likert item mean score of 3.48. Also, 54.7% of the managers were in agreement that continuous efforts were being made in their organization to create a sense of belonging and team spirit among the employee, 25% of the employees were non-committal while 20.3% thought that no continuous efforts were being made in their organization to create a

sense of belonging and team spirit among employees with a Likert item mean of 3.5 and standard deviation of 1.08. Employees were more converged on this point than any other that management was putting in more efforts to retain employees. Some employees are dissatisfied in the organizations as deduced from the overall mean of 3.25 which indicated moderate implementation of employee satisfaction issues. The standard deviation of 1.16 indicated that there was less convergent by the respondents on the labour retention issues undertaken by the firms. Moderate implementation of issues to address dissatisfaction in the sugar companies created division amongst employees whether they were adequate or not.

Bula (2012) study found out that labour turnover was spread throughout the year and impacted negatively on the Kenya sugar firms. Ongori (2007) observed that employees are the backbone of any business success and therefore, they need to be motivated and maintained in the organization at all cost to aid the organization to be globally competitive in terms of providing quality products and services to the society. The sugar industry needs to take this observation seriously and keenly work towards achieving this goal. The human resource capability had an average mean of 3.59 and standard deviation of 1.11. These were obtained by adding means and standard deviation for questions in Tables 4.5 to 4.7 and dividing by the total number of questions respectively. The mean shows that the sugar industry has invested to a large extend in human resource capability.

Table 4.8: Cadre of Staff most Trained by the Organization

	Senior level managers	**middle level managers**	**Lower level managers**	**Union staff**	**All staff**
%	18.8	14.1	1.6	1.6	64.1

From Table 4.8, 64.1% of the managers believed that the trainings in their firms targeted every employee; 18.8% of the managers felt that training targeted mainly senior management staff; 14.1% felt that the organizations targeted middle level management for trainings; 1.6% of the managers thought that trainings targeted lower level managers and 1.6% thought that training targeted union staff. A score of 64.1% indicated that the organizations were focused moderately on training and development of all staff. This is in line with Papulova and Papulova (2006) that

decisions by managers have a strategic impact and contribute to strategic change. Breznik (2014) study showed that firms strongly committed to deploying human resource capability as a dynamic capability are more successful and hold the potential for a sustained competitive advantage. Plessis, Beaver, and Nel (2006) concluded that to achieve competitive advantage, organizations need to link human resource competencies to business strategy and the needs of the diverse workforce.

Table 4.9: Common Training Upgrade Course carried out by the Organization

	Technical Skills upgrade	Social/ soft skills upgrade	problem solving skills upgrade	Managerial Skills upgrade	Conceptual skills upgrade
%	18.8	15.6	10.9	40.6	9

Table 4.9 shows that 40.6% of the respondents were of the view that most training in their organization targeted the development of managerial skills as opposed to 18.8% of the respondents who felt that trainings in the organization were geared towards the development of technical skills. However, 15.6% of the respondents said that most training were geared toward developing soft skills, 10.9% felt that trainings targeted problem solving skills and 14.1% felt that the trainings were held to develop conceptual skills. Nonetheless, 18.8% of the respondents said priority was given to technical training as opposed to 40.6% who agreed that most courses were carried out to develop managerial skills. Lack of emphasizing training of staff on technical skills is likely to lead to depletion or reduction of technical skills in the organization which are critical to achieving the competitive advantage. Nguyen, Neck, and Nguyen (2009) study findings were that technological knowledge management made a unique statistically significant contribution to a firm's competitive advantage.

Table 4.10: Cadre of Staff who mostly resign from the Organization

	Senior level managers	middle level managers	Lower level managers	Union staff	All staff
%	25	43.8	15.6	0	15.6

From Table 4.7, the overall mean Likert scale for labour turnover was 3.25. This indicated possibility of employees leaving the organizations. The study had to establish which category of employees resigned or is likely to resign from the companies most as indicated in Table 4.10. The results showed that 25% of the respondents indicated that senior level managers were the ones who resigned most, 43.8% indicated middle level managers, 15.6% thought it was lower level managers who resigned and 15.6% indicated that all staffs were prone to resignation. In total, 68.8% of the respondents were of the view that labour turnover among the senior and middle level management staff was quite high in comparison to lower level managers and union staff. The respondents felt that it was unlikely or rare for the union staff to resign as exhibited by the nil score.

The study used secondary data on resignations of employees and the length of service of the respondents in their present companies to verify this perception that senior and middle level managers were likely to leave the organizations. The study was interested in the number of employees who had resigned from the firms under study from 2011 to 2015. The information was provided by the companies and is tabulated in Table 4.11.

Table 4.11: Employees Resignations Records from 2011 to 2015

Company		**2011**	**2012**	**2013**	**2014**	**2015**	**Total resignations**
Muhoroni Sugar	Resignations	6	10	7	6	0	29
Chemelil	Resignations	10	16	12	6	2	46
West Kenya	Resignations	5	11	10	8	10	44
Nzoia	Resignations	3	4	20	9	6	42
South Nyanza	Resignations	8	8	10	20	10	56
Mumias	Resignations	11	10	0	19	50	90

Source: Respective Sugar companies (2016)

From the secondary data obtained from the companies, staff across all levels who resigned from 2011 to 2015 were; Muhoroni Sugar Company were 29, Chemelil Sugar Company were 46, West Kenya Sugar Company were 44, Nzoia Sugar Company were 42, South Nyanza Sugar Factory were 56 and Mumias Sugar Company had 90 employees. These figures exclude those who retired, were terminated for various offences or died. Senior and middle level managers in the firms in 2016 were: Muhoroni 64, Chemelil 67, West Kenya 30, Nzoia 226, South Nyanza 140 and Mumias 200.

From the primary data, 68.8% of the respondents felt that senior and middle level managers in the organizations were prone to resignations. If this view was held true, then 68.8% of all resignations each year would be attributed to senior and middle level managers. This meant that in the last five years the total number of senior and middle level managers who had resigned would be; Muhoroni 20 against staff strength of 64, Chemelil 32 managers against the establishment of 67, West Kenya 30 managers against 30 positions, Nzoia 29 resignations of middle and senior managers against 226 positions, South Nyanza 39 managers against 140 and finally Mumias 62 managers against 200 managers. This result was supported by the demographic data from Table 4.4 where 32.8% of the respondents' length of service in the Organization was less than five years. This high labour turnover amongst middle and senior managers destabilizes the smooth running of the institutions and is detrimental to the experience required to facilitate continuous, efficient and effective running of the sugar industry in the long run.

The first objective was based on the premise that human resource capability would lead to competitive advantage of the sugar industry in Western Kenya. This assertion is supported by several studies: Nguyen, Neck, and Nguyen (2009) that cultural and technological knowledge management dimensions made a unique statistically significant contribution to a firm's competitive advantage; Zoubi (2012) findings that leadership competences had a statistically significant impact on competitive advantage; Kahreh, Ahmadi, and Hashemi (2011) established that internal processes largely relied on how capabilities were harnessed for competitive advantage; Mutunga, Minja, and Gachanja (2014) found out that executive and management

competencies at innovation were critical success factors to competitiveness and Bula (2012) noted that labour turnover in the Sugar Industry in Kenya frustrated and impacted negatively on the sugar firms. Park, Gardner, and Wright (2004) findings are that consistent utilization of HR capabilities is the most consistent step toward developing and maintaining competitive advantage.

According to Human capital theory by Becker (1964) a more educated and skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training. Human capital is grounded in individual talents, training and experience. It is an intangible asset involving employee competencies, attitudes, values, and commitment. Human capital is more likely than tangible assets to provide a competitive advantage through increased operational efficiency. The RBV theory underlines the importance of enterprise internal resources in order to reach a competitive advantage. The RBV of strategy asserts that the competitive advantage and superior performance of an organization is explained by the distinctiveness of its capabilities. Wesonga, Kombo, Murumba, and Makworo (2011) are of the view that human resources are one of the most valuable resources of an organization and an organization is nothing without human resources.

It is clear from the mean of 3.59 that the sugar sector has articulated human resource capability issues to a large extend and more ground needs to be covered for better performance of the industry. The sector must re-evaluate their human resource capability to be in line with a report by Deloitte Development LLC (2014) that posits that critical new skills are scarce and their uneven distribution around the world is forcing companies to develop innovative new ways to find people, develop capabilities, and share expertise. Bontis and Serenko (2007) study found out that employee capability depend on his or her training and development as well as job satisfaction levels. Job satisfaction in turn is affected by training and development, pay satisfaction, supervisor satisfaction, and job security. To benefit from employees, the sugar sector should enhance investment in human resource to build their capabilities.

4.5.2 Logit Regression Analysis

The study conducted a logit regression analysis to assess the relationship between the human resource capability and competitive advantage as per the objective by estimating the probabilities using the logit function. The capability was categorized into two: 0-weak and 1-strong. The competitive advantage was binary: 0-not competitive and 1-competitive.The output of the analysis is presented in Table 4.12 and fitted into a model.

Table 4.12: Logit of Human Resource Capability and Competitive Advantage

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.L.for EXP(B)	
							Lower	Upper
Human Resource Capability	0.012	0.502	0.001	1	0.981	1.012	0.378	2.709
Constant	-0.194	0.361	0.289	1	0.591	0.824		

Odds of competitive advantage of sugar companies = -0.194 + $0.012x_1 + 0.863$, Where

β_0 = - 0.194 is the constant

x_1 - Human resource capability

0.863 is the error term (SE)

The objective was to determine the influence of human resource capability on competitive advantage of sugar companies in Western Kenya. The outcome of logit regression analysis is that there is a positive relationship between the human resource capability and competitive advantage. The logit results revealed that companies that had strong human resource capability were 1.012 times more likely to enjoy competitive advantage compared to those that had a weak human resource capability, however, this relationship was statistically insignificant (p=0.981). This leads to a conclusion that the influence of the human resource capability on the competitive advantage of the sugar companies under study depends to a large extent on how human resource is deployed rather than the availability of the human resources.

4.5.3 Correlation Analysis

The data for this study is categorical and Spearman's ranking was used. The correlation strengths were interpreted using Cohen (1988) decision rules where r values from 0.1 to 0.3 indicate weak correlation, 0.31 to 0.5 indicate moderate correlation strength and greater than 0.5 indicate a strong correlation between the variables. Correlation is statistically significant at 0.05 levels if p values are 0.05 and are not statistically significant if p values are more than 0.05.

Table 4.13: Correlation of Human Resource Capability and Competitive Advantage

Variables			Human Resource Capability	Competitive Advantage
Spearman's rho	Human Resource Capability	Correlation Coefficient	1.000	0.003
		Sig. (2-tailed)	.	0.491
		n	64	64
	Competitive Advantage	Correlation Coefficient	0.003	1.000
		Sig. (2-tailed)	0.491	.
		n	64	64

The first objective was "To assess the influence of human resource capability on competitive advantage of sugar companies in Western Kenya". Correlation analysis was carried out to gauge this objective if there was any influence of human resource capability on competitive advantage, the magnitude and direction of this relationship. It was established that there was a statistically insignificant weak positive correlation between human resource capability and competitive advantage; r= 0.003, p=0.491, CL=95% (2-tailed). Since the relationship is weak and not significant this shows that the competitive advantage of the sugar companies in Western Kenya are not affected to a large extent by the human resource capability. This means that if the companies are not realizing competitive advantage, then something else is influencing it negatively but not the human resource capability.

Barney (1991) paper on firm resources and sustained competitive advantage exemplifies the importance of firm's resources which include all assets, capabilities, organizational processes, firm's attributes, information and knowledge, controlled by a firm that enable the firm to conceive and implement strategies that improve its efficiency and effectiveness. This meant that strengthening the human resource capability would lead to some improvement in the company's competitive advantage.

4.5.4 Hypothesis Testing

The study tested the null hypothesis using the Chi-square computed value which was compared with the Chi-square distribution reading and a decision made whether to reject the null hypothesis or fail to reject it. Chi – square statistic was use due to the categorical data of the independent variable and binary nature of the dependent variable. This was done at 95% Confidence Level and 5% Significance Level. The first hypothesis stated;

H_{01}: There is no statistically significant relationship between human resource capability and competitive advantage of sugar companies in Western Kenya.

The X^2 test statistic =0.001 df =1

The X^2 critical values from the Tables = 3.84 at 95% CL

Since the X^2 critical values= 3.84> X^2 test statistics =0.001(df =1), it doesn't fall in the rejection region. We therefore fail to reject the null hypothesis and conclude that there is no sufficient evidence to support a statistically significant difference in the relationship between human resource capability and competitive advantage of sugar companies in Western Kenya.

The logit results that companies that had a strong human resource capability were 1.012 times more likely to be competitive compared to those that had a weak human resource capability; correlation result of a weak positive statistically insignificant correlation between human resource capability and competitive advantage(r= 0.003) and hypothesis result that there is no statistically significant relationship between human resource capability and competitive advantage of sugar companies in Western

Kenya are all in agreement that human resource capability has minimum influence on competitive advantage of the sugar companies. These results contradict earlier studies done by various researchers. This could be due to the fact that several capabilities were compared and human resource capability came out less influential on competitive advantage.

Nguyen, Neck, and Nguyen (2009) research on the role of knowledge management in achieving competitive advantage in Vietnam found out that only two critical factors of cultural and technological Knowledge Management dimensions made a unique statistically significant contribution to a firm's Competitive Advantage with culture having a major influence. Zoubi (2012) found out that leadership competences had a statistically significant impact on competitive advantage by the Jordanian telecommunication companies. While, Kahreh, Ahmadi, and Hashemi (2011) found out that empowering employees is positively affected on the three main dimensions of competitive advantage—responsiveness, innovation, and efficiency. While, Bula (2012) found out that labour turnover was spread throughout the year and that it frustrated and impacted negatively on the sugar firms. Finally, Mutunga, Minja, and Gachanja (2014) research concluded that Executive and Management competencies at innovation are critical success factors to competitiveness in food and beverage companies in Kenya.

According to Human Capital Theory a more educated/skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training. According to Izushi and Huggins (2004); a more educated/skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing returns on education and training. The Resource Based View (RBV) theory of strategy asserts that the competitive advantage and superior performance of an organization is explained by the distinctiveness of its capabilities. Newbert (2007) study showed that 2% of results were at least partially inconsistent with RBV logic. RBV theory indicates that human resource is not necessarily a capability for determining competitive advantage of the firm when various capabilities are in play. On the other hand, dynamic capabilities are different between firms because the same capabilities that are distinctive (imperative) to one firm can

be nothing more than just a normal operating capabilities to the others (Winter, 2003). From the above views it can be concluded that the human resource in the sugar industry in Kenya is not one of the most critical strategic capabilities influencing competitive advantage.

4.6 Technology Capability and Competitive Advantage of Sugar Companies

The second objective and null hypothesis the study was to achieve are "To determine the influence of technology capability on competitive advantage of sugar companies in Western Kenya and **H_{02}:** There is no statistically significant relationship between technology capability and competitive advantage of sugar companies in Western Kenya respectively. The study used both the primary and the secondary data. Descriptive statistics were used to analyse the data and interpretations made from them. Chi square statistic was used for hypothesis testing and logit regression and correlation analyses were used to find the relationship between technology capability and competitive advantage. The results are presented in sub- thematic areas.

4.6.1 Descriptive Statistics

The second objective of the study was to determine the influence of technology capability on competitive advantage of sugar companies in Western Kenya. This objective was based on the premise that technology capability would lead to competitive advantage. The study examined technology adoption, technology innovation and factory maintenance in regard to how they influence competitive advantage of the sugar companies in western Kenya. Oruwari, Jev, and Owei (2002) define technology capability as the capability needed to acquire, assimilate, use, adapt, change or create technology. Questions were formulated along each of the mentioned indicators to bring out from the respondents the information required. The results are presented in Tables 4.14 to 4.16 measured in a Likert scale 1-5 where 5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 = strongly disagree, M= Mean, SD = Standard deviation and % = Percentage of Respondents.

Table 4.14: New Technology Adoption

S/N	Statement		5	4	3	2	1	M	SD
a)	New technology adoption is to improve the manufacturing process	%	17.2	31.3	10.9	32.8	7.8	3.17	1.27
b)	New technology adoption is in the sugarcane transport	%	15.6	35.9	15.6	25	7.8	3.27	1.25
c)	New technology adoption is to improve product quality	%	14.1	60.9	7.8	12.5	4.7	3.67	1.03
d)	New technology adoption is to improve productivity	%	20.3	54.7	6.3	15.6	3.1	3.73	1.06
e)	New technology adoption is to improve existing production process	%	29.1	48.4	17.2	10.9	1.6	3.78	0.97
f)	New technology adoption is to introduce new production processes	%	18.8	23.4	21.9	21.9	14.1	3.11	1.35
g)	New technology adoption is to improve competitive advantage in COMESA free trade area	%	23.4	21.9	18.8	21.9	14.1	3.19	1.40
h)	New technology adoption is in response to government regulations and policies	%	23.4	50	18.8	7.8	0	3.89	0.86
Overall mean								**3.48**	**1.15**

From Table 4.14, technology adoption in the sugar firms studied is mainly for product quality, productivity and production process improvement with Likert item mean values of 3.67, 3.73 and 3.78 respectively. The rest of the Likert item means are below 3.3. Therefore, 75% of the respondents were in agreement that their organizations had acquired new technology in order to improve product quality while 17.2% thought otherwise and 7.8% were neutral. Likewise, 75% of managers agreed that their organizations acquired new technology to improve productivity, 18.7% thought otherwise and 6.3% of the managers were neutral. The Likert item mean was 3.73 indicating agreement to a large extend of the respondents on usage of new technology to improve productivity. Besides, 70.3% of the respondents were in agreement that new technology acquisition was undertaken to improve existing production process, 17.2% of the managers were neutral and 12.5% held that new technology was not acquired to improve existing production process. The Likert item mean was 3.78 with a standard deviation of 0.86showing more convergence by the respondents on this issue.

The overall mean for new technology adoption was 3.48 with a deviation of 1.15 from the mean indicating moderate adoption of new technology. According to Hermelo and Vassolo (2007), investment in newer technology is one of the factors explaining the firm's growth. On the other hand, Khalaji (2014) study found out that technological developments play a prominent role to achieving better competitive advantage. Finally, Kotha and Swamidass (1998) observed that investments are made each year in advanced manufacturing technology because practitioners perceive a number of benefits attributed directly to their use namely reduced cycle-time, market share growth, progress towards zero-defects, return on investment and focused production. The sugar industry in Kenya has limited investment in new technology and this is likely to curtail the industry's competitive advantage.

Table 4.15 provides respondents' information on technology innovation in the sugar industry. Though, the industry has not invested much in technology innovation; there is general agreement that technology innovation has played a major role in the organizations' meeting their revenue targets in the last five years with a Likert item mean of 3.87. The rest of the questions have Likert item means of below 3.4. Of all the respondents, 73.4% thought that technology innovation had been important in meeting the revenue targets of their organization in the last five years, 17.2% were neutral and 9.4% of the respondents thought that innovation had not been important in their organizations' meeting the revenue targets in the last five years. The respondents were more converged or in agrreement on this point than any other with a standard deviation of 0.88. The overall mean of 3.28 for technology innovation indicates that the sugar sector has invested moderately in technology innovation. More resources need to be invested further in technology innovation for the firms to enjoy competitive advantage.

Technological innovation is in many industries the most important driver of competitive advantage (Rothaermel, 2008). The firms were not taking advantage of the observation made by Baark *et al*. (2011) that internal sources constitute a major source of innovations that firms use to build technological innovation capabilities and Cabral (2010) that the sustainability of competitive advantage will depend on the extent to which the firm is able to develop capabilities for innovation. The

technology development capability of the firm leads to technical change that allows for a successful innovation process (Zawislak *et al*., 2012). Bulitia *et al*. (2014) assert that implementation of technology innovations requires consistent focus towards human resource management practices including among others regular training, appraisal and control, and material incentives for enhanced firm's performance. The competitive advantage of a company strongly depends on its possibility to benefit from innovational activities (Zakić *et al*., 2008). Research by Moghli *et al*. (2012) found out that innovation has a direct positive impact on competitive advantage.

Table 4.15: Technology Innovation

S/N	Statement		5	4	3	2	1	M	Std.
i)	The Organization has allocated enough resources towards technology innovation	%	12.5	32.5	12.5	29.7	12.5	3.03	1.28
j)	The Company has policies that support innovation.	%	17.2	37.5	17.2	18.8	9.4	3.34	1.24
k)	The Company has framework for filtering and implementing viable innovations.	%	17.2	29.7	26.6	17.2	9.4	3.28	1.22
l)	The Company has mentorship program for innovators.	%	10.9	12.5	37.5	23.4	15.6	2.80	1.18
m)	Top management is committed towards innovation	%	17.2	34.4	25	12.5	10.9	3.34	1.22
n)	Innovation has played a major role in the Organization meeting its revenue target over the past 5 years.	%	23.4	50	17.2	9.4	0	3.87	0.88
o)	The Organization has allocated enough resources towards process innovation	%	17.2	39.1	7.8	28.1	7.8	3.30	1.27
Overall mean								**3.28**	**1.18**

Table 4.16 presents results from the respondents on factory maintenance.

Table 4.16: Factory Maintenance

S/N	Statement		5	4	3	2	1	M	Std.
p)	The Organization practices waste reduction maintenance	%	14.1	34.4	7.8	40.6	3.1	3.16	1.20
q)	The Organization has strategic maintenance methods for timely replacement of obsolete technology	%	12.5	28.1	15.6	42.2	1.6	3.08	1.13
r)	The organization benchmarks for best maintenance practices for its operational benefit	%	17.2	42.2	9.4	29.7	1.6	3.44	1.14
s)	The Organization has adopted best maintenance practices to optimize plant availability	%	21.9	56.3	3.1	18.8	0	3.81	0.99
Overall mean								**3.37**	**1.12**

The firms under study have adopted the best maintenance practices to optimize plant availability with a Likert item mean of 3.81 and standard deviation of 0.99. From Table 4.16, 78.2% of the respondents were in agreement that their organizations had adopted the best maintenance practices to optimize plant availability over their rivals, 3.1% were neutral and 18.8% thought that their organizations had not adopted the best maintenance practices. Overall mean of 3.37 for factory maintenance indicates moderate implementation of factory maintenance strategies by the firms. This moderate mean value is a pointer to the average factory capacity utilization of 55% to 60% the industry is presently experiencing. Maletic *et al*. (2014) found out that 3 % of additional profit could be generated if all unplanned stoppages and loss of quality due to decrease in the productivity would be prevented. Amaeshi *et al*. (2015) found out that maintenance of production facilities can improve competitive advantage of manufacturing firms.

The overall mean for technology capability was 3.38 obtained by adding means for all questions in Tables 4.14 to 4.16 and dividing by the number of the total questions in the tables. This moderate mean for technology capability indicate time lag in replacement of obsolete technology, low investment in technology innovation and less effective maintenance strategies. These actions manifest themselves in low factory capacity utilization of 55 to 60 percent because of statistically significant

technical limitations (KSB, 2010; KSI, 2009) in comparison to world leaders like India where the sugar industry is operating at an average of 113% capacity utilization (Kumar and Arora, 2009). This moderate mean for technology capability support the observations by Obonyo (2004) that performance at the level of the factory has remained a major limitation to the increased production of sugar and to the growing of more sugarcane, Odek *et al*.(2003) findings that the problems affecting the millers are due to inefficient factory operations and Wanyande (2001) that sugar production cost in Kenya is high due to inappropriate technology. Utilizing technological capabilities in business and formulating strategies to enhance capabilities in technical and managerial fields and creating or maintaining the capabilities provide a firm with a competitive advantage (Aalizadeh, 2014). Technology development capability, operations capability, management capability, and transaction capability enable firms to reach Schumpeterian profits (Zawislak *et al*., 2012).

Secondary data was obtained from AFFA Year Book of Sugar Statistics (2014), KSB Year Book of Sugar Statistics and the firms themselves in order to analyze the performance of these factories in order to gauge the technology capability of these firms. Technology capability of a sugar company may be drilled from its factory operational parameters. These parameters are factory capacity utilization, factory time efficiency and reduced overall recovery. Factory capacity utilization compares the quantity of sugarcane crushed by a mill in comparison to the designed quantity (capacity). This parameter is also affected by amount of sugarcane delivered to the factory. It is depressed by out of sugarcane hours and comes out clearly in material capability analysis. Factory time efficiency compares the hours the factory has been crushing sugarcane in a certain period in comparison to the hours that were available in the period. Reduced overall recovery compares the amount of sugar extracted from sugarcane in comparison to the amount of sugar in the sugarcane. Table 4.17 provides data for factory capacity utilization from 2011 to 2014.

Table 4.17: Five Years' Comparative Data of Factory Capacity Utilization (%)

Company	Year 2011	Year 2012	Year 2013	Year 2014	Average %
Chemelil	28.53	29.5	38.3	41.27	**34.4**
Muhoroni	42.36	50.85	45.92	56.31	**48.9**
Mumias	64.51	63.24	55.01	51.05	**58.5**
Nzoia	69.67	75.78	70.11	82.69	**74.6**
South Nyanza	59.71	54.42	60.35	56.63	**57.8**
West Kenya	69.97	60.50	79.96	77.55	**72.0**
Average %	**55.79**	**55.72**	**58.28**	**60.92**	**57.7**

Source: AFFA Year Book of Sugar Statistics (2014).

The average factory capacity utilization for the firms under study has shown improvement from 55.79% in the year 2011 to 60.92% in 2014. Chemelil Sugar had the lowest capacity utilization in comparison to other firms under study. Its capacity utilization was a dismal 28.53% in 2011 and has shown some remarkable improvement to 41.27% in 2014. Likewise, Muhoroni has improved from capacity utilization of 42.36% in 2011 to 56.31% in 2014. Nzoia Sugar has a general upward trend from 69.67% in 2011 to 82.69% in 2014. Capacity utilization for Mumias Sugar Company is showing downward trend from 64.51% in 2011 to 51.05% in 2014. South Nyanza Sugar Company is generally on a downward trend on capacity utilization dropping from 59.71% in 2011 to 56.63% in 2014 with the exception of 2013 when they obtained 60.35%. Factory capacity utilization for West Kenya Sugar Company varies upwards and downwards. In 2011 it was 69.97; in 2012 it went down to 60.5%; in 2013 it rose up to 79.96% and in 2014 went slightly down to 77.55%. Nzoia Sugar Company generally has the best factory capacity utilization with an average of 74.6% over the period of 2011 to 2014 for the factories under study followed closely by West Kenya Sugar Company at 72%. This factory capacity utilization in the sugar industry is low in comparison to world leaders like India where the sugar industry is operating at an average of 113% factory capacity utilization (Kumar and Arora, 2009).

The second operational parameter that indicates technology capability of a firm is the factory time efficiency. This indicates the hours the factory is crushing sugarcane even if it is crushing below the rated quantity (capacity). Factory time efficiency provides the percentage time the factory crushed in comparison to the time that was available for crushing. It does not include time lost due to lack of sugarcane but

incudes time lost due to factory breakdowns. It entirely measures the availability of the factory to crush sugarcane. Table 4.18 provides data on factory crushing hours and stoppage due to factory breakdowns.

Table 4.18: Five Years' Comparative Data of Stoppage due to Factory Breakdowns

Company		Year 2011	Year 2012	Year 2013	Year 2014
Chemelil	Crushing	3.173	2,976	2,626	3,994
	Stoppage	3,329	2,532	2,112	729
Muhoroni	Crushing	3,743	4,042	3,627	4,693
	Stoppage	2,412	2,471	2,151	2,425
Mumias	Crushing	6,066	6,072	5,750	4,524
	Stoppage	742	807	733	688
Nzoia	Crushing	5,347	5,845	5,914	5,087
	Stoppage	1,071	899	1,385	401
South	Crushing	5,811	4,724	5,841	5,366
Nyanza	Stoppage	1,154	893	1,142	1,005
West Kenya	Crushing	6,030	5,957	7,177	5,962
	Stoppage	475	830	788	673

Source: AFFA Year Book of Sugar Statistics (2014).

Table 4.19: Five Years' Comparative Data of Factory Time Efficiency (%)

Company	Year 2011	Year 2012	Year 2013	Year 2014	%Average
Chemelil	48.8	54.0	55.4	84.6	**60.7**
Muhoroni	60.8	62.1	62.8	65.9	**62.9**
Mumias	89.1	88.3	88.7	86.8	**88.2**
Nzoia	83.3	86.7	81.0	92.7	**85.9**
South Nyanza	83.4	84.1	83.6	84.2	**83.8**
West Kenya	92.7	87.8	90.1	89.9	**90.1**
Average %	**76.3**	**77.2**	**76.9**	**84.0**	**78.6**

Source: AFFA Year Book of Sugar Statistics (2014).

Table 4.19 shows the factory time efficiency which has been derived from the data in Table 4.18 by dividing the crushing time by the sum of crushing time and factory stoppage hours due to factory breakdowns and multiplying the result by 100%. Factory time efficiency for Chemelil Sugar Company has remained relatively within a range of 48% to 56% from 2011 to 2013 except in 2014 when it jumped to 84.6%. On the other hand, Muhoroni Sugar Company has maintained factory time efficiency of between 60% and 66%. Mumias, Nzoia, South Nyanza and West Kenya have maintained factory time efficiency of above 80%. West Kenya is the best sugar company with an average of factory time efficiency of 90.1% over a span of four

years followed by Mumias at 88.2%. In 2011 West Kenya exceeded the industry standard of 92% by achieving 92.7% and Nzoia repeated the same feat in 2014 when they achieved 92.7%. In 2011 the average factory time efficiency for the firms under study was 76.3%; 77.2% in 2012; 76.9% in 2013 and 84% in 2014. The industry set standard is 92% (AFFA Year Book of Sugar Statistics, 2014). In most cases the factories are struggling below the set standard of 92%.

This indicates technology limitation issues resulting in frequent factory breakdowns or operational deficiencies. If the industry could strive to run at 92% factory time efficiency or above, then the cost of production would be reduced and the firms would make more revenue. Amaeshi *et al*. (2015) established that it is more costly to carry out maintenance on a failed system than to prevent the system from failing, owing to repair cost, downtime of equipment, loss of production, customers, market and profit. The third operational parameter that indicates technology capability of a firm is the reduced overall recovery of sugar. This indicates the amount of sugar bagged from sugarcane in comparison to sugar in the sugarcane under certain conditions. Data is presented in Table 4.20.

Table 4.20: Five Years' Comparative Data of Reduced Overall Recovery (%)

Company	Year 2011	Year 2012	Year 2013	Year 2014	%Average
Chemelil	65.98	64.69	74.48	76.79	**70.49**
Muhoroni	73.89	73.90	77.36	74.83	**75.0**
Mumias	87.05	83.78	84.71	84.16	**84.9**
Nzoia	76.66	73.77	68.18	72.27	**72.7**
South Nyanza	80.00	78.48	77.01	76.81	**78.1**
West Kenya	85.68	85.03	86.24	85.51	**85.6**
Average %	**78.2**	**76.6**	**78.0**	**78.4**	**77.8**

Source: AFFA Year Book of Sugar Statistics (2014, 2015).

Chemelil is showing upward trend in reduced overall recovery rising from 65.98% in 2011 to 76.79% in 2014. Muhoroni is generally at a smooth average of 75% for the period under study. West Kenya Sugar Company has the best recovery history posting between 85% and 86.3% in years under study. Mumias is second with values close to 84%. Recovery for South Nyanza Sugar Company is on a downward trend dropping continuously from 80% in 2011 to 76.81% in 2014. Nzoia has a downward trend of reduced overall recovery obtaining 76.66% in 2011 and 72.27% in 2014.

Mumias, Nzoia and South Nyanza Sugar Companies have a downward trend of the reduced overall recovery. This is an indication of technology inefficiency issues. The higher the percentage of reduced overall recovery, the better the factory performance hence better application of technology and reduction in production costs

Technology is one of the major resources of a company. The sugar industry has not learned from the findings of Kotha and Swamidass (1998) that investments are made each year in advanced manufacturing technology because practitioners perceive a number of benefits attributed directly to their use namely reduced cycle-time, market share growth, progress towards zero-defects, return on investment and focused production. According to Afuah (2002) and Zhou and Wu (2010) when a firm builds its technological capability, it invests substantial resources in research and development (R&D), which involves the discovery of new products, the accumulation of knowledge stores, and the training of technical personnel. A firm's technological capability is developed over time and accumulated through its past experience.

4.6.2 Logit Regression Analysis

The study conducted a logit regression analysis to measure the relationship between the technology capability and competitive advantage by estimating the probabilities using the logit function. The capability was categorized into two: 0-weak and 1-strong. The competitive advantage was binary: 0-not competitive and 1-competitive.The output of the analysis is presented in Table 4.21 and fitted into a model.

Table 4.21: Logit Regression of Technology Capability and Competitive Advantage

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.L.for EXP(B)	
							Lower	Upper
Technology Capability	1.204	.529	5.174	1	.023	3.333	1.181	9.406
Constant	-.847	.398	4.523	1	.033	.429		

Odds of competitive advantage of sugar companies = -0.847 + $1.204X_1$+0.927, Where

β_0 = - 0.847 is the constant

X_1 - Technology capability

0.927 is the error term (SE)

The objective was to determine the influence of technology capability on competitive advantage of sugar companies in Western Kenya. The outcome of logit regression analysis is that there is a positive statistically significant (p= 0.023) relationship between the technology capability and competitive advantage. The results revealed that companies that had strong technology capability were 3.333 times more likely to be competitive compared to those that had a weak technology capability. This leads to a conclusion that technology capability influences the competitive advantage of the sugar companies.

4.6.3 Correlation Analysis

The data for this study was categorical and Spearman's ranking was used. The correlation strengths were interpreted using Cohen (1988) decision rules where r values from 0.1 to 0.3 indicate weak correlation, 0.31 to 0.5 indicate moderate correlation strength and greater than 0.5 indicate a strong correlation between the variables. Correlation analysis was carried out to gauge if there was any relationship between technology capability and competitive advantage; the direction of this relation and the strength of this relation. Correlation is statistically significant at 0.05 level if p values are 0.05 and below and statistically insignificant if p values are more than 0.05. Table 4.22 provides the results of these tests.

Table 4.22: Correlation of Technology Capability and Competitive Advantage

Variables			Technology Capability	Competitive Advantage
Spearman's rho	Technology Capability	Correlation Coefficient	1.000	0.289*
		Sig. (2-tailed)	.	0.010
		n	64	64
	Competitive Advantage	Correlation Coefficient	0.289*	1.000
		Sig. (2-tailed)	0.010	.
		n	64	64

*. Correlation is statistically significant at the 0.05 level (2-tailed).

The second objective was "To determine the influence of technology capability on competitive advantage of sugar companies in Western Kenya". Correlation analysis was carried out to gauge if there was any relationship between technology capability and competitive advantage; the direction of this relationship and the strength of this relation. It was established that there was a weak statistically significant positive relationship between technology capability and competitive advantage; r=0.289, p=0.010, CL=95% (2-tailed). This meant that if the technology capability was enhanced then competitive advantage would also improve significantly. This agrees with Zawislak *et al*. (2012) that technology development capability of the firm leads to technical change that allows for a successful innovation process. The results of this correlation further agrees with Hermelo and Vassolo (2007) that investment in newer technology improves competitive advantage; Amaeshi *et al*. (2015) that maintenance of production facilities can improve competitive advantage of manufacturing firms; Maletic *et al*. (2014) that around 3 % of additional profit could be generated if all unplanned stoppages and loss of quality due to decrease in the productivity would be prevented and Khalaji (2014) that technological developments play the most prominent role to achieving competitive advantage.

4.6.4 Hypothesis Testing

The study tested the null hypothesis using the Chi-square computed value which was compared with the Chi-square distribution reading and a decision made whether to reject the null hypothesis or fail to reject it.. Chi – square statistic was used due to the categorical data of the independent variable and binary nature of the dependent variable. This was done at 95% Confidence Level and 5% Significance Level.

H_{02}: There is no statistically significant relationship between technology capability and competitive advantage of sugar companies in Western Kenya.

The X^2 test statistics =5.343 df =1

The X^2 critical values= 3.84 at 95% CL

Since the X^2 critical values= 3.84< X^2 test statistics =5.343 (df =1), the test statistic therefore falls in the rejection region. We, therefore, reject the null hypothesis that there is no statistically significant relationship between technology capability and competitive advantage of sugar companies in Western Kenya. We, therefore, conclude that there is a statistically significant relationship between technology capability and competitive advantage of sugar companies in Western Kenya.

The results of the logit regression that companies that had strong technology capability were 3.333 times more likely to be competitive compared to those that had a weak technology capability; correlation analysis results that there is statistically significant positive relationship between technology capability and competitive advantage(r=0.289, p=0.010) and the hypothesis testing that there is a statistically significant positive relationship between technology capability and competitive advantage of sugar companies are in agreement that technology capability directly influences competitive advantage and support previous studies and RBV theory as noted by Uli (2010) that the attributes of resources and capabilities are the drivers of competitive advantage.

Hermelo and Vassolo (2007) research found out that investment in newer technology was one the factors explaining the firm's growth. Furthermore, Amaeshi *et al.* (2015) concluded that it is more costly to carry out maintenance on a failed system than to prevent the system from failing, owing to repair cost, downtime of equipment, loss of production, customers, market and profit. The study results showed that maintenance of production facilities can improve competitive advantage of manufacturing firms. In addition, Maletic *et al*. (2014) empirical results showed that around 3 % of additional profit could be generated if all unplanned stoppages and loss of quality due to decrease in the productivity would be prevented. On the other hand, Khalaji (2014) study showed that of all the factors contributing to achieving better competitive position, technological developments played the most prominent role. Bulitia *et al*. (2014) study showed that 82% of the respondents perceived that the firm's improvement was attributed to technological innovation.

4.7 Material Capability and Competitive Advantage of Sugar Companies

The third objective and null hypothesis the study was to achieve are "To establish the influence of material capability on competitive advantage of sugar companies in Western Kenya" and **H_{03}:** There is no statistically significant relationship between material capability and competitive advantage of sugar companies in Western Kenya. The study used both the primary and the secondary data. Descriptive statistics were used to analyse the data and interpretations made from them. Chi square statistic was used for hypothesis testing and logit regression and correlation analyses were used to find the relationship between material capability and competitive advantage. The results are presented in sub- thematic areas.

4.7.1 Descriptive Statistics

This objective was based on the premise that continuous availability of material would lead to competitive advantage. Questions were formulated to bring out the feelings of the respondents. The results are presented in Table 4.23 to Table 4.25 measured in a Likert scale of 1-5 where 5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 = Strongly disagree, M= Mean, SD = Standard deviation and % = Percentage of Respondents.

Table 4.23: Sugarcane Husbandry

S/N	Statement		5	4	3	2	1	M	SD
a)	Extension staffs monitor farmers' activities and advise them on good husbandry methods in order to promote optimal sugarcane yield.	%	23.4	50	15.6	9.4	1.6	3.84	1.03
b)	Land preparation, seed cane and fertilizers supplies are provided on time in order to enhance sugarcane yield.	%	17.2	34.4	17.2	26.6	4.7	3.33	1.24
c)	The firm invests in Research and Development in order to improve sugarcane husbandry.	%	31.3	37.5	10.9	7.8	12.5	3.67	1.33
d)	The Company matches sugarcane availability projections to factory crushing capacity for effective sugarcane development	%	25	43.8	4.7	20.3	6.3	3.61	1.20
e)	The Company does annual replanting of sugarcane to replace fallow farms in order to secure sugarcane availability	%	23.4	48.4	20.3	3.1	4.7	3.75	0.96
Overall mean								**3.64**	**1.15**

From Table 4.23 all Likert item means are above 3.6 except timely land preparation, seed cane and fertilizers supplies which has a Likert item mean of 3.33. Accordingly, 31.3% of the respondents disagreed, 17.2% were neutral while 51.6% agreed that land preparation, seed-cane and fertilizer supplies were provided on time in order to enhance sugarcane yield. The Likert item mean of 3.33 showed that the farm services provision were moderate. Inputs were not always provided on time, though, all other services were provided to a large extend on time. This leads to observation by Khushk *et al*.(2011) of low sugarcane yield per hectare. Late provision of land preparation services meant that the farmer had to redevelop the land before planting resulting in extra costs. Late delivery of fertilizer results in lower yield and eventually reduced returns to the farmer. Good yield is determined by the farm activities being carried out at an appropriate time. Waswa, Onyango, and Mcharo (2012) found out that sugarcane yield per hectare was a key determinant of gross income to farmers. Drop in income to farmers is likely to cause discontent and demoralize farmers from continuing with the sugarcane business.

Company does annual replanting of sugarcane to replace fallow farms in order to secure sugarcane availability had the least standard deviation of 0.96 from the mean of 3.75. In all other areas the firms were to a large extend doing well resulting in an overall mean for sugarcane husbandry of 3.64 and standard deviation of 1.15. The standard deviation indicates moderate agreement by the respondents on sugarcane husbandry. Good farmer management results in good sugarcane husbandry, high sugarcane yields and a motivated farmer who is enthusiastic to continue with sugarcane farming due to the lucrative returns. This encourages more people to enter into sugarcane farming ensuring optimal material availability for the firm and this is beneficial to both the farmers and the company. Chidoko and Chimwai (2011) noted that if farmers do not receive good extension services they are likely to incur very high costs of production and lower output per unit of land area and eventually abandon sugarcane farming. Bushuru *et al*.(2014) found out that proper sugarcane supplier contracting is critical since it improves supplier loyalty and hence efficiency in supply chain performance of sugarcane. When the growing of sugarcane is not matched to factory capacity it leads to either sugarcane glut or shortage. This leads to observation by Lokhande (2015) of erratic supply of sugarcane due to unplanned planting of sugarcane.

The vicious cycle of shortage and surplus of sugarcane, lower sugarcane yield, ever increasing production costs and mounting losses affect competitive advantage of the sugar firm (Pandey, 2007). Sugarcane shortage leads to financial loss by the sugar firms due to under- utilization of the factory capacity and high production costs. Sugarcane glut leads to over mature sugarcane, delayed harvesting of sugarcane causing revenue losses to farmers, losses to the company due to reduced sugar in sugarcane and court awards arising out of the farmers suing the company for over mature sugarcane or un-harvested sugarcane, dissatisfied farmers uprooting their sugarcane crop and the eventual result of sugarcane shortage.

Table 4.24: Sugarcane Harvesting

S/N	Statement		5	4	3	2	1	M	SD
f)	Harvesting program is used to control sugarcane age and sites to be harvested.	%	28.1	43.8	17.2	7.8	3.1	3.86	0.96
g)	The organization does block sugarcane harvesting in order to facilitate maximum fleet productivity	%	21.9	34.4	17.2	17.2	9.4	3.42	1.30
h)	The organization frequently holds seminars for sugarcane cutters in order to improve quality of sugarcane harvesting.	%	20.3	35.9	17.2	17.2	9.4	3.34	1.34
i)	The organization has an incentive scheme other than task-based pay for sugarcane cutters to encourage good cane harvesting.	%	7.8	15.6	18.8	37.5	20.3	2.66	1.30
Overall mean								**3.32**	**1.23**

From Table 4.24 only harvesting program and incentive scheme for cane cutters had a Likert item mean of above 3.5. There was moderate convergence by the respondents that harvesting program is used to a large extend to control sugarcane age and sites to be harvested with a mean of 3.86 and standard deviation of 0.96. The overall mean score for sugarcane harvesting was 3.32 showing moderate performance by the firms and standard deviation of 1.23 representing less convergence by the respondents on this issue. This, generally, indicate moderate implementation of factors leading to optimal sugarcane harvesting whose result is failure by the firms to carry out effective and efficient sugarcane harvesting. This situation agrees with observation by Le Gal, and Requis (2002) that sugarcane harvest management frequently leads to co-ordination problems between the different operations being carried out and the different stakeholders who are involved, such as cutters, growers, service providers and millers. Harvesting program leads to good company image, orderly activity operations, farmers' understanding of when their sugarcane will be harvested and eliminates corruption and lobbying by farmers for their sugarcane to be harvested. It is expensive and takes more time to transport sugarcane cutters to various sites.

In addition, tractors and sugarcane loaders waste time moving from one site to another distant site to load sugarcane and this reduces sugarcane delivery or productivity of the fleet. Lack of incentive scheme to sugarcane cutters may encourage poor sugarcane harvesting. Supply chain management is a viable initiative to enhance sustainable competitive advantage (Gargeya & Su, 2004). Ogbo *et al*. (2014) state that organizations stand to gain from effective inventory control management system and Unam (2012) found a positive and statistically significant relationship between efficient materials management and firm profitability. Profitability is an indicator of firm's competitive advantage.

Table 4.25 provides information on sugarcane transportation to the mills.

Table 4.25: Sugarcane Transport

S/N	Statement		5	4	3	2	1	M	SD
j)	The Company has established strategic fleet for sugarcane transport to ensures delivery of the right quantity of sugarcane to the factory	%	23.4	43.4	7.8	17.2	7.8	3.66	1.19
k)	The Company has efficient transport system in order to ensure optimal delivery of sugarcane to the factory	%	26.6	39.1	7.8	25	1.6	3.66	1.14
l)	The Company provides daily sugarcane delivery targets to each contractor to ensure delivery of right quantity of sugarcane to the factory	%	15.6	54.7	9.4	15.6	4.7	3.63	1.15
m)	Company uses high capacity sugarcane transport facility to optimize sugarcane delivery to the factory	%	17.2	26.6	10.9	32.8	12.5	3.14	1.34
n)	The Company has established trans loading facilities to optimize sugarcane delivery to the factory	%	34.4	17.2	20.3	23.4	4.7	3.03	1.49
o)	Sugarcane harvesting program is used to maximize fleet productivity.	%	25	50	10.9	9.4	4.7	3.95	1.25
Overall mean								**3.51**	**1.26**

Usage of high capacity sugarcane transport facility and establishment of trans-loading facilities had Likert item means of 3.14 and 3.03 respectively indicating that these two issues are given moderate preference in the sugar sector. All the other issues scored above Likert item mean of 3.5 showing more attention paid to them. Sugarcane transport had the overall Likert scale mean of 3.51 and standard deviation of 1.26. This Likert scale mean of 3.51 indicates that the sugar firms are performing moderately and more effort is required to raise this mean to above 4.0 for consistent transportation of adequate sugarcane to the mills. The standard deviation of 1.26 shows less convergence by the respondents on performance of the company on sugarcane transport. The Sugar Industry in Kenya faces challenges of poor or non-existent transport and road infrastructure (Odek *et al*., 2003). Poor road network infrastructure lead to high fleet maintenance costs and less fleet productivity which results in transporters demanding higher transportation rates. The average mean and standard deviation for material (sugarcane) capability was 3.50 and 1.26 obtained by adding all the means and standard deviation for questions in Tables 4.23 to 4.25 and dividing by the total number of questions respectively. This performance of material capability is an indication of unstable availability of the material (sugarcane) for the factory.

Table 4.26 presents the hours lost at each sugar mill due to lack of sugarcane.

Table 4.26: Five Years' Data on Factory Stoppage due to no Sugarcane (MT)

Company	**Year 2010**	**Year 2011**	**Year 2012**	**Year 2013**	**Year 2014**	**Total hrs. lost**
Chemelil	714	942	929	198	1,255	**4,038**
Muhoroni	465	2,040	335	747	898	**4,485**
Mumias	1,437	1,015	995	1,208	1,194	**5,849**
Nzoia	255	136	189	551	409	**1,540**
South Nyanza	392	1,224	1,406	965	693	**4,680**
West Kenya	421	1,408	1,200	203	262	**3,494**
Total	**3,684**	**6,765**	**5,054**	**3,872**	**4,711**	**24,086**

Source: AFFA Year Book of Sugar Statistics (2014).

The single most prominent operational indicator of material (sugarcane) capability in the sugar industry is the hours lost due to lack of sugarcane at the factory. Hours lost at each sugar mill due to lack of sugarcane may be caused by lack of mature sugarcane in the field, lack of sufficient sugarcane transport system to the factory or adverse weather conditions stifling sugarcane transport to the factory from the farms. Basing the observation on hours lost, it can be argued that the factory with the least hours lost is the best firm in ensuring material availability for its mill. In any one year Nzoia Sugar Company has lost the least hours emerging the best in material planning and supply having lost 1,540 hours in five years from 2010 to 2014. Nzoia is followed by West Kenya having lost 3,494 hours in five years. Mumias Sugar Company is the worst having lost 5,849 hours in the same period. With the exception of Nzoia Sugar Company, the rest face serious challenges on material capability. Mumias Sugar Company had perennial challenges on material capability for the period under study.

Factory stoppage of 1,000 hours due to lack of sugarcane represents a monetary loss of approximately one and half months of continuous factory operation at 92% factory time efficiency excluding weekly factory maintenance time. In order to zero down to actual causes of lack of sugarcane, it is prudent to look at other operational parameters. These parameters are area under sugarcane (hectares), sugarcane yield per hectare (MT), sugarcane availability projections for crushing (MT), sugarcane delivered (MT) and Sugarcane Transport Fleet Strengths. These parameters are presented in the Table 4.27 to Table 4.33 and each Table was analyzed individually before overall observation was made.

Table 4.27: Five Years' Comparative Data of Area under Sugarcane (Hectares)

Company	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014
Chemelil	15,556	16,433	17,232	16,257	18,516
Muhoroni	13,551	14,727	15,516	18,306	18,889
Mumias	56,927	53,153	52,646	46,971	39,687
Nzoia	25,574	26,478	27,010	28,428	28,621
South Nyanza	16,765	16,664	18,081	18,192	17,937
West Kenya	19,720	21,425	24,611	24,871	24,813
Total	**148,093**	**148,880**	**155,096**	**153,025**	**148,463**

Source: AFFA Year Book of Sugar Statistics (2014)

With the exception of Mumias Sugar Company limited, the rest of the sugar companies have adequate area under sugarcane unless the company records do not reflect the reality on the ground. From Table 4.27 area under sugarcane for Mumias Sugar Company was declining year in year out from the highest figure of 56,927 hectares in 2010 to the lowest area of 39,687 hectares in 2014; a drop of 17,240 hectares. This represents a 31% drop from the original area. This is one of the reasons Mumias Sugar Company had no adequate sugarcane to crush. If this issue of lack of sugarcane for Mumias Sugar is not urgently addressed; the firm is staring at an imminent collapse due to lack of mature sugarcane to crush and financial crunch.

Table 4.28: Five Years' Comparative Data of Sugarcane Yield per Hectare (MT)

Company	**Year 2010**	**Year 2011**	**Year 2012**	**Year 2013**	**Year 2014**	**Year 2015**
Chemelil	55.74	53.62	49.89	44.60	48.77	48.75
Muhoroni	63.66	57.25	56.47	49.99	59.00	48.02
Mumias	61.42	53.49	42.66	45.52	46.75	49.0
Nzoia	65.26	66.74	56.19	55.96	72.09	75.36
South Nyanza	82.54	77.62	70.54	70.62	67.23	81.0
West Kenya	72.15	72.60			61.24	74.64
Average	**66.80**	**63.55**	**55.15**	**53.34**	**59.18**	**62.80**

Source: AFFA Year Book of Sugar Statistics (2014, 2015)

Table 4.28 provides sugarcane yield per hectare from 2010 to 2015.Sugarcane yield per hectare is another factor affecting material capability. The yield is determined by sugarcane husbandry practices. The higher the yield, the lower the hectares required to produce the same amount of sugarcane. From Table 4.28 South Nyanza Sugar Company had the best yield of 82.54 tonnes per hectare in 2010 and 81 tonnes per hectare in 2015 averaging to 75 tonnes per hectare over the period. Nzoia's yield has progressively improved from 65.26 tonnes in 2010 to 75.36 tonnes per hectare in 2015. This indicates more output for the same area under sugarcane. West Kenya yield has roughly remained constant for the data that was provided. For the 2012 and 2013 data was not available for West Kenya Sugar Company. Yield for Mumias Sugar belt is generally low and unsteady having been 61.42 tonnes per hectare in 2010, dropping to 42.66 in 2012 and rising again to 49 tonnes per hectare in 2015.

This is an indicator of poor sugarcane husbandry practices. The average yield for Mumias Sugar Company for the six years is 50 tonnes of sugarcane per hectare as calculated from Table 4.28 which is just almost equal to the break-even point of sugarcane production cost per hectare of 49 tonnes of sugarcane. This scenario is likely to cause more sugarcane farmers to abandon the crop since the income does not provide the funds required for sustainable sugarcane business. This could be one of the reasons acreage under sugarcane in Mumias zone is declining. For Muhoroni Sugar belt, the yield has generally reduced from 63.66 tonnes in 2010 to 48.02 tonnes in 2015; a drop of 15.64 tonnes per hectare or 24.6% drop in comparison to the original value. Chemelil had 55.74 tonnes per hectare in 2010 and dropped to 48.75 tonnes in 2015. Yield drop has contributed negatively towards sugarcane availability to the sugar firms under study. Yield drop below 50 tonnes of sugarcane per hectare reduces farmers' income and this demoralizes mainly small scale farmers which may lead to some farmers abandoning sugarcane farming.

Mumias, Muhoroni and Chemelil sugarcane zones require urgent attention if sugarcane supply to the mills is to be sustained in future. The mills in these regions face danger of sugarcane scarcity and hence turbulent factory operations. The result agrees with Odek *et al.(*2003) observation that the problems affecting the millers are due to inefficient agronomic practices. The yield is low in comparison to Zambia whose yield is 113 tonnes per hectare and Malawi producing 105 tonnes per hectare (KSB, 2013). Chidoko and Chimwai (2011) found out that if farmers do not receive good extension services they are likely to incur very high costs of production and lower output per unit of land area. This low yield is likely to demoralize farmers with the end result of some of them abandoning the growing of sugarcane leading to insufficient sugarcane for the mills.

Table 4.29 provides sugarcane census report which estimated the number of mature sugarcane available for each factory.

Table 4.29: Five Years' Projections of Sugarcane Availability for Crushing (MT)

Company	Year 2010/11	Year 2011/12	Year 2012/13	Year 2013/14	Year 2014/15
Chemelil	326,519	219,359	771,145		651,204
Muhoroni	498,885	170,632	631,960		518,569
Mumias	2,310,552	770,346	2,594,634		1,161,794
Nzoia	921,454	526,549	1,084,507		1,070,375
South Nyanza	812,760	268,076	757,193		810,364
West Kenya	181,757	303,468	1,251,987		947,934

Source: Agriculture, Food and Fisheries Authority (AFFA) (2014/2015 –2015/2016) and KSB Cane Census (2010/2011, 2011/2012, 2012/2013 and 2013/2014)

From the report Mumias Sugar Company sugarcane availability declined from the highest value of 2,594,634 tonnes in 202/2013 to an all low of 1,161,794 tonnes in 2014/2015. South Nyanza has had adequate sugarcane over the study period. Hence lack of sugarcane at the South Nyanza Sugar Factory is likely caused by lack of transport system or poor sugarcane harvesting planning which results in sugarcane available only in lowland areas and hence affected by adverse weather conditions. Nzoia Sugar Company has had more sugarcane over the period than they could handle. The amount of sugarcane was 921,454 tonnes in 2010/2011 climbing to 1,070,375 tonnes in 2014/2015. The average for the period under study was a remarkable 901 tonnes. Hence lack of sugarcane to crush at Nzoia is caused by lack of transport system or sugarcane available in lowland areas and hence affected by adverse weather conditions. From the sugarcane projections report, Chemelil and Muhoroni suffer periods of sugarcane glut and scarcity. Sugarcane availability planning in these two institutions seems to be not well planned.

Table 4.30 provides tonnes of sugarcane delivered to each factory from 2010 to 2014.

Table 4.30: Five Years' Comparative Data of Tonnes of Sugarcane Delivered (MT)

Company	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014
Chemelil	506,943	347,193	294,423	251,450	466,754
Muhoroni	460,762	364,631	437,172	329,001	492,998
Mumias	2,272,305	1,960,461	1,938,681	1,825,743	1,243,433
Nzoia	661,656	645,113	738,433	742,057	695,988
South Nyanza	574,679	675,224	553,858	673,120	627,218
West Kenya	722,769	603,229	593,329	1,022,030	852,046

Source: AFFA Year Book of Sugar Statistics (2014).

Comparing sugarcane projections in Table 4.29 to sugarcane delivered in Table 4.30 bring out some disparities indicating movement of sugarcane from an area occupied by one miller to another miller's area. This is an indication of sugarcane poaching. In 2010 West Kenya delivered 722,769 tonnes while projections showed 181,757 tonnes of sugarcane available. In summary, lost hours due to lack of sugarcane at the factory in Nzoia and South Nyanza Sugar Companies may be caused mainly by limited transport system, lack of pragmatic sugarcane harvesting and transport planning and adverse weather conditions. In the rest of the factories under study; lack of sugarcane to the mills is caused by inadequate sugarcane availability due to lack of investment in good sugarcane husbandry practices. It can be concluded that there is a serious crisis in the sugar sub-sector as far as sugarcane yield per hectare (sugarcane husbandry) and sugarcane availability is concerned.

Table 4.31: Sugarcane Production Cost per Hectare

Firm		2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015
Muhoroni	Production cost per hectare(kshs)	163,498	163,498	163,498	163,498	163,498
Chemelil	Production cost per hectare(kshs)	85,562	105,348	110,625	110,985	86,443
West Kenya	Production cost per hectare(kshs)	150,000	150,000	160,000	170,000	180,000
Nzoia	Production cost per hectare(kshs)	135,369	134,057	156,640	138,899	143,850
Mumias	Production cost per hectare(kshs)	145,000	145,000	145,000	145,000	145,000
South Nyanza	Production cost per hectare(kshs)	145,000	145,000	145,000	145,000	140,000

Source: Respective Sugar Companies (2016)

From Table 4.31 the industry average break-even yield from 2010 to 2015 was 49 tonnes of sugarcane per hectare and average cost of production was Kenya shillings 143,350.00. Assume gross revenue of Kenya shillings 3,000 per tonne of sugarcane to the farmer whose yield is 49 tonnes per hectare for the plant crop. The farmer's statement will read gross Kenya shillings 147,000.00 less sugarcane development costs of Kenya shillings 143,350.00, less harvesting and transport costs. This farmer is likely to end up with a negative income

Table 4.32 provides the average Sugarcane Prices for the industry from 2010 to 2014.

Table 4.32: Five Years' Data of Average Sugarcane Prices (Ksh /tonne)

	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014
Ex- Factory Sugarcane Prices (Kshs./tonne)	3,094	3,487	3,792	3,685	3,133

Source: AFFA Year Book of Sugar Statistics (2014)

The ex-factory sugarcane prices were Kenya shillings (Kshs.) 3,094 in 2010, Kshs. 3,487 in 2011, Kshs. 3,792 in 2012, Kshs. 3,685 in 2013 and Kshs. 3,133 in 2014 as shown in Table 4.32. The ex-factory sugarcane prices are dependent on market prices of sugar. The negative income may demoralize the farmer from continuing with sugarcane farming and looking after the ratoon crop. From this data, any yield below 50 tonnes per hectare for plant crop provides a debit (negative income) to the farmer and hence the farmer has to look for alternative source of money to maintain the ratoon (new crop shooting off from the stumps of the harvested sugarcane). This is an uphill task for the peasant farmer and may lead to poor maintenance of the ratoon further resulting in lower yield with eventuality of a vicious circle in sugarcane production.

Table 4.33 provides sugarcane transport fleet strengths for each sugar firm.

Table 4.33: Five Years' Sugarcane Transport Fleet Strengths (Numbers)

Company	Year 2010	Year 2011	Year 2012	Year 2013	Year 2014
Chemelil	300	257	252	250	260
Muhoroni	245	207	232	202	218
Mumias	241	207	199	212	178
Nzoia	120	140	110	120	130
South Nyanza	72	84	92	110	146
West Kenya	150	150	180	200	210

Source: Respective Sugar Companies (2016)

Table 4.33 reveals that it is only Nzoia and South Nyanza Sugar Companies who suffer from low fleet strength and this affects (reduces) sugarcane delivery to the factory resulting in several hours of out of sugarcane stoppage. Emphasis should be put on proper planning to increase the yield per hectare and developing adequate sugarcane land with good husbandry practices in order to secure constant adequate tonnes of sugarcane for the firm. From Table 4.23, 73.4% of the respondents agreed that the firms use sugarcane inventory reports for sustained optimal sugarcane supply and 71.8% respondents concurred that annual replanting of sugarcane is carried out in fallow farms by the sugar firms under study in order to ensure sugarcane availability for the mills. The secondary data showed that these reports are not used effectively as shown by cyclic periods of sugarcane glut and scarcity.

The secondary data indicate that the Kenya Sugar Industry faces three challenges to meeting material capability. The first challenge is lack of perennial adequate sugarcane for the mills. Unam (2012) recommended that priority must be given to Materials Management as a total concept. This study reinforces this researcher's view and points to the fact that production performance of the Kenya sugar firms is affected positively or negatively by the material (sugarcane) availability. The second challenge facing the industry is the low yield of sugarcane per hectare. In 2015 the average yield was 62.8 tonnes per hectare. This compares miserably with Zambia whose yield is 113 tonnes per hectare and Malawi producing 105 tonnes per hectare (KSB, 2013). This low yield of sugarcane is likely to raise the purchasing price of sugarcane for the farmer to make some returns making Kenya Sugar sector uncompetitive. The third challenge facing the industry is sugarcane reaching the mills. The Sugar Industry in Kenya faces challenges of poor or non- existent transport and road infrastructure (Odek *et al*., 2003). Poor road network infrastructure lead to high fleet maintenance costs and less fleet productivity which results in transporters demanding higher transportation rates. Higher transportation costs increase the cost of sugarcane production and hence uncompetitive sugar market price. Low fleet productivity means less sugarcane reaching the mills. Lack of sugarcane to the mills causes many hours of mill stoppage. Hence, high costs of production resulting in the industry losing its competitive advantage.

4.8.1 Logit Regression Analysis

The study conducted a logit regression analysis to measure the relationship between the material capability and competitive advantage by estimating the probabilities using the logit function. The material capability was categorized into two: 0-weak and 1-strong. The competitive advantage was binary: 0-not competitive and 1-competitive.The output of the analysis is presented in Table 4.34 and fitted into a model.

Table 4.34: Logit Regression of Material Capability and Competitive Advantage

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.L.for EXP(B)	
							Lower	Upper
Material Capability	1.449	0.537	7.293	1	0.007	4.259	1.488	12.192
Constant	-0.938	0.393	5.695	1	0.017	0.391		

Odds of competitive advantage of sugar companies = -0.938 + $1.449x_1$+0.930, Where

β_0 = - 0.938 is the constant

X_1 - Material capability

0.930 is the error term (SE)

The objective was to determine the influence of material capability on competitive advantage of sugar companies in Western Kenya. The outcome of logit regression analysis is that there is a positive statistically significant (p=0.007) relationship between material capability and competitive advantage. The results revealed that companies that had strong material capability were 4.259 times more likely to be competitive compared to those that had weak material capability. This leads to a conclusion that material capability influences competitive advantage of the sugar companies in western Kenya.

4.8.2 Correlation Analysis

The data for this study is categorical and Spearman's ranking was used. The correlation strengths were interpreted using Cohen (1988) decision rules where r values from 0.1 to 0.3 indicate weak correlation, 0.31 to 0.5 indicate moderate correlation strength and greater than 0.5 indicate a strong correlation between the variables. Correlation analysis was carried out to gauge if there was any relationship between material capability and competitive advantage; the direction of this relation and the strength of this relation. Correlation is statistically significant at 0.05 level if p values are 0.05 and below and statistically insignificant if p values are more than 0.05. Table 4.35 provides the results of these tests.

Table 4.35: Correlation of Material Capability and Competitive Advantage

Variables			Material Capability	Competitive Advantage
Spearman's rho	Material Capability	Correlation Coefficient	1.000	0.345**
		Sig. (1-tailed)	.	0.003
		n	64	64
	Competitive Advantage	Correlation Coefficient	0.345**	1.000
		Sig. (1-tailed)	0.003	.
		n	64	64

**. Correlation is statistically significant at the 0.05 level (2-tailed).

The third objective was "To establish the influence of material capability on competitive advantage of sugar companies in Western Kenya". Correlation analysis was carried out to establish this objective if there was any relationship between material capability and competitive advantage; the direction of this relationship and the strength of this relationship. It was established that there was a moderate statistically significant positive correlation between material capability and competitive advantage; r=0.345, p=0.003, CL=95% (2-tailed). This meant that if the companies enhanced their material capability then the competitive advantage would significantly be enhanced.

4.8.3 Hypothesis Testing

The study tested the null hypothesis using the Chi-square computed value which was compared with the Chi-square distribution reading and a decision made whether to reject the null hypothesis or fail to reject it. Chi-square statistic was used due to the independent data being categorical and dependent data being binary. This was done at 95% Confidence Level and 5% Significance Level. The third hypothesis:

H_{03}: There is no statistically significant relationship between material capability and competitive advantage of sugar companies in Western Kenya.
The X^2 test statistic =7.630 df =1

The X^2 critical values= 3.84 at 95% CL

Since the X^2 critical values= 3.84< X^2 test statistic =7.630 (df =1), the test statistic therefore falls in the rejection region. We, therefore, reject the null hypothesis that there is no statistically significant relationship between material capability and competitive advantage of sugar companies in Western Kenya. We, therefore, conclude that there is statistically significant relationship between material capability and competitive advantage of sugar companies in Western Kenya.

The results of the logit regression analysis, correlation analysis and hypothesis testing are in agreement that material capability influences competitive advantage. The secondary data shows that material capability plays an important role in determining the competitive advantage of a firm. The implication of this is that through efficient and effective management of material, a manufacturing firm can achieve statistically significant cost saving, improvement in production efficiency, and increase in profitability. These observations support findings by other researchers.

Unam (2012) research provides evidence of a positive statistically significant relationship between efficient Materials Management and firm success. Miguel and Brito (2011) found out that there was a positive relationship between Supply Chain Management implementation and operational performance of a firm. Chellaswamy and Revathi (2013) study found out that materials accounts for nearly 80 percent of cost of production and therefore proper planning; purchasing, handling and accounting of material are of great importance. Gargeya and Su (2004) found out that strategic sourcing is a key contributor to firm's success. Strategic sourcing leads to low cost, high quality, reliable delivery, flexibility, and quick response time and also improve firm's financial performance.

The vicious cycle of shortage and surplus of sugarcane, lower sugarcane yield, ever increasing production costs and mounting losses affect competitive advantage of the sugar firm (Pandey, 2007). Nazir *et al*.(2013) found out that the high prices of inputs, low price of output, delay in payments and lack of scientific knowledge were the major problems in sugarcane production in Pakistan. Similar challenges are facing the Kenya sugar sector and if not well addressed the sector will not enjoy competitive advantage in the COMESA free market region. This study supports the RBV theory which asserts that the competitive advantage of an organization is explained by the distinctiveness of its capabilities. The study also supports the Dynamic capability theory and agrees with Winter (2003) who noted that in order for the firms to compete successfully in their markets; firms need dynamic capabilities which help them to upgrade their ordinary capabilities, or to create new ones. This dynamic capability ensures sustainable sugarcane supply to the factory.

4.8 Financial Capability and Competitive Advantage of Sugar Companies

The fourth objective and null hypothesis the study was to achieve are "To assess the influence of financial capability on competitive advantage of sugar companies in Western Kenya" and **H_{04}**: There is no statistically significant relationship between financial capability and competitive advantage of sugar companies in Western Kenya respectively. The study used both the primary and the secondary data. Descriptive statistics were used to analyse the data and interpretations made from them. Chi

square statistic was used for hypothesis testing and logit regression and correlation analyses were used to find the relationship between financial capability and competitive advantage. The results are presented in sub- thematic areas.

4.8.1 Descriptive Statistics

The fourth objective the study was to achieve was to assess the influence of financial capability on competitive advantage of sugar companies in Western Kenya. This objective was based on the premise that a financially endowed firm should be able to implement strategies that enhance its competitive advantage in comparison to other financially weaker firms. The researcher was interested in the financial performance of the firms. Questions were formulated along the Capital Structure (Total Liabilities/Total Assets), Leverage ratio (Debt/Equity) and Cash Flow ratio (Total Liabilities/ Net cash from operations) position of the firms in order to bring out the feelings of the respondents. The preceding section presents findings on how financial capability of a firm influences competitive advantage of Sugar Companies in western Kenya. The results are presented in Table 4.36a and Table 4.36b measured in a Likert scale of 1-5 where 5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 = Strongly disagree, M= Mean, SD = Standard deviation and % = Percentage of Respondents.

Table 4.36a: Financial Capability (Financial adequacy of the Company)

S/N	Statement		5	4	3	2	1	M	SD
a)	The organization pays its farmers within the stipulated timelines.	%	9.4	48.4	9.4	15.6	17.2	3.20	1.30
b)	The organization pays its other suppliers within the stipulated or agreed timelines.	%	7.8	37.5	15.6	21.9	17.2	3.03	1.28
c)	The organization is able to finance its operations from internally generated funds.	%	12.5	45.3	18.8	10.9	12.5	3.38	1.23
d)	The company has adequate cash reserves which are used for new asset creation and investment to grow its production facilities.	%	1.6	15.6	28.1	31.3	23.4	2.69	1.19
Overall mean								**3.08**	**1.25**

Questions in Table 4.36a were asked to gauge the financial capability of the sugar firms to meet their financial obligations. The highest Likert item mean was 3.38 for the organizations being able to finance their operations from internally generated funds. In this case, 57.3% of the respondents agreed that the organizations are able to finance their operations from internally generated funds, 18.8% were neutral and 23.4% were of the opinion that their organizations were not able to finance their operations from only internally generated funds.

The overall mean for the Organizations being able to meet their financial obligations as stipulated or on time was 3.08 and standard deviation of 1.25. This Likert scale mean of 3.08 indicated that the firms' financial performance was moderate in meeting their obligations and standard deviation of 1.25 showing less convergence by the respondents on issues of financial adequacy.

There are times when the firms met some of their financial obligations on time and there are also times when they did not meet their financial obligations on time. This situation calls for debt financing of operations and for acquisition of new assets. The end result is high leverage and weak capital structure. Hence, the sugar firms do not always pay their farmers or suppliers within the stipulated timelines. Late payment to farmers or suppliers is caused by financial or cash flow constraints the companies experience and they have to juggle with the cash available in sorting out their excess financial obligations. Adeyemi (2011) defines this situation as financial distress. The findings in this study support Amuzu (2010) that if the inward flow is less than the outflow then the sustainment of corporate life will be in peril.

From Table 4.36b it is observed that poaching of firm's developed sugarcane by other millers had a score of 79.7% and Likert item mean of 4.06 and weakening of the Kenya shilling with a score of 71.9% and Likert item mean of 3.88. These two factors are beyond the firm's control and they fall under the Government regulatory policy. It is upon the Government to address these factors for the competitive advantage and prosperity of the sugar sector and the country's economy at large.

Low factory capacity utilization with a score of 76.6% with a Likert item mean of 3.86 and low factory extraction efficiency with a score of 82.8% and Likert item mean of 3.94 are factors within the control of the firms and with good strategies the firms should be able to overcome these challenges in order to increase the revenue of the firms.

Table 4.36b: Financial Capability (Financial inadequacy of the Company)

S/N	Statement		5	4	3	2	1	M	Std.
e)	The company struggles to service its operations.	%	20.3	50	10.9	12.5	6.3	3.63	1.19
f)	The company carries more debt than its equity.	%	20.3	28.1	28.1	9.4	14.1	3.16	1.30
g)	The company carries more debt than its assets.	%	14.1	25	25	20.3	15.6	3.12	1.32
h)	The company struggles to service its current and long term debts.	%	23.4	50	12.5	7.8	6.3	3.66	1.09
i)	The company usually borrows funds to finance major factory rehabilitation.	%	34.4	45.3	7.8	10.9	1.6	3.91	1.11
j)	The company borrows heavily to finance its capital expenditure.	%	18.8	15.6	21.9	29.7	14.1	3.02	1.40
k)	Court awards and other litigation costs for sugarcane not harvested are causing cash flow problems	%	9.4	37.5	21.9	15.6	15.6	3.09	1.26
l)	Low factory extraction efficiency reduces cash generation	%	28.1	54.7	10.9	4.7	1.6	3.94	0.92
m)	Lack of long periods of adequate mature sugarcane affect company finances.	%	9.4	34.4	17.2	21.9	17.2	3.08	1.25
n)	Low factory capacity utilization due to frequent factory breakdowns reduces projected company revenue	%	26.6	50	9.4	10.9	3.1	3.86	1.35
o)	Weakening Kenya shilling increases costs of importing spares	%	29.7	42.2	17.2	7.8	3.1	3.88	1.35
p)	Poaching of firm's developed Sugarcane by other millers cause revenue decline of the Organization.	%	39.1	40.6	12.5	3.1	4.7	4.06	**1.49**
Overall mean								**3.53**	**1.25**

The firms usually borrow funds to finance major factory rehabilitation with a score of 79.7% and Likert item mean of 3.91 indicate that the firms have high leverage ratio. The Company struggles to service its current and long term debts with a score of 73.4% and Likert item mean of 3.66 indicate that the firms are operating on high total liabilities to total assets ratio and high debt to equity ratio. The overall mean for the Likert scale was 3.53 indicating that the survival of most of the sugar firms depends to a large extent on external borrowing of funds resulting in weak capital structure and high leverage (debt/equity ratio). The standard deviation was 1.25 from the mean indicating less convergence of the respondents on issues of financial adequacy. The heavy borrowing of funds is detrimental to the smooth operations of the firms as the various studies have shown. The respondents had moderate convergence that low factory extraction efficiency reduces cash generation by standard deviation of 0.92.

Suryani *et al.* (2016) found out that growth in sales and profit growth was positively correlated with financial capability and Kochhar (1997) concluded that to ensure sustained competitive advantage, capabilities concerning the financing structure of a firm are necessary to extract rents from idiosyncratic resources. Shubita and Alsawalhah (2012) observed significantly negative relation between short debt to total assets and profitability and total debt to total assets and profitability. This suggests that profitable firms depend more on equity as their main financing option. The higher the debt ratio, the greater the risk, and thus higher the interest rate will be. According to Velnampy and Niresh (2012) as cited by Abubakar (2015) a debt-equity value of 2 is considered normal and safe and above this it is unsafe. Most of the sugar firms under study fall under Amuzu (2010) observation where, the inward flow is less than the outflow causing the sustainment of corporate life to be in peril.

Secondary data was analyzed and conclusions made from it. Secondary data consisted of information from AFFA Year Book of Sugar Statistics (2014). Ratio analysis is a process of identifying the financial strengths and weaknesses of a firm (Pandey, 2004). Pandey further states that this may be accomplished either through a trend analysis of the firm's ratios over a period of time or through a comparison of the firm's ratios with its nearest competitors and with the industry averages. Trends

in ratios tell us a lot about a company. Understanding what the ratios tell us and putting them into context is as important as getting the correct number out of the formula. As with most financial ratios, it is important to see how a company's ratios compare to competitors and the industry as a whole. Ratios will vary widely among industries, so it is only meaningful to compare companies in similar lines of business. Ratios are only as good as the head who analyzes them.

Financial Structure (Total liabilities/Total assets), leverage ratio (Debt/Equity), cash-flow ratio (Total liabilities/ Net cash from operations) affect the financial performance of the firm. The finance masters have not only invested in strong core finance capabilities, they have gone further by building much better business capabilities to support business improvement and transformation (Chartered Institute of Management Accountants, 2009). The researcher was interested in the secondary data on the financial performance of the companies. Secondary data form was used to collect the information from the companies to enable the calculation of Capital Structure (Total Liabilities to Total Assets), Leverage Ratio (Debt to Equity) and Cash- flow Ratio (Total liabilities to Net cash from operations) and interpretations made from the results. The computation of a ratio is a simple arithmetic operation; its interpretation is far more complex. The secondary data is further discussed in sub-thematic areas.

4.8.2 Capital Structure (Total Liabilities/Total Assets)

The debt ratio measures the proportion of total assets financed by the firm's creditors. Greater leverage will result in higher debt ratios. When a company uses debt financing, they use other people's money to finance their business activities. With the debt ratios we try to measure the indebtness of the firm which gives us an idea of the riskiness of the firm as an investment destination. The debt ratio is the ratio of debts to assets (in actuality total liabilities to total assets). It measures the percentage of funds provided by current liabilities and by long-term debt. Generally, the lower the debt-to-assets ratio the better, but acceptable levels will vary across industries and companies. Larger, stable and more established companies can take on more debt without adding too much risk for investors. The more predictable and

stable the cash flow, the easier and cheaper it is for firms to borrow. Creditors prefer low debt ratios because a low ratio indicates that the firm has plenty of assets to pay back its debts. In other words, the firm has a financial 'airbag' in case of an accident which will protect against a creditor's losses in the event of bankruptcy.

Debt Ratio = Total Liabilities (Total Debt)
Total Assets

If the ratio ***is below 1***, then total assets exceed total liabilities. Debt ratio is the percent of financing in the form of liabilities.

Debt ratios over several years for various sugar companies under study are shown in Table 4.37

Table 4.37: Capital Structure or Debt ratio (Total Liabilities to Total Assets)

Firm		**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**
Muhoroni	Total liabilities(A)	14.2B	19.1B	19.13B	19.34B	36.94B
	Total assets(B)	1.5B	914M	1.059B	891M	895M
	A/B	**9.47**	**20.90**	**18.06**	**21.71**	**41.27**
Chemelil	Total liabilities(A)	1.66B	2.133B	2.24B	2.22B	2.334B
	Total assets(B)	3.47B	3.23B	5.24B	5.23B	5.08B
	A/B	**0.48**	**0.66**	**0.43**	**0.42**	**0.46**
Nzoia	Total liabilities(A)	21B	21B	38B	39.5B	38B
	Total assets(B)	11B	12B	10B	9.6B	9.5B
	A/B	**1.91**	**1.75**	**3.8**	**4.11**	**4.00**
Mumias	Total liabilities(A)	8.7B	11.7B	13.9B	12.9B	14.5B
	Total assets(B)	23.2B	27.4B	27.3B	23.6B	20.4B
	A/B	**0.38**	**0.43**	**0.51**	**0.55**	**0.71**
South Nyanza	Total liabilities(A)	2.9B	3.4B	3.4 B	4.1B	4.0B
	Total assets(B)	5.5B	6.7B	6.1B	6.3B	5.6B
	A/B	**0.53**	**0.51**	**0.56**	**0.65**	**0.71**

Firm		**2011**	**2012**	**2013**	**2014**
West Kenya	Total liabilities(A)	3B	3.1B	2.6B	1.7B
	Total assets(B)	5.6B	6.0B	6.44B	6.7B
	A/B	**0.54**	**0.52**	**0.40**	**0.25**

Source: Respective Sugar Companies (2016)

Muhoroni and Nzoia have debt ratio of above one. Hence if the firms closed, the creditors would not be able to recover all their money. Mumias and South Nyanza Sugar Companies had a debt ratio of 0.71 in 2014/2015. In this case the value is below one and hence creditors may be able to recover their money from the sale of the assets. Chemelil had the debt ratio of 0.46 in 2014/2015 while West Kenya Sugar

Company had the lowest debt ratio of 0.25 in 2014. West Kenya Sugar Company is the least indebted sugar company and the best investment destination for creditors. The debt ratio of one is the maximum ratio for an Organization and safe in guarding the interests of creditors. The lower this ratio is below one the more secure the creditors are in event of liquidation. This study indicates negative relation between the debt ratio (Total Liabilities to Total Assets) and the competitive advantage of the Organization. This agrees with Shubita and Alsawalhah (2012) and Shubita and Alsawalhah (2012) who found significantly negative relation between total debt (total liabilities) to total assets and profitability. Trade Off theory expects Managers of firms to choose a target capital structure that maximizes the firm value by minimizing the costs of prevailing market imperfections and Pecking Order theory assumes firms with more profitability will issue less debt and more likely finance their activities with internal funds.

4.8.3 Leverage Ratio (Debt/Equity)

Debt to equity ratio serves the purpose of determining the solvency of the business firm or a measurement of the risk in the company all creditors are taking compared to the risk the company's owners are taking. The term ‘solvency’ refers to the ability of a concern to meet its long term obligations. This ratio measures leverage by comparing long-term debt directly to shareholder’s equity. This is a more accurate reading of a company’s financial position, as it does not count items such as accounts payable in the calculation of debt. A smaller number means a company is less reliant on debt as compared to equity. Generally, a smaller number also translates to less risk; this is because more debt means more interest payments and more outstanding loans that must be paid. Debt-to-equity ratio measures the amount of debt capital a firm uses compared to the amount of equity capital it uses. This ratio establishes the relationship between the outsiders’ funds and the shareholders fund. Excessive liabilities tend to cause insolvency. This ratio also tells the extent to which the firm depends upon outsiders for its existence. Generally, the higher this ratio, the riskier a creditor will perceive its exposure in your business, making it correspondingly harder to obtain credit. Thus,

Debt-equity ratio = $\frac{\text{Outsiders' funds}}{\text{Share holders' funds}}$

Debt-Equity Ratio = $\frac{\text{Total Liabilities}}{\text{(Total Assets − Total Liabilities)}}$

The two basic components of the ratio are outsiders' funds and shareholders' funds. The outsiders' funds include all debts or liabilities to outsiders that is debentures and long term loans from financial institutions. Shareholders' funds mean preference share capital, equity share capital, reserves and surplus and fictitious assets like preliminary expenses. This ratio indicates the proportion between shareholders' funds and the long-term borrowed funds. A ratio of 1.00 indicates that the firm uses the same amount of debt as equity and means that creditors have claim to all the equity, leaving nothing for shareholders in the event of a theoretical liquidation. The desired range for the debt to equity ratio is 2.00 to 1. If the debt to equity ratio exceeds 2.00 to 1, one begins to question whether the company can service its debt, particularity during a downturn in the industry. If the debt-equity ratio is more than 2:1, it shows a rather risky financial position from the long term point of view. A debt to equity ratio that is less than 1 to 1 may indicate that the company is averse to debt financing and is not using debt to expand the company's business. A negative value indicates that the firm is insolvent; owners' equity has been eroded and the company is unable to meet its financial obligation if loans are recalled or demand note for monthly payment is implemented.

From the data in Table 4.38 Muhoroni, Chemelil and Nzoia are insolvent. These three Companies' Debt-to-equity ratio is negative indicating that the firms are insolvent; owners' equity has been eroded and the company is unable to meet its financial obligation if loans are recalled or demand note for payment is implemented. Mumias Sugar Company was solvent in 2010/2011 at a ratio of 0.21 and has continuously and progressively deteriorated to a debt to equity ratio of 2.31 in 2014/2015 indicating serious financial position of the firm. The same applies to South Nyanza Sugar Company which had a ratio of 0.81 in 2010/2011 and worsened to 2.27 in 2014/2015. West Kenya Sugar Company; a private owned firm is the only firm under study which has shown a health financial position from 2011 to 2014 as

indicated by its ratios which has the least risk ratio of 1:1. The result of this study showed that most of the sugar companies had a debt to equity ratio above 2:1. Velnampy and Niresh (2012) observed that the debt/equity ratio is safe up to 2. Abubakar (2015) research revealed a significant negative relationship between debt-equity ratio and financial performance. Abubakar considered Debt- equity value of 2 as normal and safe. Rehman (2013) study showed negative relationship of debt equity ratio with net profit margin. In reference to Velnampy and Niresh (2012) and Abubakar (2015) all the sugar companies under study with the exception of West Kenya Sugar Company have ratios above 2 and this shows that they are operating under financial distress. Hence, these firms with a ratio above 2:1 are not expected to be profitable.

Table 4.38: Leverage Ratio (Debt to Equity)

Firm		**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**
Muhoroni	Debt(A)	5B	5.1B	5.1B	5.4B	10.045B
	Equity(B)	(12.7B)	(18.2B)	(18.1B)	(18.5B)	(36.050B)
	A/B	**-0.39**	**-0.28**	**-0.28**	**-0.29**	**-0.28**
Chemelil	Debt(A)	1.423B	1.511B	2.261B	2.636B	3.006B
	Equity(B)	382.5M	(417.0M)	737.8M	378.3M	(261.7M)
	A/B	**3.72**	**-3.62**	**3.06**	**6.97**	**-11.49**
Nzoia	Debt(A)	11B	10B	34B	35B	36B
	Equity(B)	(10B)	(9.5B)	(28B)	(29.8B)	(31B)
	A/B	**-1.10**	**-1.05**	**-1.21**	**-1.17**	**-1.16**
Mumias	Debt(A)	3B	5.7B	8.4B	10.6B	13.6B
	Equity(B)	14.5B	15.7B	13.4B	10.6B	5.9B
	A/B	**0.21**	**0.36**	**0.63**	**1.00**	**2.31**
South Nyanza	Debt(A)	2.1B	2.6B	2.4B	3.0B	3.4B
	Equity(B)	2.6B	3.3B	2.7B	2.2B	1.5B
	A/B	**0.81**	**0.79**	**0.89**	**1.36**	**2.27**
Firm		**2011**	**2012**	**2013**	**2014**	
West Kenya	Debt(A)	3B	2.6B	2.6B	2.4B	
	Equity(B)	2.6 B	3.4B	3.7B	3.9B	
	A/B	**1.15**	**0.76**	**0.70**	**0.62**	

Source: Respective Sugar Companies (2016)

4.8.4 Cash Flow Ratio (Total Liabilities/ Net Cash flow from Operations)

Operating cash flows information indicates the business' ability to generate sufficient cash from its continuing operations. The cash flow statement provides information about the firm's liquidity and its ability to finance its growth from internally generated funds. Further, given that the utilization of the performance ratios of cash flows is not common practice; an interpretation of what these indicate is also a novel

undertaking (Amuzu, 2010). A firm with a strong cash flow is best placed to witness a faster recovery following a temporary financial crisis. Helfert (2001) as cited by Amuzu (2010) asserts that exhibition of negative cash flows in future would, even in the case of the most seemingly sound business entities, experience liquidation episodes. According to Everingham, Kleynhans, and Posthumus (2003) operating cash flow ratios are indicators of performance. They determine the extent to which a company has generated sufficient funds to repay loans; to maintain operating capabilities; to pay dividends and to make new investments without using external financing. Cash flow ratios can be used to answer questions on a company's performance since debt obligations are met with cash. It will allow an analyst to examine a company's financial health, and how the company is managing its operations, investment and financing cash flows (Palepu, Healy & Bernard, 2000).

Table 4.39 provides ratios for total liabilities to net cash from operations for the companies under study.

Table 4.39: Cash-Flow Ratio (Total Liabilities to Net Cash from Operations)

Firm		**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**
Muhoroni	Operation cash (A)	235M	50.3M	105.2M	67.3M	(34.6M)
	Total liabilities (B)	14.2B	19.1B	19.13B	19.34B	36.94B
	B/ A	**60.4**	**379.7**	**181.8**	**287.4**	**-1067.6**
Chemelil	Operation cash (A)	49.5M	(220.5M)	401.2M	(366.2M)	(281.9M)
	Total liabilities (B)	1.66B	2.133B	2.24B	2.22B	2.334B
	B/ A	**33.5**	**-9.7**	**5.6**	**-6.1**	**-8.3**
Nzoia	Operation cash (A)	147M	1.1B	(32M)	(281M)	1.1B
	Total liabilities (B)	21B	21B	38B	39.5B	38B
	B/ A	**142.9**	**19.1**	**-1,187.5**	**140.6**	**34.5**
Mumias	Operation cash (A)	656M	(1,280M)	(940M)	(1,329M)	(2,002M)
	Total liabilities (B)	8.7B	11.7B	13.9B	12.9B	14.5B
	B/ A	**13.3**	**-9.1**	**-14.8**	**-9.7**	**-7.2**
South Nyanza	Operation cash (A)	135,412	414,898	(408,867)	(707,012)	(1,365,062)
	Total liabilities (B)	2.9B	3.4B	3.4 B	4.1B	4.0B
	B/ A	**21.4**	**8.2**	**-8.3**	**-5.8**	**-2.9**
Firm		**2011**	**2012**	**2013**	**2014**	
West Kenya	Operation cash (A)	1B	1.2B	1.4B	1.9B	
	Total liabilities (B)	3B	3.1B	2.6B	1.7B	
	B/ A	**3.0**	**2.6**	**1.9**	**0.9**	

Source: Respective Sugar Companies (2016)

The ratio of total liabilities to net cash from operations estimates the number of years the firm will take to repay debt at the current level of net cash from operations and is called debt cover. Giacomino and Mielke (1993) three-year averages for US industries were: chemical industry, 5.62 years; food industry, 6.06 years and for electronic industry 6.5 years and Jooste (1999) three-year period evaluation for similar South African companies were 2.52 years for chemical industry, 3.27 years food industry and 3.18 years for electronics industry. Comparing these ratios to the sugar firms under study in Kenya paints a glim picture.

Muhoroni Sugar Company best debt cover was 60.4 years in 2010/2011 and this has gotten out of hand for the succeeding years indicating that the firm cannot meet its financial obligation on total debt. Chemelil had the best debt recovery of 5.6 years in 2012/2013 before deteriorating to negative cash flow. Nzoia Sugar had the best debt recovery of 34.5 years in 2014/2015. South Nyanza Sugar Company had the best debt recovery of 8.2 years in 2011/2012 before sliding into negative cash flow. Mumias Sugar had the best debt recovery of 13.3years before sliding into negative cash flow. West Kenya Sugar Company has the best debt recovery which was 3 years in 2010/2011 and has gradually improved to 0.9 years. West Kenya Sugar Company is the most liquid of the companies under study. With the exception of West Kenya Sugar Company, all other firms under study do not meet either the South African debt recovery average of 3.27 years or United States of America average of 6.06 years. These firms are not able to operate and meet their financial obligation without the government or outside intervention and are cash starved for smooth business operation.

Amuzu (2010) established that Cash Flow is the lifeblood of any corporate. If, the inward flow is less than the outflow then the sustainment of corporate life will be in peril. The financial capability of an organization is affected by maximizing revenue generation and minimizing its expenditure. In the Kenya Sugar industry scenario, revenue is generated from sales of mainly sugar. The amount of sugar produced is dependent on the supply of sugarcane to the factory and the availability of the factory to crush the sugarcane. Overall time efficiency and the factory capacity utilization determine the sugar production with factory capacity utilization playing a major role.

From 2011 to 2014 the average factory capacity utilization for the firms under study was between 55% and 61% while the overall time efficiency was between 65% and 75% over the same period. This means that the lost opportunity production of sugar was represented by between 45% and 39% capacity utilization and therefore the revenue by the same percentage if it is assumed that the factory can run at 100% capacity utilization. If factory capacity utilization, which is within the company's control, is addressed, then there would be an improvement in revenue generation. A firm may have higher overall time efficiency but because of crushing sugarcane

below the design capacity it ends up with low capacity utilization as shown from Tables 4.40 to Table 4.42. This study used factory capacity utilization to demonstrate the sugar and gross revenue that would have been achieved if the factory operated at 100% factory capacity utilization assuming sugarcane was delivered to the factory as demanded and other factors remaining constant.

Table 4.40: Four Years' Comparative Data of Overall Time Efficiency (%)

Company	Year 2011	Year 2012	Year 2013	Year 2014	Average %
Chemelil	42.6	46.2	53.2	66.8	**52.2**
Muhoroni	45.7	59.0	55.6	58.5	**54.7**
Mumias	77.5	77.1	74.8	70.6	**75**
Nzoia	81.6	84.3	75.3	86.3	**81.9**
South Nyanza	71.0	67.3	73.5	76.0	**72.0**
West Kenya	76.2	74.6	87.9	86.4	**81.3**
Average %	**65.8**	**68.1**	**70.1**	**74.1**	**69.5**

Source: AFFA Year Book of Sugar Statistics (2014).

Table 4.41: Four Years' Comparative Data of Factory Capacity Utilization (%)

Company	Year 2011	Year 2012	Year 2013	Year 2014	Average
Chemelil	28.53	29.5	38.3	41.27	**34.4**
Muhoroni	42.36	50.85	45.92	56.31	**48.9**
Mumias	64.51	63.24	55.01	51.05	**58.5**
Nzoia	69.67	75.78	70.11	82.69	**74.6**
South Nyanza	59.71	54.42	60.35	56.63	**57.8**
West Kenya	69.97	60.50	79.96	77.55	**72.0**
Average	**55.8**	**55.7**	**58.3**	**60.9**	**57.7**

Source: AFFA Year Book of Sugar Statistics (2014).

Table 4.42: Four Years' Comparative Data of Sugar bagged (MT)

Company	Year 2011	Year 2012	Year 2013	Year 2014
Chemelil	21,369	16,107	22,461	37,720
Muhoroni	24,932	31,684	28,891	38,864
Mumias	188,405	179,497	164,215	117,966
Nzoia	60,778	66,884	60,350	66,462
South Nyanza	71,945	51,984	67,442	60,028
West Kenya	59,234	49,565	84,046	73,696
Yearly Totals	**426,663**	**395,721**	**427,405**	**394,736**

Source: AFFA Year Book of Sugar Statistics (2014)

Table 4.42 provides actual sugar bagged and Table 4.43 provides the calculated sugar that would have been bagged if the factory operated at 100% factory capacity utilization.

Table 4.43: Calculated Data of Sugar Bagged at 100% Factory Capacity Utilization

Company	Year 2011	Year 2012	Year 2013	Year 2014
Chemelil	74,900	54,600	58,645	91,398
Muhoroni	58,857	62,309	62,916	69,018
Mumias	292,055	283,835	298,518	231,079
Nzoia	87,237	88,261	86,079	80,375
South Nyanza	120,491	95,524	111,751	106,000
West Kenya	84,656	81,926	105,110	95,030
Yearly Totals	**718,196**	**666,455**	**723,019**	**672,900**

Source: AFFA Year Book of Sugar Statistics (2014).

Table 4.43 shows that in 2011 the difference in total firms' production was 291,533 metric tonnes of sugar which is 68.3% higher than the actual production in the year. The same can be said for 2012 where the actual production was 395,721 tonnes against 666,455 tonnes for 100% capacity utilization; 427,405 actual tonnes in 2013 against projection of 723,019 tonnes and 394,736 actual tonnes against 672,900 for 100% factory capacity utilization. From the above assumptions, it can be seen that the financial capability of the sugar firms in Kenya are negatively affected by the low factory capacity utilization resulting from inadequate sugarcane and below par factory performance. Hence the industry should address the causes of low factory capacity utilization if the firms have to enjoy the economies of scale, be financially capable and enjoy competitive advantage. Addressing this single issue may more than double the income of the sugar firms and this could significantly reduce the cost of sugar production other factors remaining constant. Sales from this extra production will result in totally different ratios for total liabilities to total assets, debt to equity and total liabilities to net cash from operations.

4.8.5 Logit Regression Analysis

The study conducted a logit regression analysis to measure the relationship between the financial capability and competitive advantage by estimating the probabilities using the logit function. The financial capability was categorized into two: 0-weak and 1-strong. The competitive advantage was binary: 0-not competitive and 1-competitive.The output of the analysis is presented in Table 4.44 and fitted into a model.

Table 4.44: Logit Regression of Financial Capability and Competitive Advantage

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.L.for EXP(B)	
							Lower	Upper
Financial Capability	-0.080	0.506	0.025	1	0.874	0.923	0.342	2.489
Constant	-0.143	0.379	0.143	1	0.706	0.867		

Odds of competitive advantage of sugar companies = -0.143 + - $0.080x_1 + 0.885$, Where

β_0 = - 0.143 is the constant

x_1 - Financial capability

0.885 is the error term (SE)

The objective was to determine the influence of financial capability on competitive advantage of sugar companies in Western Kenya. The outcome of logit regression analysis is that there is a negative relationship between the financial capability and competitive advantage of sugar companies in Western Kenya and this relationship is statistically insignificant (p=0.874). The results revealed that companies that had strong financial capability were 0.923 times less likely to be competitive compared to those that had a weak financial capability. This leads to a conclusion that the influence of financial capability on competitive advantage of the sugar companies under study depend on how the financial resources are deployed and not merely that the resources are available.

4.8.6 Correlation Analysis

The data for this study is categorical and Spearman's ranking was used. The correlation strengths were interpreted using Cohen (1988) decision rules where r values from 0.1 to 0.3 indicated weak correlation, 0.31 to 0.5 indicated moderate correlation strength and greater than 0.5 indicated a strong correlation between the variables. Correlation analysis was carried out to gauge if there was any relationship between financial capability and competitive advantage; the direction of this relation and the strength of this relation. Correlation is statistically significant at 0.05 level if p values are 0.05 and below and statistically insignificant if p values are more than 0.05. Table 4.45 provides the results of these tests.

Table 4.45: Correlation of Financial Capability and Competitive Advantage

Variables			Financial Capability	Competitive Advantage
Spearman's rho	Financial Capability	Correlation Coefficient	1.000	-0.020
		Sig. (1-tailed)	.	0.438
		n	64	64
	Competitive Advantage	Correlation Coefficient	-0.020	1.000
		Sig. (1-tailed)	0.438	.
		n	64	64

The fourth objective was "To assess the influence of financial capability on competitive advantage of sugar companies in Western Kenya". Correlation analysis was carried out to assess if there was any relationship between financial capability and competitive advantage; the direction of this relation and the magnitude of this relation. It was established that there was a weak negative and statistically insignificant correlation between financial capability and competitive advantage; r= -0.020, p=0.438, CL=95% (2-tailed). This meant that the competitive advantage of the sugar firm would not necessarily improve if the financial capability of the firms were enhanced. The financial capability of the company would only improve depending on how the financial resources are strategically deployed.

The result of this study does not support Suryani *et al*. (2016) findings that growth in sales and profit was positively correlated with financial capability and Kochhar (1997) that to ensure sustained competitive advantage, capabilities concerning the financing structure of a firm are necessary to extract rents from idiosyncratic resources.

4.8.7 Hypothesis Testing

The study tested the null hypothesis using the Chi-square computed value which was compared with the Chi-square distribution reading and a decision made whether to reject the null hypothesis or fail to reject it. This was done at 95% Confidence Level and 5% Significance Level. The fourth hypothesis:

H_{04}: There is no statistically significant relationship between financial capability and competitive advantage of sugar companies in Western Kenya.

The X^2 test statistics =0.025 df=1
The X^2 critical values= 3.84 at 95% CL

Since the X^2 critical values= 3.84> X^2 test statistics =0.001(df =1), it doesn't fall in the rejection region. Therefore we fail to reject the null hypothesis that there is no statistically significant relationship between financial capability and competitive advantage of sugar companies in Western Kenya. We, therefore, conclude that there is no statistically significant relationship between financial capability and competitive advantage of sugar companies in Western Kenya. The result of the logit regression, correlation analysis and hypothesis testing indicate that availability of financial resources does not necessarily result in competitive advantage of the firm but it depends on how the funds are strategically deployed. The study agrees with Rehman (2013) study which found negative relationship of debt equity ratio with net profit margin. The descriptive statistics support the findings by Amuzu (2010) that Cash Flow Ratios are better tools in assessing a company's financial performance.

4.9 Strategic Capabilities and Competitive Advantage

The fifth objective and null hypothesis the study was to achieve are "To establish the influence of strategic capabilities on competitive advantage of sugar companies in Western Kenya" and **H_{05}:** There is no statistically significant relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya. The study used Chi-square statistic for hypothesis testing and logit regression was used to find the influence of strategic capabilities on competitive advantage of sugar companies in Western Kenya. The results are presented in sub- thematic areas.

4.9.1 Logit Regression Analysis

Logit regression analysis to measure the influence of the strategic capabilities on competitive advantage of sugar companies in Western Kenya was carried out. The independent variables in the function were human resource, technology, material and financial capabilities while the dependent variable was the competitive advantage. The scores for the strategic capabilities were categorized into two: 0-weak and 1-strong. The competitive advantage was also binary: 0-not competitive and 1-competitive. The study results for a logit regression analysis to measure the influence of the strategic capabilities on competitive advantage of the sugar companies under study are presented in Table 4.46 and fitted into a model.

Table 4.46: Logit Regression of Strategic Capabilities and Competitive Advantage

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Human Resource Capability	1.656	.914	3.281	1	.070	2.191	.032	3.146
Technology Capability	1.003	.740	1.838	1	.175	2.727	.639	11.629
Material Capability	2.019	.873	5.355	1	.021	7.533	1.362	41.663
Financial Capability	-.180	.667	.073	1	.787	.835	.226	3.086
Constant	-.813	.516	2.481	1	.115	.444		

Odds of competitive advantage of sugar companies

= -0.813 + 1.656x_1 + 1.003x_2+2.019x_3-0.180x_4

Where

β_0 is the constant

x_1 is Human resource capability

x_2 is Technology capability

$x_3$is Material capability

x_4 is Financial capability

From the logit regression analysis several deductions were made. First, firms that had strong human resource capability were 2.191 times more likely to be competitive compared to those that had weak human resource capability though the relationship was statistically insignificant (p= 0.070). Secondly, Companies that had strong technology capability were 2.727 times more likely to be competitive though the relationship was statistically insignificant (p= 0.175). Thirdly, Companies that had strong material capability were 7.533 more likely to be competitive compared to those that had weak material capability and the relationship was statistically significant (p=0 .021). Lastly, Companies that had strong financial capability were less likely to achieve competitive advantage compared to those that had weak financial capability with an Odds Ratio of 0.835 and the relationship was statistically insignificant (p=0.787).

The logit regression analysis revealed that when all the strategic capabilities were acting on the competitive advantage at the same time; material capability was the most critical strategic capability and statistically significant on determining the competitive advantage of the sugar companies in Western Kenya. These study findings support Duncan, Gintei and Swayne (1998) that effective strategic management requires an understanding of organizational resources and competencies as well as how each contributes to the formation of organizational strengths and ultimately to the development of a competitive advantage.

4.9.2 Hypothesis for Strategic capabilities on Competitive Advantage

H_{05}: There is no statistically significant relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya.

The X^2 test statistics =3.738 df =1

The X^2 critical values= 3.84 at 95% CL

Since the X^2 critical values= 3.84> X^2 test statistics =3.738(df =1), it doesn't fall in the rejection region. We, therefore, fail to reject the null hypothesis that there is no statistically significant relationship between the strategic capabilities and competitive advantage of sugar companies in Western Kenya.

4.10 Strategic Capabilities, Government Regulatory Policy and Competitive Advantage

The sixth objective and null hypothesis the study was to achieve are "To determine the moderating influence of Government regulatory policy on the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya" and **H_{06}:** The Government regulatory policy does not moderate the relationship between the strategic capabilities and competitive advantage of sugar companies in Western Kenya respectively. The study used the primary data and the descriptive statistics were used to analyse the data and interpretations made from them. Chi-square statistic was used for hypothesis testing and logit regression was used to find the influence of Government regulatory policy on the relationship between strategic capabilities and competitive advantage. Correlation analysis was used to find out the relationship between the various variables. The results are presented in sub- thematic areas.

4.10.1 Descriptive Statistics

The sixth objective the study was to achieve is to determine the moderating influence of Government regulatory policy on the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya. This objective was based on Porter (1990) theory that national home base (national determinants of competitive advantage) of an organization plays an important role in shaping the

extent to which it is likely to achieve an advantage on a global scale. The strategic capabilities in question or under study were human resource, technology, material and financial. Questions were formulated along the labour laws, taxation regime and industry laws in the sugar sector to bring out from the respondents the information required on the role of government in shaping the competitive advantage of the sugar industry in western Kenya. The respondents were requested to state the extent of their agreement with the statement. The results are presented in Table 4.47 measured in a Likert scale of 1-5 where 5= Strongly agree; 4= Agree; 3=Neutral; 2=disagree; 1=Strongly disagree, M= Mean, SD= Standard deviation and % = Percentage of Respondents.

Table 4.47: Government Regulatory Policy and Competitive Advantage

S/N	Statement		5	4	3	2	1	M	SD
a)	The Kenya Government taxation regime in sugar industry increases price of sugar.	%	32.8	31.3	7.2	17.2	6.3	3.56	1.39
b)	Lack of subsidy to sugarcane farmers increases cost of sugarcane production.	%	31.3	32.8	6.3	23.4	6.3	3.60	1.32
c)	Kenya Labour laws governing the relationship between employers and employees stabilize the operation of the sugar industry.	%	7.8	45.3	20.3	23.4	3.1	3.27	1.06
d)	Government should enforce laws governing the conduct of millers and growers.	%	28.1	25.0	10.9	21.9	14.1	3.32	1.44
e)	Government should enforce trade regulations in the sugar sector.	%	54.7	35.9	4.7	3.1	1.6	4.41	0.83
f)	Government should categorize sugar as a food in order to reduce taxation.	%	67.2	25	1.6	3.1	3.1	4.45	0.94
g)	Government should provide financial support and incentives for diversification.	%	68.8	25	3.1	3.1	0	4.64	0.68
h)	Kenya Government should privatize state owned sugar millers.	%	45.3	29.7	6.3	12.5	6.3	3.95	1.28
	Overall Mean							**3.90**	**1.12**

From Table 4.47, two questions had Likert items means of below 3.5 while the rest had Likert items means of above 3.5. Kenya Labour laws governing the relationship between employers and employees stabilize the operation of the sugar industry had Likert item mean of 3.27. Hence, 53.1% of the respondents agreed that the Labour laws stabilize the operation of the sugar industry, 20.3% were neutral and 26.5% disagreed that Labour laws governing the relationship between employers and employees stabilize the operation of the sugar industry. Accordingly, 53.1% of the respondents agreed that Government should enforce laws governing the conduct of millers and growers, 10.9% were neutral and 36.0% disagreed. The Likert item mean was 3.32. This meant that the effect of the Labour laws and laws governing the conduct of millers and growers had moderate influence on competitive advantage of the sugar companies in Western Kenya. The Likert scale overall mean was 3.9 and standard deviation of 1.12 indicating that the respondents were more in agreement that Government regulatory policy is critical if the Kenya sugar industry is to survive in the free trade COMESA region. The respondents were more in agreement that Government should provide financial support and incentives for diversification with the least standard deviation of 0.68 followed by Government should enforce trade regulations in the sugar sector with a standard deviation of 0.83 and lastly Government should categorize sugar as a food in order to reduce taxation with a standard deviation of 0.94.

The result support Arjchariyaartong (2006) that issues facing the sugar industry in Thailand is divided into economic problems, processing problems, market problems, regulation problems, and management problems and Emam and Musa (2010) recommendation that, the government should exempt sugarcane production from taxes to lower the cost of sugar production and make the industry competitive. According to Monitoring African Food and Agricultural Policies (MAFAP) (2013), sugar in Kenya is not classified as a basic food, so it is subjected to a 16 percent value added tax (VAT). If value added tax is zero rated, ex-factory sugar price would be able to go down. This reduction in price would enhance the competitive advantage of the industry. This view is supported by 92.2% of the respondents that sugar should be categorized as a food in order to reduce taxation as shown in Table 4.47 item f.

4.10.2 Logit Regression Analyses

The study carried out two logit regression analyses:

1. Logit regression analysis to measure the influence of Government regulatory policy on competitive advantage of sugar companies.
2. Logit regression to analyze the moderating influence of Government regulatory policy on the relationship between the strategic capabilities and competitive advantage of sugar companies.

These regressions were carried out to bring out clearly the influence of each set on competitive advantage of the sugar companies in Western Kenya for better understanding of the sixth objective of the study "To determine the moderating influence of Government regulatory policy on the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya". A logit regression analysis was carried out to measure the influence of the Government regulatory policy on competitive advantage by estimating the probabilities using the logit function. The government regulatory policy was categorized into two: 0-weak and 1-strong. The competitive advantage was binary: 0-not competitive and 1-competitive. The output of the analysis is presented in Table 4.48 and fitted into a model.

Table 4.48: Logit of Government Regulatory Policy and Competitive Advantage

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.L.for EXP(B)	
							Lower	Upper
Government Regulatory Policy	0.973	0.551	3.122	1	0.077	2.647	0.899	7.791
Constant	-0.827	0.453	3.328	1	0.068	0.438		

Odds of competitive advantage of sugar companies = -0.827 + $0.973x_1 + 1.004$, Where

β_0 = - 0.827 is the constant

x_1 - Government regulatory policy

1.004 is the error term (SE)

The outcome of the logit regression analysis was that there was a positive statistically insignificant relationship between the government regulatory policy and competitive advantage (p= 0.077). The results revealed that companies that were supported by enabling government regulatory policy were 2.647 times more likely to enjoy competitive advantage compared to those that had stifling government regulatory policy.

Logit regression to analyze the moderating influence of Government regulatory policy on the relationship between the strategic capabilities and competitive advantage (CA) of sugar companies was carried out and results are shown in Table 4.49.

Table 4.49: Logit of Strategic Capabilities, Government Regulatory Policy and CA

	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**95% C.I. for EXP(B)**	
							Lower	Upper
Human resource capability by Moderator	.378	.464	.664	1	.415	1.459	.588	3.622
Technology capability by Moderator	-1.195	.682	3.071	1	.080	.303	.080	1.152
Material capability by Moderator	.783	.708	1.223	1	.269	2.188	.546	8.764
Financial capability by Moderator	.338	.231	2.143	1	.143	1.402	.892	2.203
Constant	-.474	.335	2.004	1	.157	.623		

Odds of competitive advantage of sugar companies given government regulatory policy

= -0.813*-0.474 + 1.656*0.378x_1 + 1.003*-1.195x_2+2.019*0.783x_3-0.180*0.338x_4

=0.385 + 0.626 x_1-1.956x_2+ 1.581x_3+ 0.061x_4

Where:

β_0 is the constant

x_1 is Human resource capability

x_2 is Technology capability

x_3 is Material capability

x_4 is Financial capability

Values with * were obtained from Table 4.46

Government regulatory policy influenced human resource capability positively by 1.459 times and technological capability negatively by 0.303. It was also established that the Government regulatory policy enhanced material and financial capabilities of the sugar companies in western Kenya by 2.188 and 1.402 times respectively.

4.10.3 Correlation of Strategic Capabilities, Government Regulatory Policy and Competitive Advantage

Table 4.50 represents Correlation of Strategic Capabilities, Government Regulatory Policy and Competitive Advantage.

Table 4.50: Strategic Capabilities, Government Policy and Competitive Advantage

	1	2	3	4	5	6
1Human Resource	1					
2Technology Capability	.468**	1				
Sig.(2-tailed)	.000					
3Material Capability	.532**	.564**	1			
Sig.(2-tailed)	.000	.000				
4Financial Capability	.406**	.055	.315*	1		
Sig.(2-tailed)	.001	.665	.011			
5Government Regulatory Policy	.186	.341**	.228	-.004	1	
Sig.(2-tailed)	.140	.006	.070	.974		
6.Competitive Advantage	.003	.289*	.345**	-.020	.224*	1
Sig.(2-tailed)	.491	.010	.003	.438	.038	

It was established that there was a weak statistically significant positive relationship between government regulatory policy and competitive advantage r= 0.224, p=0.038, CL=95% (2-tailed).This meant that if the government regulatory policy were improved on or made better, then the competitive advantage of the sugar industry would improve. Human resource capability statistically significantly relates with

technology capability, material capability and financial capability. This meant that human resource capability influences the achievement of the technology, material and financial capabilities.

This is in line with Collins (2009) that no company can grow its revenues faster than its ability to get enough of the right people to implement that growth. Technology capability statistically significantly relates with material capability and government regulatory policy while material capability significantly relates to financial capability. This meant that if financial capability was enhanced then human and material capability will definitely improve and consequently competitive advantage.

4.10.4 Hypothesis Testing

The study tested the null hypothesis using the Chi-square computed value which was compared with the Chi-square distribution reading and a decision made whether to reject the null hypothesis or fail to reject it. This was done at 95% Confidence Level and 5% Significance Level.

H_{06}: The Government regulatory policy does not moderate the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya.

The X^2 test statistics =3.920 df =1; The X^2 critical values= 3.84 at 95% CL

Since the X^2 critical values= 3.84< X^2 test statistics =3.920 (df =1), the test statistic, therefore, falls in the rejection region. We, therefore, reject the null hypothesis that the government regulatory policy does not moderate the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya. We, therefore, conclude that Government regulatory policy statistically significantly moderates the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya. These results support Stiglitz (2009) findings that regulations can both enhance markets and protect those who might otherwise suffer in unregulated markets and Jalilian, Kirkpatrick and Parker (2006) that where political capture occurs, the regulatory goals are distorted to

pursue political ends at the expense of the industry. Odek et al. (2003) observed that Government policy, taxation and various levies as well as middlemen costs such as Out- grower Company deductions contribute towards raising the domestic cost of production of sugar in Kenya. Lemos (2004) noted that firms respond to minimum wage increases by the government by either reducing profits or raising prices. Further, firms respond to these higher labour costs by reducing employment. Table 4.51 compares the influence of strategic capabilities on competitive advantage of sugar companies in Western Kenya before and after moderation by the Government regulatory policy.

The logit regression results show that the government regulatory policy has negative influence on the relationship between human, technology and material capabilities and competitive advantage of sugar companies and positive influence on the relationship between financial capability and competitive advantage. The respondents are categorical that the Kenya Sugar industry may be competitive if the government provides financial support and incentives for diversification (93.8%); Sugar is categorized as a food to eliminate taxation (92.2%); trade regulations are enforced (90.6%) and privatization of the state-owned sugar mills (75%) as shown in Table 4.47. These results are in agreement with Sheales *et al*. (1999) that distortion in world sugar trade stemmed largely from government policies in a small number of countries. The policies pursued in these countries imposed substantial economic costs worldwide. On the other hand, Arjchariyaartong (2006) found out that government policies and political location factors such as subsidies, taxes, regulations and exchange rate influenced the competitive advantage of the sugar firm. Appropriate policies are crucial to creating the conditions within which competition can thrive, and the Government should act to build these. According to Dollery and Worthington (1996), theory of market failure facilitates the identification of undesirable market outcomes and assists in the prescription and implementation of corrective Government intervention. This study agrees with Porter (1990) Diamond theory that the national home base of an organization plays an important role in shaping the extent to which it is likely to achieve competitive advantage on a global scale.

Table 4.51: Strategic capabilities and Competitive Advantage

Inferential Analysis	Construct	Before Government Regulatory Policy Moderation	After Government Regulatory Policy Moderation
Logit regression	Human resource capability	Human resource capability influences competitive advantage positively 2.191 times and the relation is statistically insignificant, p=0.07.	Government regulatory policy reduces human resource capability influence on competitive advantage from 2.191 times to 1.459 times and the relation is statistically insignificant, p=0.415.
	Technology Capability	Technology capability increases competitive advantage of a sugar firm by 2.727 times and the relation is statistically insignificant, p= 0.175.	Government regulatory policy reduces technology capability influence on competitive advantage from 2.727 times to 0.303 times and the relation is statistically insignificant, p= 0.08.
	Material Capability	Material capability influences competitive advantage of a firm positively 7.533 times and the relation is statistically significant, p= 0.021.	Government regulatory policy reduces material capability influence on competitive advantage from 7.533 times to 2.188 times and the relation is statistically insignificant,p= 0.269.
	Financial Capability	Financial capability influences competitive advantage of a sugar firm negatively to 0.835 and the relation is statistically insignificant, p= 0.787.	Government regulatory policy increases financial capability influence on competitive advantage from 0.835 times to 1.402 times and the relation is statistically insignificant, p= 0.143.
Hypothesis testing	Human resource, Technology, Material and Financial Capabilities	X^2 critical values= 3.84> X^2 test statistics =3.738(df =1), it doesn't fall in the rejection region and conclude that there is no statistically significant relationship between strategic capabilities and competitive advantage of sugar firms in Western Kenya.	X^2 critical values= 3.84< X^2 test statistics =3.920 (df =1), the test statistic falls in the rejection region. We reject the null hypothesis and conclude that Government regulatory policy statistically significantly moderates the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya.

From Table 4.47, 75% of the respondents held that the state-owned sugar mills should be privatized in order to inject professionalism and accountability into the sugar sector. This desire for privatization of the Kenya state owned sugar mills supports the study by Ellis and Singh (2010) whose findings indicated that state led sugar industries exhibit low productivity and poor performance and they required substantial levels of costly government subsidization, which is unlikely to be sustainable in the long run, thus jeopardizing many livelihoods. In conclusion, 90.6% (Table 4.47) of the respondents agreed that the government should enforce the trade regulations to save the Kenya sugar industry from collapse. This view supports Jemaiyo (2013b) research which concluded that appropriate policies are crucial to create the conditions within which competition can thrive, and authorities can help to build a culture of competition, and increase awareness of competition issues amongst policy-makers and the public. Arjchariyaartong (2006) found out that the problems and obstructions of the sugar industry included regulation problems. Emam and Musa (2010) recommended that, government should exempt sugarcane production from taxes, induce incentives to encourage sugar industry production and secure sustainable and steadiness foreign exchange. Positive action by the Kenya government on the issues influencing the sugar industry negatively will go a long way in enhancing the competitive advantage of the sugar industry. The result are in line with the Porter,s (1990) theory on influence of home base country on competitive advantage of a firm.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings of the study results, conclusions and the recommendations made from the research findings. The general objective of the study was to assess the Influence of Strategic Capabilities on Competitive Advantage of Sugar Companies in Western Kenya. The independent variables were human resource, technology, material and financial capabilities. The dependent variable was the competitive advantage and the moderating variable was the Government regulatory policy. The data sources that were employed in this study consisted of both primary and secondary data. The presentation is organized around specific objectives and conclusions are in tandem with the specific objectives. The chapter also highlights the recommendations of the research and suggested areas for further research.

5.2 Summary of Findings

The quantitative data was analyzed and presented using descriptive and inferential statistics. Chi- square statistic was used for hypotheses testing to determine the relationships between the independent and dependent variables. The general logit model was simplified to provide the log linear model of logit regression for this study. Secondary data was used to compare the companies' performance to the response of the respondents and conclusions drawn from it. This led to the findings in sections 5.2.1 to 5.2.6.

5.2.1. Human Resource Capability and Competitive Advantage of Sugar Companies

The study examined Human Resource Capability indicators which are training and development of staff, company leadership and labour turnover in regard to how they influence the competitive advantage of the sugar companies in Western Kenya. The researcher raised questions that probed the respondents to provide information on the mentioned indicators. The study established that training and development of

employees was given moderate consideration in the sugar firms under study. Most trainings in the organizations target the development of managerial skills as opposed to the development of technical skills. Lack of emphasizing training of staff on technical skills is likely to lead to depletion or reduction of technical skills in the organization which are critical to achieving the competitive advantage. The sugar firms under study are expected not to perform very well and enjoy competitive advantage due to limited investment in training and development of their employees in technical fields.

Leadership in the organizations to a large extend provided conducive and enabling environment for the operations of the sugar industries. The sugar firms are expected to perform well due to the enabling leadership. Employee retention issues were being implemented moderately in the sugar companies with the end result of creating some level of employee dissatisfaction. Demographic data indicated high labour turnover among the middle and senior level managers. This is detrimental to the smooth continuity of business in the sugar industry and its competitive advantage. Employees are the backbone of any business success and therefore, they need to be motivated and maintained in the organization if the firms have to enjoy competitive advantage.

The outcome of logit regression analysis was that there was a positive relationship between the human resource capability and competitive advantage; however, this relationship was statistically insignificant. Correlation analysis established that there was a statistically insignificant weak positive correlation between human resource capability and competitive advantage. Hypothesis testing established that there was no sufficient evidence to support a statistically significant difference in the relationship between human resource capability and competitive advantage of sugar companies in Western Kenya. Hence, the null hypothesis was accepted. The Resource Based View (RBV) theory of strategy asserts that the competitive advantage and superior performance of an organization is explained by the distinctiveness of its capabilities.

Human resource capability is necessary for proper usage of the company resources in order to achieve competitive advantage. From the results of logit regression analysis, correlation analysis and hypothesis testing it can be concluded that the human resource capability has positive relation with competitive advantage, though not statistically significant.

5.2.2. Technology Capability and Competitive Advantage of Sugar Companies

The study found out moderate technology adoption in the sugar industry in Kenya. Technological developments play a prominent role to achieving better competitive advantage. The sugar industry in Kenya has limited investment in new technology and this curtails the industry's competitive advantage. Though, the industry has not invested much in technology innovation; there was general agreement by the respondents that technology innovation has played a major role in the organizations' meeting their revenue targets. The industry has also invested moderately in technology innovation. Technological innovation is one of the most important drivers of competitive advantage. The competitive advantage of a company strongly depends on its possibility to benefit from innovational activities. Performance of factory maintenance is moderate. This moderate performance is a pointer to average factory capacity utilization the industry is experiencing. The technology capability of the industry is moderate. This moderate technology capability indicate time lag in replacement of obsolete technology, low investment in technology innovation and less effective maintenance strategies. These actions manifest themselves in average factory capacity utilization of the industry due to inefficient factory operations limiting the increased production of sugar and to the growing of more sugarcane. Due to the moderate factory capacity utilization it can be concluded that the industry technology capability is below par and needs to be enhanced for better industry performance.

The outcome of logit regression analysis established a positive statistically significant relationship between the technology capability and competitive advantage. Correlation analysis established that there was a weak statistically significant positive relationship between technology capability and competitive

advantage. Hypothesis testing showed that there was a statistically significant relationship between technology capability and competitive advantage of sugar companies in Western Kenya leading to the rejection of the null hypothesis. This meant that if the technology capability was enhanced then competitive advantage would also improve significantly. This leads to a conclusion that technology capability influences competitive advantage of the sugar companies. The logit, correlation and hypothesis results show that investment in newer technology, successful innovation process and maintenance of production facilities leads to the competitive advantage of manufacturing firms. Technology capability is one of the critical capabilities in the Kenya sugar industry determining competitive advantage. The study supports RBV theory and Dynamic capabilities theory. RBV theory underlines the importance of enterprise internal resources in order to reach a competitive advantage. DCs exist because of dynamics interactions between firms' capability building and environment, and the needs to sustain competitive advantage through capability building.

5.2.3. Material Capability and Competitive Advantage of Sugar Companies

The material capability is composed of sugarcane husbandry, sugarcane harvesting and sugarcane transport. The sugar firms were implementing to a large extends good practices for sugarcane husbandry. More effort is required in sugarcane husbandry to ensure adequate supply of sugarcane to the mills. Good farmer management results in good sugarcane husbandry, high sugarcane yields and a motivated farmer who is enthusiastic to continue with sugarcane farming due to the lucrative returns. If farmers do not receive good extension services they are likely to incur very high costs of production and lower output per unit of land area and eventually abandon sugarcane farming. Sugarcane yield per hectare is a key determinant of gross income to farmers.

Sugarcane harvesting results showed moderate implementation of factors leading to optimal quality of sugarcane harvesting. This is an indication of failure by the firms to carry out effective and efficient sugarcane harvesting. Sugarcane harvest management is key to sustained delivery of sugarcane to the mills. Proper

coordination amongst different teams such as cutters, growers, service providers and millers is critical to achieving competitive advantage. Good harvesting program leads to good company image, orderly activity operations and farmers' understanding of when their sugarcane will be harvested and eliminates corruption and lobbying by farmers for their sugarcane to be harvested. Sugarcane transport system in the sugar industry is moderate. This is an indication that sugarcane transportation to the factory is facing challenges leading to sub-optimal delivery of sugarcane to the factory. This leads to several hours of factory stoppage due to lack of sugarcane delivery to the factory.

The results of the study indicated that material capability in the Kenya sugar industry was moderate. The industry has made some progress in material capability but more effort is required for sustainable sugarcane availability and hence competitive advantage. The firms under study lost some crushing hours in the period under study due to lack of sugarcane and the sugarcane yield per hectare has been decreasing over the study period. These out of sugarcane hours and low yields affect the competitive advantage of the sugar sector negatively. The firms under study suffer from cyclic periods of lack of sugarcane and sugarcane glut. What emerged from the secondary data was that the Kenya Sugar Industry faced three major challenges to meeting material capability namely; lack of adequate sugarcane, low sugarcane yield per hectare and poor transport system of sugarcane to the mills. Emphasis should be put on proper sugarcane varieties research and development, increasing the yield per hectare and developing adequate sugarcane land with good husbandry practices in order to secure constant adequate tonnes of sugarcane for the firms. For the Kenya sugar sector to experience remarkable success in their performance, priority must be given to sugarcane management as a total concept.

The outcome of the logit regression analysis revealed that there was a positive statistically significant relationship between material capability and competitive advantage. On the other hand, Correlation analysis established that there was a moderate statistically significant positive correlation between material capability and competitive advantage. Finally, hypothesis testing showed statistically significant relationship between material capability and competitive advantage of sugar

companies in Western Kenya leading to the rejection of the null hypothesis. The results of the logit regression analysis, correlation analysis and hypothesis testing are in agreement that material capability influences competitive advantage. This meant that if the companies enhanced their material capability then the competitive advantage would significantly be enhanced. Hence, it can be concluded that material capability is the most critical strategic capability that affects competitive advantage of the sugar companies in Western Kenya. This research shows that firms who possess dynamic capabilities are capable of meeting the change that is necessary to build material capability and enjoy competitive advantage. Sugarcane is a material whose availability is dynamic.

5.2.4. Financial Capability and Competitive Advantage of Sugar Companies

The financial position of most of the sugar firms under study was weak. Poaching of firm's developed sugarcane by other millers; low factory capacity utilization and low factory extraction efficiency are factors affecting the competitive advantage of the sugar firms. Low factory capacity utilization and low factory extraction efficiency are factors within the control of the firms and with good strategies the firms should be able to overcome these challenges in order to increase the revenue of the firms. The firms are operating on high total liabilities to total assets ratio and high debt to equity ratio. The heavy borrowing of funds is detrimental to the smooth operations of the firms.

Secondary data analyzed showed that Muhoroni and Nzoia had debt ratio of above one. Hence if the firms closed, the creditors would not be able to recover all their money. Debt to equity ratio serves the purpose of determining the solvency of the business firm or a measurement of the risk in the company all creditors are taking compared to the risk the company's owners are taking. Muhoroni, Chemelil and Nzoia are insolvent. These three Companies' Debt-to-equity ratio was negative. West Kenya Sugar Company had the best debt recovery. West Kenya Sugar Company is the most liquid of the companies under study.

The cash flow statement provides information about the firm's liquidity and its ability to finance its growth from internally generated funds. It can be concluded that with the exception of West Kenya Sugar Company, all the firms under study were having serious cash flow problems and unable to operate smoothly without external assistance.

The outcome of logit regression analysis is that there is a negative relationship between the financial capability and competitive advantage of sugar companies in Western Kenya. The logit results revealed that companies that had strong financial capability were less likely to be competitive compared to those that had a weak financial capability. Correlation Analysis established that there was a weak negative correlation between financial capability and competitive advantage. This meant that the competitive advantage of the firms would not necessarily improve if the financial capability of the firms were enhanced. Hypothesis Testing established that there was no statistically significant relationship between financial capability and competitive advantage of sugar companies in Western Kenya. This led to the acceptance of the null hypothesis. The result of the logit and correlation analyses and hypothesis testing indicated that availability of financial resources does not result in direct competitive advantage of the firm but it depends on how these funds are strategically utilized.

5.2.5. Strategic capabilities on Competitive Advantage of Sugar Companies

The logit regression analysis showed that there was a positive relationship between the human resource capability, technology capability and material capability and competitive advantage. The relationship between the human resource capability and technology capability and competitive advantage was not statistically significant. The logit regression analysis revealed that material capability was the most critical strategic capability and statistically significant on determining the competitive advantage of the sugar companies in Western Kenya.

On the other hand, financial capability influenced the competitive advantage negatively and this influence was not statistically significant. On the other hand, the hypothesis testing established that there was no statistically significant relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya leading to the acceptance of the null hypothesis.

5.2.6. Moderating Influence of Government Regulatory Policy on Strategic Capabilities and Competitive Advantage of Sugar Companies

The respondents were in agreement that the Government intervention was critical and essential if the sugar sector has to survive the regional competition. A logit regression analysis on the influence of the Government regulatory policy on competitive advantage established a negative influence on human, technology and material capability and competitive advantage. Government regulatory policy reduced the influence of human resource capability, technology capability and material capability on competitive advantage and enhanced the influence of financial capability on competitive advantage. The Hypothesis testing showed that Government regulatory policy statistically significantly moderates the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya. This led to the conclusion that Government regulatory policy is critical for the sugar companies in Western Kenya to enjoy competitive advantage. Finally, correlation analyses showed that human resource capability statistically significantly related with technology capability, material capability and financial capability. This shows that human resource capability is essential in creating the other three capabilities (technology, material and financial).

5.3 Conclusions

The first conclusion drawn from the study findings is that the human resource capability positively influences competitive advantage of sugar companies in Western Kenya as indicated by the correlation and logit analyses results, though, the relationship is not statistically significant as shown by the hypothesis testing result. The organizations target mostly the development of managerial skills. This is likely to lead to poor performance of the sugar firms due to the weakening of the technical competency of the employees.

The second conclusion that is drawn from the research is that technology capability positively influences competitive advantage of sugar companies in Western Kenya as observed from the logit and correlation analyses results and hypothesis testing results. The logit, correlation and hypothesis testing results established that relationship between technology capability and competitive advantage is statistically significant

The third conclusion drawn from the study findings is that material capability is the most critical strategic capability that influences competitive advantage of sugar companies in Western Kenya. The logit and correlation analyses and the hypothesis testing results showed a statistically significant positive relationship between material capability and competitive advantage.

The fourth conclusion drawn from the research is that the financial capability has negative influence on the competitive advantage of the sugar companies in Western Kenya, though; the relationship is not statistically significant. The logit and the correlation analyses results revealed negative relationship between the financial capability and competitive advantage. Hypothesis testing results indicated that the relationship between financial capability and competitive advantage was not statistically significant.

The fifth conclusion drawn from the study findings is that according to logit regression analysis; human resource, technology and material capabilities have positive influence on competitive advantage of sugar companies in Western Kenya

and financial capability has negative influence on the competitive advantage of the sugar companies in Western Kenya. Hypothesis testing established that there is no statistically significant relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya.

The sixth conclusion drawn from the study is that the Government regulatory policy has negative influence on the relationship between human resource, technology and material capabilities and competitive advantage. While, the government regulatory policy has positive influence on the relationship between financial capability and competitive advantage. Hypothesis testing established that Government regulatory policy moderates the relationship between strategic capabilities and competitive advantage of sugar companies in Western Kenya).

5.4 Recommendations

Several recommendations have been made based on the findings of the study. First, the industry should pay keen attention to the training of the human resource in technical fields and retention of employees in order. Secondly, technology capability statistically significantly affects competitive advantage of the sugar industry. Hence, the industry should pay keen attention to the technology capability by creating an environment for technology acquisition, technology innovation and constantly evaluating the maintenance strategies for efficient and effective operation of the sugar industry in Western Kenya in order to enjoy competitive advantage. Thirdly, the sugar industry should prioritize sugarcane husbandry, harvesting and supply in line with factory demand for sustainable material capability. Hypothesis Testing established that there was a statistically significant relationship between material capability and competitive advantage. The government and the sugar industry stakeholders to establish a joint committee to resolve the issues around sugarcane area zoning, drop in sugarcane yield, poor road infrastructure and its maintenance. Fourth, with the exception of West Sugar Company, the rest of the sugar firms under study are heavily indebted and insolvent as brought out by the secondary data. The Government should intervene to correct this situation if the industry has to survive in the COMESA free trade area. Fifth, sugarcane is the most critical strategic capability

amongst the strategic capabilities studied and the sugar firms have to ensure that sugarcane management takes center stage in their strategies for them to enjoy competitive advantage. Sixth, the Government regulatory policy reduced the influence of human resource capability, technology capability and material capability and enhanced the influence of financial capability on competitive advantage. This shows the important role the government plays on competitive advantage of sugar companies in Western Kenya. The Government should pursue policies that will enhance positive influence on human resource, technology, material and financial capabilities.

5.5 Areas for Further Research

A review of the literature indicated that few studies had been carried out on the influence of strategic capabilities on competitive advantage of the sugar industry in Kenya. The objectives were clear and successfully accomplished though did not cover all strategic capabilities such as marketing. These objectives were broad and each of the areas requires further detailed research to establish influence of its various factors on competitive advantage of the sugar industry in Kenya. In addition, one of the limitations of the study was generalization of research findings. Most of the sugar firms under study are State owned companies except Mumias and West Kenya sugar companies. Therefore, an expansion of the geographical scope of the study to involve private owned sugar companies in Kenya is required to enable the generalization of the result in the country. The study recommends the following areas for further research: Influence of marketing capability on competitive advantage of the sugar companies in Kenya; Influence of Strategic Capabilities on Competitive Advantage of Privately owned Sugar Companies in Kenya and research on the suitable ratios for total liabilities to total assets and total liabilities to net cash from operations for companies enjoying competitive advantage in COMESA region. These financial ratios once established will act as guide to good performance of sugar firms in COMESA region that are enjoying competitive advantage. Research in this area of financial ratios in the manufacturing sector is scanty.

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APPENDICES

Appendix I: Introductory Letter

The Managing Director,
----------Sugar Company Limited,
P.O. Box ----------,

Dear Sir/Madam,

I am a student pursing Doctor of Philosophy in Business Administration at Jomo Kenyatta University of Agriculture and Technology, Kisumu Campus. I am carrying out a research entitled: **Influence of strategic capabilities on competitive advantage of Sugar Companies in Western Kenya**. Your honest view and information you provide on this study will be appreciated; will be treated with a lot of confidentiality and your responses and your name will not be divulged to any other person. The information collected will be used for the purpose of this study and not for any other purpose. The questionnaire is designed to help carry out a survey of the identified sugar factories in Western region of Kenya. Thank you very much for your valuable time and co-operation.

Yours sincerely,

Eng. Richard M. Imbambi
(Student)

Appendix II: Questionnaire for the Middle and Senior Managers of Sugar Companies

Dear respondent,
The present study is an endeavor to identify the role of strategic capabilities namely; human, technology, material and financial on competitive advantage of sugar companies in Western Kenya and the moderation of Government regulatory policy. The information you provide will be used only for the PhD research and not for any other commercial activity. Please spare a few minutes from your valuable schedule and share your true feelings. Confidentiality of the information provided by you is ensured.

SECTION 1: DEMOGRAPHIC INFORMATION OF THE RESPONDENTS

Please tick/mark in the boxes provided as appropriate

1. Names (Optional)----------

2. Category

1.	Top (senior) Management	
2.	Middle Management	

3. Age (In Years)

1.	Above 50	
2.	41 – 50	
3.	31 – 40	
4.	21 – 30	
5.	Under 21	

4. Highest level of education

1.	PhD Degree	
2.	Master's Degree	
3.	Bachelor's Degree	
4.	Diploma	
5.	Secondary Certificate	
6.	Primary Certificate	

5. Length of Service with this Organization

1.	Above 20 Years	
2.	16 – 20 Years	
3.	11 – 15 Years	
4.	6 – 10 Years	
5.	5 Years and Below	

SECTION 2: HUMAN RESOURCE CAPABILITY

1. *On a Likert scale of 1 to 5 tick in the appropriate space your level of agreement with the following statements in reference to your organization.* ***(5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 =Strongly disagree)***

S/N	Statement	5	4	3	2	1
a)	Training needs of employees are assessed on the basis of their performance appraisal.					
b)	Intrapreneurship and entrepreneurship training approach is used					
c)	Performance Appraisal needs training approach is used.					
d)	Strategic Plan needs training approach is used					
e)	Management trainee and Apprenticeship training approach is used.					
f)	Ad Hoc training method is used.					
g)	Coaching and mentoring training approach is used.					
h)	I am empowered to make decisions that ensure optimal performance of my job.					
i)	Our organization promotes feedback from employees.					
j)	My manager is able to influence others to commit to his/her vision.					
k)	My manager encourages innovative thinking.					
l)	My manager recognizes good performance.					
m)	Managers and employees of our firm have relevant experience in their jobs.					
n)	My manager has a clear understanding of the company and functional goals.					
o)	The Chief Executive Officer (CEO) provides enabling leadership.					

S/N	Statement	5	4	3	2	1
p)	Our organization has an effective employee succession plan in place.					
q)	I a m very happy to spend the rest of my career with this Organization.					
r)	The Organization cares for employees' general satisfaction at work.					
s)	Promotion is done on merit.					
t)	The company rewards employees fairly.					
u)	Continuous efforts are made in our organization to create a sense of belonging and team spirit among employees.					

2. *Please tick in the box below the cadre of employees that are mostly trained in your Organization.*

Senior level managers	**middle level managers**	**Lower level managers**	**Union staff**	**All staff**

3. *Please tick in the box below the type of trainings mostly carried out in your Organization.*

Technical Skills upgrade	**Social/ soft skills upgrade**	**problem solving skills upgrade**	**Managerial Skills upgrade**	**Conceptual skills upgrade**

4. *Please tick in the box below the cell that corresponds to the group of employees who mostly resign in your organization.*

Senior level managers	**middle level managers**	**Lower level managers**	**Union staff**	**All staff**

SECTION 3: TECHNOLOGY CAPABILITY

Technology refers to either new technology or optimizing old technology in areas of information and communication, sugarcane harvesting and transport and manufacturing.

On a Likert scale of 1 to 5 tick in the appropriate space your level of agreement with the following statements in reference to your organization. ***(5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 =Strongly disagree)***

S/N	Statement	5	4	3	2	1
a)	New technology adoption is to improve the manufacturing process.					
b)	New technology adoption is in the sugarcane transport.					
c)	New technology adoption to improve product quality.					
d)	New technology adoption to improve productivity.					
e)	New technology adoption to improve existing production process.					
f)	New technology adoption to introduce new production processes.					
g)	New technology adoption to improve competitive advantage in COMESA free trade area.					
h)	New technology adoption in response to government regulations and policies.					
i)	The Organization has allocated enough resources towards technology innovation.					
j)	The Company has policies that support innovation.					
k)	The Company has framework for filtering and implementing viable innovations.					
l)	The Company has mentorship program for innovators.					
m)	Top management is committed towards innovation.					
n)	Innovation has played a major role in the Organization meeting its revenue target over the past 5 years.					
o)	The Organization has allocated enough resources towards process innovation.					
p)	The Organization practices waste reduction maintenance.					
q)	The Organization has strategic maintenance methods for timely replacement of obsolete technology.					
r)	The organization benchmarks for best maintenances practices for its operational benefit.					
s)	The Organization has adopted best maintenance practices to optimize plant availability.					

SECTION 3: MATERIAL CAPABILITY

On a Likert scale of 1 to 5 tick in the appropriate space your level of agreement with the following statements in reference to your organization. ***(5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 =Strongly disagree)***

S/N	Statement	5	4	3	2	1
a)	Extension staffs monitor farmers' activities and advise them on good sugarcane husbandry methods in order to promote optimal sugarcane yield.					
b)	Land preparation, seed cane and fertilizers supplies are provided on time in order to enhance sugarcane yield.					
c)	The firm invests in Research and Development in order to improve sugarcane husbandry.					
d)	The Company matches sugarcane availability projections to factory crushing capacity for effective sugarcane development.					
e)	The Company does annual replanting of sugarcane to replace fallow farms in order to secure sugarcane availability.					
f)	Harvesting program is used to control sugarcane age and sites to be harvested.					
g)	The organization does block cane harvesting in order to facilitate maximum fleet productivity.					
h)	The organization frequently holds seminars for sugarcane cutters in order to improve quality of sugarcane harvesting.					
i)	The organization has an incentive scheme other than task-based pay for sugarcane cutters to encourage good sugarcane harvesting.					
j)	The Company has established strategic fleet for sugarcane transport to ensure delivery of the right quantity of sugarcane to the factory.					
k)	The Company has efficient transport system in order to ensure optimal delivery of sugarcane to the factory.					
l)	The Company provides daily sugarcane delivery targets to each contractor to ensure delivery of right quantity of sugarcane to the factory.					
m)	Company uses high capacity sugarcane transport facility to optimize sugarcane delivery to the factory.					
n)	The Company has established trans loading facilities to optimize sugarcane delivery to the factory.					
o)	Sugarcane harvesting program is used to maximize fleet productivity.					

SECTION 4: FINANCIAL CAPABILITY

On a Likert scale of 1 to 5 tick in the appropriate space your level of agreement with the following statements in reference to your organization. ***(5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 =Strongly disagree)***

S/N	Statement	5	4	3	2	1
a)	The organization pays its farmers within the stipulated timelines.					
b)	The organization pays its other suppliers within the stipulated or agreed timelines.					
c)	The organization is able to finance its operations from internally generated funds.					
d)	The company struggles to service its operations.					
e)	The company has adequate cash reserves which are used for new asset creation and investment to grow its production facilities.					
f)	The company carries more debt than its equity.					
g)	The company carries more debt than its assets.					
h)	The company struggles to service its current and long term debts.					
i)	The company usually borrows funds to finance major factory rehabilitation.					
j)	The company borrows heavily to finance its capital expenditure.					
k)	Court awards and other litigation costs for sugarcane not harvested are causing cash flow problems.					
l)	Low factory extraction efficiency reduces cash generation.					
m)	Lack of long periods of adequate mature sugarcane affect company finances.					
n)	Low factory capacity utilization due to frequent factory breakdowns reduces projected company revenue.					
o)	Weakening Kenya shilling increases costs of importing spares.					
p)	Poaching of firm's developed sugarcane by other millers cause revenue decline of the Organization.					

SECTION 5: GOVERNMENT REGULATORY POLICY

On a Likert scale of 1 to 5 tick in the appropriate space your level of agreement with the following statements in reference to your organization. ***(5= Strongly Agree; 4=Agree; 3=Neutral; 2= Disagree; 1 =Strongly disagree)***

S/N	Statement	5	4	3	2	1
a)	The Kenya Government taxation regime in sugar industry increases price of sugar.					
b)	Lack of subsidy to sugarcane farmers increases cost of sugarcane production.					
c)	Kenya Labour laws governing the relationship between employers and employees stabilizes the operation of the sugar industry.					
d)	Government should enforce laws governing the conduct of millers and growers.					
e)	Government should enforce trade regulations in the sugar sector.					
f)	Government should categorize sugar as a food in order to reduce taxation.					
g)	Government should provide financial support and incentives for diversification.					
h)	Kenya Government should privatize state owned sugar millers.					

SECTION 6: COMPETITIVE ADVANTAGE OF SUGAR COMPANIES

1. *Evaluate the impact of the following statements based on present situation at your firm in comparison to other sugar firms in COMESA region and state whether your firm is competitive or not competitive.*

S/N	Statements	Competitive	Not competitive
a)	Product pricing due to technology and automation level at the factory.		
b)	Cost of production due to level of employee productivity.		
c)	Level of profit due to overall cost reduction strategy.		
d)	Company profitability due to available revenue stream/s.		
e)	Product pricing due to tax regime in the sugar industry.		
f)	Market sales due to effects of sugar imports from COMESA region.		
g)	Product pricing due to cost of sugarcane.		
h)	Availability of financial resources.		
i)	Effects of factory capacity utilization on market share.		
j)	Government regulation on the sugar industry.		
k)	Sugarcane produced in tonnes per hectare		
l)	Cost of inputs (farm and process).		
m)	Price of sugar.		
n)	Company competitive policies.		

Thank you very much indeed for your time in filling this questionnaire.

Appendix III: Secondary Data Form for the Sugar Companies.

Kindly fill the section that relates to your department only, i.e. Human resource section should be filled by senior manager from Human resource department; Technology capability by senior manager from Manufacturing department; material capability by senior manager from Agriculture department and Financial capability and Competitive advantage by senior manager from Finance department.

SECTION 2: HUMAN RESOURCE CAPABILITY

1. Fill the Table below. *Staff turnover refers to employees who left the organization to other organizations by the end of the year.*

Year	**2011**	**2012**	**2013**	**2014**	**2015**
Staff turnover					

SECTION 3: TECHNOLOGY CAPABILITY

1. *Kindly fill the Table below as far as your factory performance is concerned*. Where your financial year is different from the indicated one, please change and answer the questions appropriately.

Activity	**Year 2010/11**	**Year 2011/12**	**Year 2012/13**	**Year 2013/14**	**Year 2014/15**
Stoppage of factory from sugarcane crushing due to factory breakdown.					
Tonnes sugarcane crushed.					
Reduced Overall sugar recovery (%)					
Factory time efficiency (%)					
Factory capacity utilization (%).					

SECTION 3: MATERIAL CAPABILITY

2. *Fill the Table below concerning synchronization of sugarcane supply and factory demand in your organization.* Where your financial year is different from the indicated one, please change and answer the questions appropriately.

Activity	**Year 2010/11**	**Year 2011/12**	**Year 2012/13**	**Year 2013/14**	**Year 2014/15**
Projected mature sugarcane in tonnes available for crushing.					
Area in hectares under sugarcane.					
Average yield tonnes sugarcane per hectare.					
Tonnes sugarcane delivered to the factory.					
Average yearly fleet strengths.					
Average sugarcane production cost per hectare.					
Sugarcane company buying price per tonne.					
Factory stoppage hours due to lack of sugarcane.					

SECTION 4: FINANCIAL CAPABILITY

3. *Kindly provide the information for your organization for the years indicated.* Where your financial year is different from the indicated one, please change and answer the questions appropriately.

S/N	**Financial information**	**Year 2010/11**	**Year 2011/12**	**Year 2012/13**	**Year 2013/14**	**Year 2014/15**
1	Total Liabilities					
2	Total Assets					
3	Total Debt					
4	Total Equity					
5	Net Cash flow from operations					
6	Sugar production in tonnes					

Thank you very much indeed for your time in filling this questionnaire.

Appendix IV: Approval Letter from the University

JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY
DIRECTOR, BOARD OF POSTGRADUATE STUDIES

P.O. BOX 62000
NAIROBI – 00200
KENYA
Email: director@bps.jkuat.ac.ke

TEL: 254-067-52711/52181(6114)
FAX: 254-067-52164/52030
Mobile:0708-602225

REF BPS/ HD433-C012-0810/2013 **26th MAY, 2016**

Imbambi Richard Misigo
C/o SEPM
JKUAT

Dear

RE: APPROVAL OF RESEARCH PROPOSAL AND SUPERVISORS

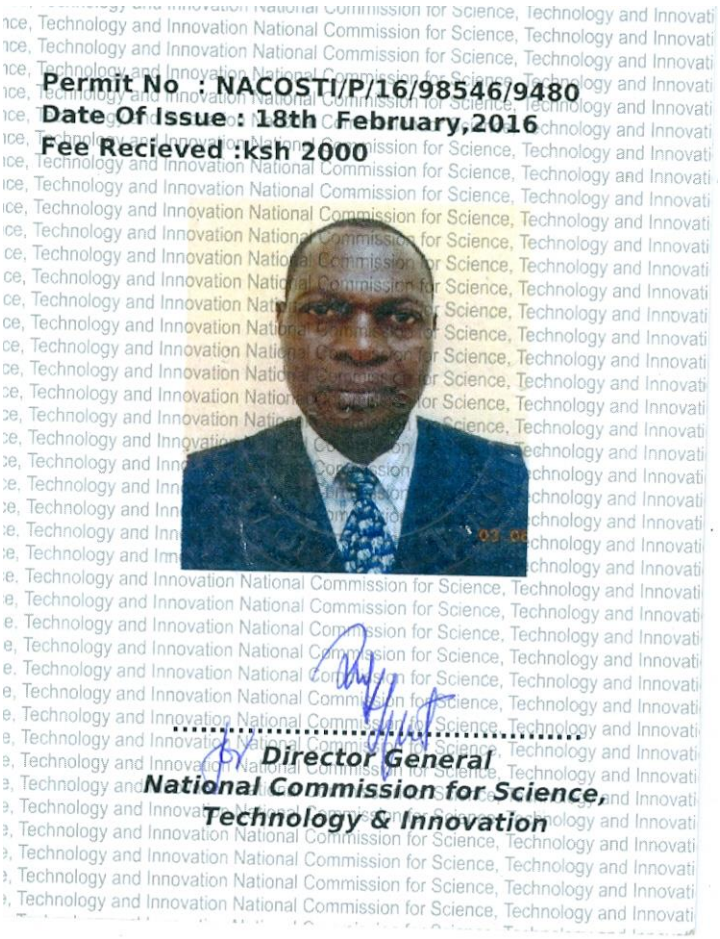
Kindly note that your Ph.D. research proposal entitled: **"Influence of Strategic Capabilities on Competitive Advantage in Sugar Companies in Western Kenya."** has been approved by the Board of Postgraduate Studies. The following are your approved supervisors:-

26. Prof. Charles Rambo
27. Dr. Margaret Oloko

PROF. MATHEW KINYANJUI
DIRECTOR, BOARD OF POSTGRADUATE STUDIES

Copy to: Dean, SEPM
/do

Appendix V: Research Permit by NACOSTI



Appendix VI: Research Authorization Letter by NACOSTI

NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/16/98546/9480**

Date: **18th February, 2016**

Richard Misigo Imbambi
Jomo Kenyatta University of Agriculture
And Technology
P.O. Box 62000-00200
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Influence of strategic capabilities on Competitive Advantage in Sugar Companies in Western Kenya"*** I am pleased to inform you that you have been authorized to undertake research in **selected Counties** for a period ending **18th February, 2017.**

You are advised to report to **the Chief Executive Officers of selected Sugar Companies, the County Commissioners and the County Directors of Education of the selected Counties** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. S. K. LANGAT, OGW
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Chief Executive Officers
Selected Sugar Companies.

The County Commissioners
Selected Counties.

National Commission for Science, Technology and Innovation is ISO 9001: 2008 Certified