STRATEGIC DETERMINANTS OF ORGANIZATIONAL PERFORMANCE OF MAIZE SEED COMPANIES IN KENYA

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(Business Administration)

JOMO KENYATTA UNIVERSITY OF

AGRICULTURE AND TECHNOLOGY

2018

Strategic Determinants of Organizational Performance of Maize Seed Companies in Kenya

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A Thesis Submitted in Partial Fulfillment for the Degree of Doctor of Philosophy in Business Administration in the Jomo Kenyatta University of Agriculture and Technology

2018

DECLARATION

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

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

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DEDICATION

This thesis is dedicated to my family and parents who have all given me the support making my life better and more abundant today. Besides the support from the university administration, the support I got from my wife and my immediate family has been a great source of my strength in my studies. Their integrity, humility, love and loyalty have left an indelible impression on my life.

ACKNOWLEDGMENT

First and foremost special thanks to my supervisors Dr. Esther Waiganjo and Dr. Agnes Njeru for their exceptional advice and guidance throughout my compilation of this thesis. I also extend my gratitude to my family as well as friends for their generous support. The route towards accomplishment of this thesis has been long and my sincere appreciation to my colleagues for their generosity, faith and superb guidance. Finally, my sincere appreciation to my extraordinaire wife, Sheila for her invaluable support all along my PhD study programme and her understanding of what this thesis is all about.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFSTA	African Seed Trade Association
AGRA	Alliance for a Green Revolution in Africa
AGRA_PASS	AGRA – Program for Africa's Seed System
DTMA	Drought Tolerant Maize for Africa
IMAS	Improved Maize for Africa Soils
IRMA	Insect Resistant Maize for Africa
ISAAA	International Service for Acquisition of Agri-biotech Application
KSC	Kenya Seed Company
MoA	Ministry of Agriculture
NARS	National Agricultural Research Systems
OPV	Open Pollinated Varieties
RBV	Resource Based View
SPSS	Statistical Package of Social Sciences
TQM	Total Quality Management

WEMA Water Efficient Maize for Africa

DEFINITION OF KEY TERMS

Germplasm: is living tissue from which new plants can be grown. It can be a seed or another plant part – a leaf, a piece of stem, pollen or even just a few cells that can be turned into a whole plant. Germplasm contains the information for a species' genetic makeup, a valuable natural resource of plant diversity (Kloppenburg & Hassanein, 2006).

Seed distribution: is the process of moving packaged seed from the stores where it is held following processing and packing to the farmer. This may involve a single step, if sales are made directly to farmers, or a series of steps involving intermediate wholesalers and retailers (Stern & Sturdivant, 1987).

Product pricing: price is what customers pay in order to acquire goods and services. Managers developing a pricing strategy should base their decisions on a careful consideration of several factors such as costs, demand, and impact to the customer, implications on the quality and competitor prices (Armstrong & Kotler, 2009).

Product Quality: are the characteristics of a product that gives it the ability to satisfy customers' needs. Customers view product quality in terms of how a product fulfills their needs (Kotler, 2002)

Production strategy: is a broad long term action plan for the production of goods and services. It decides the investment to be made and technology to be used for production, the training to be

given to staff and the production schedule to be followed (Akrani, 2011)

Cost structures: refers to the types and relative proportions of fixed and variable costs that a business incurs. The concept can be defined in smaller units, such as by product, service, product line, customer, division, or geographic region (McGuire, 2005).

Organizational Performance: a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Naser & Mokhtar, 2004).

ABSTRACT

A number of new seed entrepreneurs were established in Kenya, however, the majority of them fail to achieve the required business growth and competiveness. As a result, they remain small and producing less quantities of seed failing to meet the market demand for improved maize seed. This study sought to establish the strategic determinants of organizational performance. Specifically the study evaluated the influence of cost structures, product quality, product pricing strategy, production strategy and distribution strategy on organizational performance of maize seed companies in Kenya. The study adopted a cross-sectional survey research design to collect data from the target population which comprised of maize seed companies in Kenya. The sampling frame of the study was the registered maize seed companies at the Seed Trade Association of Kenya which was the unit of analysis while the respondents were the managerial employees within the seed companies and key seed experts in Kenya. Primary data was obtained by administering questionnaires to four employees within each seed company. The four employees were randomly selected from the production, marketing, finance and warehousing departments. Interviews were conducted with key seed experts that were selected through snow balling and judgment technique. The collected data was analyzed using SPSS software. Factor analysis was done to establish the appropriateness of the questionnaire constructs. Both descriptive and inferential statistics were used. Inferential statistics included the use of bivariate analysis and the study used the Pearson correlation coefficient. The study also ran a multiple regression model in order to establish the influence of cost structures, production strategy, product quality, pricing strategy and distribution strategy on organizational performance of maize seed companies. The results of the study indicated that cost structures, product quality, product pricing strategy, production strategy as well as seed distribution strategy had significant influence on organizational performance of maize seed companies in Kenya. The optimal regression model showed that cost structures, product pricing and seed distribution strategies were statistically significant as joint explanatory variables for organizational performance. Although the seed companies implemented some effective strategies that slowly enhanced seed sales and grow revenue in year 2014, they still faced some challenges in achieving set profit targets as well as failure to contain total business expenses. The results showed that it is possible to conclude that seed companies implemented some effective product quality, product pricing, production and seed distribution strategies that led to slight growth in seed sales and revenue performance in 2014. It is concluded that there were limited effective and sound management strategies and policies on cost structures as total expenses as a percentage of revenue continued to grow, hence reducing profitability. It is therefore, recommended that particular attention should be directed towards analysis of cost structures and streamlining them in order to minimize total expenses and grow revenue which would result in higher profit wedge and enhanced organizational performance. It is also recommended that strategies to grow sales and revenues should be enhanced in order to both meet farmers' seed demand and achieve business growth.

CHAPTER ONE

INTROUCTION

1.1 Background of the Study

Most countries in Africa are agro-based relying on agriculture for food, the supply of industry raw materials, employment creation and foreign currency earnings through exports of various commodities. A bigger proportion of the countries in Africa rely on maize based cropping systems for food security and the main staple crop is maize. Seed can play a critical role in increasing agricultural productivity. According to Langyintuo et al. (2010) seed can be described as an essential, strategic, and relatively inexpensive input that often determines the upper limit of crop yields and the productivity of all other agricultural inputs. This is because if the farmers are provided with high optimized seed for the climates of various regions in Kenya, they can produce up to two times more grain per hectare than ordinary seed thus ensuring higher food security. It is with this concern that this study wished to address strategic determinants of organizational performance and the factors that facilitate development of a seed system that is robust and capable of generating, producing and distributing adequate new seed varieties that meet the needs of all farmers, in a cost-effective way and increase agricultural production.

Despite the heavy reliance on agriculture in African economies, the productivity levels of the various cropping systems remain very low. The average yield of course grains (maize, sorghum, millets) in Africa is < 1.4t/ha, compared with 5.6t/ha in developed regions (FAO, 2012). This is mainly due to suboptimal use of required inputs, low usage of improved seeds (Msuya & Stefano, 2010) and poor crop husbandry practices. The low usage of improved seed contributes significantly to low productivity and profitability in the smallholder farming sector in Africa.

The African continent is currently faced with a big challenge of failing to meet the demand for improved quality maize seed. In 2006/07 season, only 35% of improved maize seed was marketed in nine DTMA project countries in Eastern and Southern Africa (Setimela,

Badu-Apraku & Mwangi, 2009). The balance (65%) of the requirement is normally fulfilled through use of unimproved seed and recycling of OPVs and hybrids. This deficit of improved seed is a big threat to both seed and food security in most African states that rely on maize as a staple food. Due to seed shortages and other factors such as high cost of hybrid seed, most smallholder farmers resort to using unimproved OPVs, farm saved seed (F2) and various landraces shared in communities. Farm saved seed accounts for the greatest proportion of planted land in low-income economies (Msuya & Stefano, 2010). Wambugu, Mathenge, Auma and vanRheenen (2012) reported that about 80% of farmers in Western Kenya use own farm saved seed. The performance of such unimproved and recycled seed is significantly lower than that of improved seeds (Akulumuka, Mduruma, Kaswende & Nkonya, 1996). Pixley and Banziger (2004) reported average losses from use of recycled (F2) seed of 32% for hybrids, 16% for top-crosses and 5% for OPVs.

Kloppenburg and Hassanein analyzed the evolution of the maize seed industry in the United States. They argued that as long as open pollinated varieties (OPVs) remained the dominant technology, farmers retained the ability to save seed from their own harvest to replant the following season. This left effective control over the means of production in the hands of direct producers, and rent-seeking firms had no incentive to enter into such a seed industry (Kloppenburg & Hassanein, 2006). In order to create economic incentives (which are needed to pave the way for the expansion of capitalism), it was necessary for farming to be converted from a largely self-sufficient production process into one in which purchased inputs account for the bulk of the resources employed. In the Marxian view, this transformation can be seen as a process of primitive accumulation in which the farmer is progressively separated from the means of agricultural production, including seed. According to Kloppenburg and Hassanein (2006), in the United States maize seed industry the key development in this process was the commodification of seed, which was made possible by the introduction of hybrid technology and the extension of intellectual property rights to germplasm. These developments dispossessed farmers from control

over the means of production by preventing them from autonomously reproducing seed for their own use (Kloppenburg & Hassanein, 2006).

In Kloppenburg's view, the United States maize seed industry evolved to support a capitalist mode of production (agribusiness) characterized by the existence of a class of direct producers who were dispossessed of the means of production. This process affected not only the seed industry, but agricultural science itself. Reviewing the history of maize research in the United States, Kloppenburg and Hassanein (2006) argued that over time a social division of labour occurred that progressively subordinated public research to serve the needs of private industry. To see this, we need only to look at maize breeding research: in stark contrast to the early part of the century, when virtually all commercial OPVs and hybrids were developed and released out of the public sector, today most public research programmes no longer release commercial materials (Kloppenburg & Hassanein, 2006).

Concentration and vertical integration in the maize seed industry are desirable in that they create opportunities for increasing efficiency. At the same time, concentration and vertical integration are undesirable in that they create opportunities for the potential exercise of monopoly power. Economic theory suggests that large firms in concentrated markets will be able to increase profits by forming cartels and colluding to set prices. Why this has not happened not even in the extremely concentrated and vertically integrated North American and European maize seed industries remains something of a mystery. Recent studies of pricing behaviour in these industries have failed to turn up evidence that seed companies have parlayed their market power into higher prices. Maize seed prices have indeed risen in United States and in Europe, but the rises are generally consistent with increases in actual research, production, and distribution costs. Several hypotheses have been advanced to explain the continuing competitiveness of the North American and European maize seed prices. Some analysts think that strategic considerations discourage seed companies from exercising their power to influence maize seed prices. Diversified companies that sell maize seed along with other inputs may prefer to use seed as a "loss leader" in order to secure sales of more profitable chemical products (for example,

fertilizers, herbicides and pesticides). Other analysts point out those seed companies that have links to the food and/or feed industries may use low-priced seed to ensure production of steady supplies of maize grain (Pal, Bahl & Mruthyunjaya, 1993).

Informal or on-farm seed systems vary among countries, regions and crops. They rely on seed saving practices, that is, keeping parts of the harvest for planting in the next season. The system usually plants local varieties of seed kept from the previous year's harvest, obtained from neighbours and/or the local market. This is the predominant system for food crops in subsistence agriculture. It is estimated that in developing countries, the informal seed system is responsible for more than 80% of the total area planted with subsistence crops. It is a very resilient system, which is very active even without the support of public or private institutions. On-farm seed systems are essential for improving food security for developing countries. They will likely continue to be the main source of seed for subsistence crops in the world. However, this system is not market oriented; seeds are usually produced for consumption. Some surplus can be barter traded with neighbours or sold to local grain dealers (FAO, 2004).

As a study made by German Technical Co-ordination [GTZ] (2000) clearly states, for small-scale farmers in developing countries, management of seed is of crucial importance and forms an integral part of their crop production systems. For many centuries, farmers have developed and maintained their own plant genetic resources, based on local means of seed production, selection and exchange. Introgressions, mutations and introductions from elsewhere are the common sources of new genetic material in a community. Newly introduced varieties are subject to farmers' experimentation, and when adopted they become part of the local gene pool. In many cases, this integration involves physical mixing of seeds and spontaneous crossing with other materials. The informal seed sector has strong local character, without necessarily being confined to a small geographical area.

1.1.1 Seed Industry Development in Kenya

Maize is the most important staple crop for over 90 percent of the population in Kenya (International Service for Acquisition of Agri-biotech Application [ISAAA], 2001). It is important for food security, generation of farm income and rural employment. It accounts for more than 20 percent of all agricultural production and 25 percent of agricultural employment in Kenya (Republic of Kenya, 2004). Kenya produces about 2.4 million tonnes of maize per year on 1.5 million hectares of land (FAOSTAT, 2002). Maize production in Kenya takes place under both small–scale and large–scale farming systems with the former accounting for 75-80 percent of total production (Kamidi, Cheruiyot, Osore & Barasa, 1999).

The Economic Review of Agriculture Report, Ministry of Agriculture [MoA] (2007) notes that Kenyans consumed 2.62 million tonnes of maize in 2002 representing 40-45 percent of their total calorie consumption. According to this report, maize consumption has risen steadily through the years to above 3 million tonnes in 2006. The Kenyan population is projected to continue growing at 3 percent per year (FAOSTAT, 2001). Despite efforts to ensure food security in Kenya, production continues to fall short of consumption therefore necessitating imports (MoA, 2007). The country produced 2,454,930 tonnes of maize in 2004 and imported 241,757 tonnes to cover the deficit while in 2005 an amount of 2,918,157 tonnes were produced occasioning imports of 49,621 tonnes. Maize consumption is currently estimated at 3.6 million tonnes. The demand for maize is growing at 0.7 percent annually and, hence, consumption is likely to continue to grow faster than production.

Kenya needs to increase maize productivity and production to meet the growing demand and reduce imports of the commodity into the country and save the country of foreign exchange earnings. Growth in smallholder maize production in the 1960s and 1970s was attributed to successful diffusion of improved maize seed in Kenya (Smale & Jayne, 2003). Development and release of new maize varieties was matched with investment in agronomic research, extension, seed distribution systems, rural infrastructure and

institutions to coordinate grain marketing with seed and credit delivery (Smale & Jayne, 2003). Production also increased through the expansion of the area under maize. With almost all the arable land under cultivation, long-term growth in maize production will come from yield improvement in areas already under crops including marginal or arid and semi-arid areas. This could be achieved through widespread access and use of technologies such as appropriate improved maize germplasm.

Kamau (2002) studied the Kenyan seed industry in a liberalized environment and found out that the potential market for improved seed is high yet not being fully targeted. Access to improved germplasm was found to be restricted by a number of factors that include: the highly fragmented structure and behaviour of farmers, poor access to credit (seed is not an attractive venture for commercial banks), high price margins for companies, agents and stockists that contribute to high seed prices to the farmers, lack of information on the opportunities on both demand and supply side of the market and the performance of various players in the market, and macro-economic environment, interest rates, fees, costs and revenues. These factors impact negatively on the effective demand for seed, and may also have an effect of pushing traders and farmers to informal markets so as to avoid these costs.

The Ministry of Agriculture [MoA], (2007) used value chain analysis to study the status of maize seed industry in Kenya. The study identified legal and regulatory constraints, seed pricing, poor infrastructure, inadequate promotion of new varieties as well as poor quality of the seed in the market as the major bottlenecks in the seed value chains.

The seed industry development in Kenya started in the early 20th century, when the government of Kenya realized the importance of high quality seed in agricultural production. This was supported by research on food, industrial and export crops, which supplied seeds and planting material to the farming community. This resulted in the formation of Kenya Seed Company in 1956 to initially produce pasture seeds to serve the then dairy farmers. Later, the company diversified to other crops.

The seed industry in Kenya comprises of the formal and informal seed sector. The Seed industry is governed by the Seeds and Plant Varieties Act (Cap 327) of 1972, which became operational in 1975. Regulations to guide seed operations were made in 1977 and revised in 1991 to incorporate plant variety protection (plant breeder's rights) regulations. Over the years, the seed industry has grown from three companies in the 1980's to 18 in the 1990's. The liberalization of the seed industry in the mid 1990's resulted in the entry of new seed players in the seed market, resulting in the over 78 seed companies having been officially registered by mid-2010.

The Act is currently under review to make seed trade business fully liberalized and to incorporate harmonized regional seed certification standards. This is being introduced through a Seed Bill which has already got cabinet approval and will be brought to parliament at the earliest opportunity. The formal seed sector started with the establishment of Kenya Seed Company (KSC) in 1956 in Kitale to produce pasture seed for the colonial settlers. KSC continued to play a predominant role until the industry was partially liberalized in the mid-1980s. Further liberalization of the seed industry was effected in 1996. After this, several companies entered the formal sector and by 2005, there were 50 registered seed companies largely dealing in seeds of cereals, namely, maize, wheat, barley, oats, triticale and sorghum; oil crops, that is, rapeseed, sunflower; pulses; pastures; horticultural crops and Irish potatoes. By mid-2010, there were 82 registered seed companies, with the latest dealing with crops neglected previously, due to their low profitability. These include horticultural crops, rice, cotton, pasture seeds, pigeon peas, groundnuts and chickpea. Despite the growth in number of seed companies over the years, the supply of improved maize seed is failing to meet demand. This reflects the low capacity and poor performance of the new seed companies.

Due to the poor competitiveness and limited performance of the established seed companies, the informal seed sector continues to be operational in Kenya particularly for the small scale farmers. According to the National Seed Policy document for Kenya, the source and quality of most of the planting materials and seed purchased, multiplied and

marketed by the informal seed sector may not be known, yet this is the major source of planting material for the farmers. For example, “road-side” nurseries for forest and fruit trees do not have clearly documented sources. Other informal sources of seed include farm-saved seed, farmer-to-farmer exchange, local markets, Non-Governmental Organizations (NGOs) and Community Based Organizations (CBOs). Growers of flowers and ornamental plants do import and/or locally multiply planting material for their own use or sale to other local growers, yet they are not registered as seed dealers. Moreover, some Relief Agencies who supply emergency seed, do not always obtain such planting material from registered seed dealers, and so such seed may not be of known quality. However, as farming becomes more commercial, the focus is shifting towards the formal seed supply system. This therefore, requires further studies to establish and address the critical factors that would enable the established seed companies to enhance their organizational performances for improved and competitive seed supply.

1.2 Statement of the Problem

Despite the significant growth in numbers of maize seed companies in Kenya, the demand for improved maize seed is still being not met. Collectively the seed companies are currently supplying only 72% of the current demand of 39 000 tonnes for improved maize seed in Kenya (Langyintuo et al., 2008). The shortfall in improved seed supply is being filled by use of inferior land races and other planting materials exchanged by smallholder farmers in their specific farming communities. The informal use of such unimproved planting materials, results in lower productivity and hence perennial food insecurity among the farming households (Pixley & Banziger, 2004). The failure to meet the demand for improved maize seed reflects the limited performance of the current seed companies in Kenya.

In order to address the maize seed supply challenges, a lot of studies on seed supply in Kenya and the whole East African region were undertaken. These studies identified policy issues, technical and funding challenges as the main factors impacting on the seed businesses (Langyintuo et al., 2008). Policy issues on variety release, access to superior

germplasm, seed certification regulations, human skills in seed production and funding were cited as some of the major challenges faced by the seed industry especially the new seed entrepreneurs (AGRA 2013). These challenges were tackled by various organizations in Kenya and elsewhere in Sub- Saharan Africa through the supply of superior germplasm by projects such as DTMA, WEMA, AGRA-PASS, IMAS and IRMA. Kenya also has a robust variety registration process that resulted in 82 maize varieties released for commercialization between 2002 - 2006 (Setimela, Badu-Apraku & Mwangi, 2010) and the number grew to 240 varieties in 2014. This shows that the number of improved maize varieties available is no longer a limiting factor for the growth and performance of seed companies. Furthermore, a lot of capacity building was done through seed business grants and loans, training of plant breeders and seed technologists in order to support growth of new seed entrepreneurs (AGRA, 2013).

Despite all these efforts and interventions by various organizations, NGOs and projects, to enhance the performance of the new maize seed entrepreneurs by addressing the policy, regulatory, technical and funding challenges, the seed demand of 39 000 tonnes in Kenya is still being unmet. The past and current interventions focus much on external and technical factors affecting seed businesses. However, these alone, failed to catapult new seed entrepreneurs to strategic growth and performance levels that result in sustained business competitiveness in the Kenyan seed market. As highlighted by Langyintuo et al. (2009), the reforms done in the seed sector which resulted in four-fold increase in the number of seed companies in the last decade were insufficient as the quantity of seed marketed did not grow in tandem with the increase in number of seed companies. Furthermore, the Kenyan seed sector is classified to be in the Late Growth stage (stage 4) of seed sector development that is characterized among other things, by favourable seed policies that facilitated establishment of many new seed entrepreneurs, with 104 seed companies having been registered by 2012 (AGRA, 2013).

The major challenge is that the majority of the new seed entrepreneurs are not achieving the required growth to compete and contribute to the already unsatisfied maize seed

market. Many new seed entrepreneurs remain small, producing less than 500 tonnes of seed annually (MacRobert, 2009). It is therefore, critical to study the strategic determinants of organizational performance and growth in maize seed companies.

Although there are many studies on factors influencing organizational performance, the focus has been on large firms and there are very few studies that have been conducted in developing economies especially in Kenya. For instance, Muogbo (2013) investigated the place of strategic human resource management in improving competitive advantage among SMEs in Anambra State Nigeria. Kavitha, Karthikeyan and Devi (2013), examined the relationship between the competitive priorities and competitive advantage among small scale industries in Coimbatore. Nkonok (2012) on the other hand, examined the factors that limit the competitive advantage of small businesses in Tanzania, and Protogerou, Caloghirou and Lioukas (2012) did a study on the relationship between dynamic capabilities and the firm's performance. These studies however did not address the other major strategic factors that influence organizational performance such as cost structures, product quality, product pricing, production strategies and distribution strategies. This study therefore, sought to establish specific strategic determinants of organizational performance of maize seed companies in order to come up with new business models and strategies that would result in multiplicative business growth and sustainable financial performance of the new maize seed entrepreneurs in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study was to establish the strategic determinants of organizational performance of maize seed companies in Kenya.

1.3.2 Specific Objectives

1. To determine the influence of cost structures on organizational performance of maize seed companies in Kenya.

2. To establish the influence of product quality on organizational performance of maize seed companies in Kenya.
3. To determine the influence of product pricing strategy on organizational performance of maize seed companies in Kenya.
4. To establish the influence of production strategy on organizational performance of maize seed companies in Kenya.
5. To determine the influence of distribution strategy on organizational performance of maize seed companies in Kenya.

1.4 Research Hypotheses

$H_{o1:}$ Cost structures have no influence on organizational performance of maize seed companies in Kenya.

$H_{o2:}$ Product quality has no influence on organizational performance of maize seed companies in Kenya.

$H_{o3:}$ Product pricing strategy has no influence on organizational performance of maize seed companies in Kenya.

$H_{o4:}$ Production strategy has no influence on organizational performance of maize seed companies in Kenya.

$H_{o5:}$ Seed distribution strategy has no influence on organizational performance of maize seed companies in Kenya.

1.5 Significance of the Study

The past and current initiatives and support to establish and operationalize emerging small maize seed entrepreneurs and businesses in Kenya, are failing to achieve the intended objective of supplying adequate quantities of improved seed to smallholder farmers. The initiatives and implemented programmes supported the provision of improved germplasm (inbreds and hybrids) to emerging seed companies which used to be the major barrier to entry in the past. Technical training on the seed business aspects, assistance with

processing and start-up capital have been also provided. However, despite all these efforts the supported emerging seed entrepreneurs and businesses are failing to grow to anticipated levels and they face serious financial constraints. The failure to grow the seed supply business and limited financial resources, result in continued shortages of improved seed to the smallholder farmers and serious viability concerns among the new seed businesses. This study determined the strategic aspects of conducting a competitive seed business besides the technical training, provision of germplasm and start-up capital which were the intervention targets of the past initiatives.

1.5.1 Seed Business Entrepreneurs

The findings of the study would therefore, benefit new seed business entrepreneurs, managers of established businesses to further enhance their organizational performance and seed systems practitioners in the formulation and implementation of competitive business strategies.

1.5.2 Policy Makers and Government

Government and developmental policy makers on agriculture can also benefit from the findings of this study to come up with sustainable policies on agriculture and developmental work, especially inputs supply and funding. Further, investment priorities in the seed sector would also be guided by this study's findings. Once the seed companies enhance performance of their organizations, the supply of improved seeds to farmers can also be enhanced thereby resulting in significant productivity improvements at the farmers' level.

1.5.3 Academicians and other Researchers

Finally, academicians and other researchers would find this study useful as a point of reference and indeed to add to the existing body of knowledge by further research on this area. It is hoped that the recommendations from this study can contribute to new knowledge on competitive seed business management.

1.6 Scope of the Study

The study population was the maize seed companies in Kenya which comprised of 24 companies registered with the seed trade association of Kenya (STAK, 2014) from which the target population was drawn. The target population therefore, was the managerial staff in maize seed businesses in Kenya, as well as various seed experts with wide experience on seed business management. Further, this study focused on the strategic factors that influence organizational performance of maize seed companies in Kenya. In particular, the study determined how cost structures, product quality, product pricing strategy, production strategy and seed distribution strategy influence organizational performance of maize seed companies in Kenya. The performance of the seed companies was evaluated over a period of five years, from 2010 to 2014. However the study was conducted in 2016 - 2017 thus primary data was collected in the same period.

1.7 Limitations of the Study

The nature of the study called for confidential information related to the maize seed companies' performance. Some of the bottlenecks that were experienced were lack of cooperation from some of the respondents to fill correctly the questionnaire as they overlooked the significance of the study due to confidentiality considerations. However, the attempted lack of commitment from some of the participants was resolved by the researcher through taking enough time to meet with all potential respondents and clarified to them the scope of the study and its significance to the organization. The respondents were also assured of confidentiality and ethical handling of the information for study purposes.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the information from other researchers who have carried out research in the same field of study in prior years. It also entailed a review of the theories and discussion of studies done both locally and worldwide on the strategic determinants of organizational performance.

2.2 Theoretical Framework

This section reviewed the theories that were considered to be of fundamental influence to the study. Specifically, the theories that are presented were influential in guiding the objectives of the study and as such the competitive advantage theory and resource based view theory, were reviewed as they were considered the most relevant to the present study. In addition, some concepts and strategies under the competitive advantage theory were also reviewed as they help organizations to achieve competitiveness in business. The following were reviewed; cost leadership strategy, total quality management (TQM) concept, and product differentiation strategy.

2.2.1 Competitive Advantage Theory

Competitive advantage theory developed by Porter (1985) is derived from features that allow an organization to outdo its competitors, such as superior market position, competence or resources (Newbert, 2008). Frawley and Fahy (2006) and Ma (1999) argue that the attainment of a sustainable competitive advantage position can be expected to lead to superior performance, usually measured in conventional terms such as market-share and profitability, that is, the financial performance measurement approach. In other words, anchoring on the view that competitive advantage and performance are two different concepts and dimensions, firms should focus their managerial strategy towards attaining and sustaining competitive advantage position over their rivals.

The competitive advantage theory has been criticized by several researchers on its applicability on firms' performance. For instance, Ma (2000) makes three observations and conceptually explores the various patterns of relationship between competitive advantage and firm's performance, namely: competitive advantage does not equate to superior performance; competitive advantage is a relational term; and competitive advantage is context specific. Nonetheless, there are other two potential relationships between competitive advantage and performance as projected by Ma (2000), namely that competitive advantage does not always lead to superior performance. Bearing in mind the notion that competitive advantage is a relational concept and it is also context-specific, there are possibilities that competitive advantage does not result in superior firm's performance, and there are also possibilities that superior firm's performance being achieved without attaining and/or sustaining competitive advantage position (Rose, Abdullah & Ismad, 2010).

Competitive advantage strategies through maximization of resources in an organization are very important for companies with the objective of gaining a competitive advantage in the market. Thus, this theory supports the concept of this study as it argues that resources and their efficient management lead to companies gaining a competitive advantage position which is important for companies to achieve superior performance.

2.2.1.1 Cost Leadership Strategy

Cost leadership is a concept developed by Michael Porter (1980), used in business strategy. It describes a way to establish the competitive advantage. Cost leadership, in basic words, means the lowest cost of operation in the industry (Stahl & Grigsby, 1997). The cost leadership is often driven by company efficiency, size, scale, scope and cumulative experience (learning curve). A cost leadership strategy aims to exploit scale of production, well defined scope and other economies (For example, a good purchasing approach), producing highly standardized products, using high technology (Reid, 2002). In the last years more and more companies choose a strategic mix to achieve market

leadership. These patterns consist in simultaneous cost leadership, superior customer service and product leadership (Davidson, 2003).

Cost leadership is different from price leadership. A company could be the lowest cost producer, yet not offer the lowest-priced products or services. If so, that company would have a higher than average profitability. However, cost leader companies do compete on price and are very effective at such a form of competition, having a low cost structure and management (Stahl & Grigsby, 1997).

According to this strategy, the market-share leader can underprice competition because of its lower costs due to its cumulative experience, thus "further hastening its drive down the curve (Lieberman, 1987). A frequent result of such an aggressive strategy can be a kick-'em, punch-'em, wrestle-'em-to-the-ground price war (Lieberman, 1987). Wars like these are quite bloody and often end without winners. Because price cuts are easy to imitate, they may not result in long-term advantage (Wensley, 1981). Since price is the primary competitive weapon of such a strategy, this approach implicitly assumes that most products are commodities (Giddens-Emig, 1983). Texas Instruments' sad experience in the consumer watch market is a good case in point (Peters & Waterman, 1982; Porter, 1985). DuPont's adventure in the nylon market may be one more example of a similar failure (Lieberman, 1987). Another disadvantage of competing on price is that it can lead to a "cut rate" or "discount" image that may be hard to overcome. One example is Sharp which tried to compete on the basis of price even though it was offering quality products that were favourably rated (Rachman & Mescon, 1979). Also it is far easier for a firm to cut prices in order to gain market share, but it is much more difficult to try to do the opposite, that is, to raise prices in order to make some money as DuPont found out in its nylon business (Lieberman, 1987). The cost leadership concept supports the objectives of this study especially as companies manage their operational expenses to be competitive and profitable.

2.2.1.2 Total Quality Management Concept

This is the highest level of quality management. It is concerned with the management of quality principle in all the facets of a business including customers and suppliers (Dale, Boaden & Lascelles, 1994; Lockwood, Baker & Ghillyer, 1996). Total Quality Management (TQM) involves the application of quality management principles to all aspects of the organization, including customers and suppliers, and their integration with the key business processes. It is an approach which involves continuous improvement by everyone in the organization. TQM is a principle which involves the mutual cooperation of everyone that aids the business process of an organization and it involves all the stakeholders of an organization. Dale et al., (1994) defined TQM as a philosophy embracing all activities through which the needs and expectations of the customer and the community, and the objectives of the organization are satisfied in most efficient and cost effective way by maximizing the potentials of all employees in a continuing drive for improvement.

According to Mohammed (2006), TQM is an effective system for integrating the quality development, quality maintenance and quality improvement efforts of various aspects of a system so as to enable services at most economical level and derive full satisfaction. TQM is aimed at the satisfaction of customers' needs in an efficient, reliable and profitable way. It involves a radical direction through which an organization perform her day to day operations in order to ensure that quality is put at the top of mind of every employee and departments in which they operate. Vorley and Tickle (2001), defined TQM as the synthesis of the organizational, technical and cultural elements of a company. They opined that TQM is a heart and mind philosophy which recognizes that company culture affects behaviour which in turn affects quality. Oakland (1993), describes TQM as an approach to improve competitiveness efficiently and flexibility for the whole organization. According to Hellsten and Klefsjö (2000), TQM can be defined as a management system which consist of interdependent units namely core values, techniques such as process management, benchmarking, customer focused planning or improvement

teams and tools such as control charts. Dahlgaard, Kristensen and Kanji (1998) saw TQM as a corporate culture that is characterized by increased customer satisfaction through continuous improvement involving all employees in the organization. Oakland (1993), noted that 'for an organization to be truly effective each part of it must work properly together towards the same goal, recognizing that each person and each activity affects and in turn is affected by each other – the methods and techniques used in TQM can be applied throughout any organization. The concept of continual improvement as expounded under TQM helps companies to improve their processes to become effective and efficient which lead to competitiveness.

2.2.1.3 Product differentiation Strategy

Product differentiation refers to such variations within a product class that some consumers view as imperfect substitutes. Consumer goods are available in a variety of styles and brands and as a result require some differentiation. Product differentiation is aimed at influencing people's perception of a brand in such a way that they are persuaded to act in a certain manner, for example, buy and use the products and services offered by the firm (Kotler & Keller, 2012). In an attempt to differentiate products, firms need to provide relevant meaning and experience to people across multiple societies. To do so, the strategy needs to be devised that takes account of the brand's own capabilities and competencies, the strategies of competing brands, and the outlook of consumers (including business decision makers) which has been largely formed by experiences in their respective societies (Kotler & Armstrong, 2005).

There are three basic families of product differentiation models that are typically used for modeling equilibrium with free entry and comparing optimal to equilibrium diversity. Representative consumer models start by positing a utility function intended to portray aggregate preferences (Lancaster, 1966). This preference ordering generates the demand system for differentiated products and it measures welfare for the optimality analysis. Such functions typically embody global competition insofar as demands for varieties of the differentiated product are symmetric substitutes. Models in this class include the

often-used CES preference formulation and the quadratic utility that gives rise to a linear demand system. These are parameterized utility functional forms that embody taste for variety in that more variety raises welfare even when total consumption is fixed (Anderson, Simon, De Palma & Thisse, 1992).

The discrete choice approach is founded in econometric and probabilistic models of consumer behaviour. Each individual has an idiosyncratic taste (or "match value") for each product. Aggregating individual choices yields the demand function and aggregating the surpluses yields the welfare function. Discrete choice models are not constrained to symmetric substitutability among variants. Models such as the nested logit embody closer substitutability between products within the same nest and the general probit model embodies quite elaborate substitutability patterns through the variance-covariance matrix of the match terms (Anderson et al., 1992).

Location models explicitly describe product specifications and consumer preferences as addresses and assume that consumers dislike distance "traveled" between ideal type and product. Location models may also be viewed as discrete choice models because individuals make discrete choices and have idiosyncratic match values. There is a difference in interpretation: location models typically assume the population of consumers to be given and deterministic, while discrete choice models suppose that an individual's taste is a realization from a probability distribution (Anderson et al., 1992).

The different approaches are not necessarily inconsistent with or substitutes for each other. Rather, they may frequently be twinned and one approach may be reinterpreted within the setting of the others. The CES model is a variant of the logit model, and a representative consumer does exist for the circle model and for probabilistic discrete choice models. These models are also useful for comparative static analysis of changing patterns in industries in response to structural changes in cost structures, population growth, transportation costs, and consumer tastes. Product differentiation strategy is

relevant to this study since the various seed companies need to have unique products with different characteristics in order to be competitive on the market and grow the business.

2.2.2 Resource Based View Theory

A resource-based view (RBV) of a firm explains its ability to deliver sustainable competitive advantage when resources are managed such that their outcomes cannot be imitated by competitors, which ultimately creates a competitive barrier (Hooley, Greenley, Cadogan & Fahy, 2005). RBV explains that a firm's sustainable competitive advantage is reached by virtue of unique resources being rare, valuable, inimitable, non-tradable, and non-substitutable, as well as firm-specific capabilities (Barney, 1991; Makadok, 2001).

Finney, Campbell and Powell (2005); and Makadok (2001) write about the fact that a firm may reach a sustainable competitive advantage through unique resources which it holds, and these resources cannot be easily bought, transferred, or copied, and simultaneously, they add value to a firm while being rare. It also highlights the fact that not all resources of a firm may contribute to a firm's sustainable competitive advantage. Varying performance between firms is a result of heterogeneity of assets (Helfat & Peteraf, 2003) and RBV is focused on the factors that cause these differences to prevail. The RBV theory is relevant to the current study and objectives because organizations need to identify their unique resources and how they can use such resources to deliver quality products and services and thus achieving sustainable competitive advantage in the market which is characterized by stiff competition. This theory anchors this study since it shows how the maize seed companies can use the resources they have to adopt strategies that will help them achieve superior performance.

2.3 Conceptual Framework

According to Kombo and Tromp (2006), a concept is an abstract or general idea inferred or derived from specific instances. A conceptual framework is a set of broad ideas and

principles taken from relevant fields of enquiry and used to structure a subsequent presentation. Below is a figurative representation of the variables explored by this study.

The relationship between the independent and dependent variables is depicted in the conceptual framework. When there is a relationship between the variables, a change in the independent variables results in a change in the dependent variable. In such a case, it is said the value of the dependent variable dependents on the values of the independent variables. In this study it is expected that the organizational performance of maize seed companies in Kenya, which is the dependent variable will depend on the values of the five independent variables namely, cost structures, product quality, product pricing strategy, production strategy and distribution strategy (Figure 2.1).

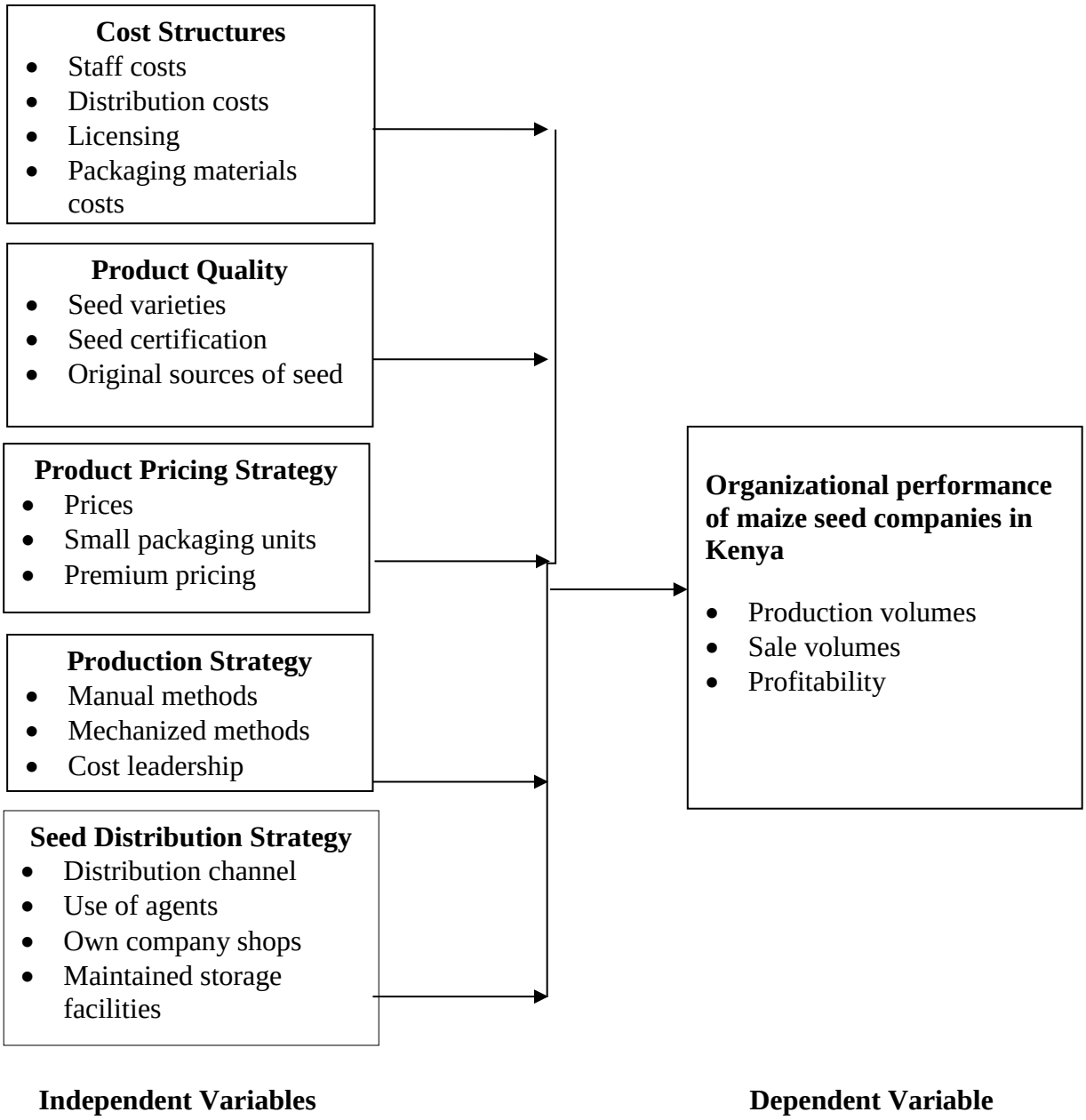

Figure 2.1: Conceptual Framework

2.3.1. Cost Structures

The formal seed system can be characterized by a clear chain of activities. It usually starts with plant breeding and promotes materials for formal variety release and maintenance. Regulations exist in this system to maintain variety identity and purity as well as to

guarantee physical, physiological and sanitary quality. Seed marketing takes place through officially recognized seed outlets, and by way of national agricultural research systems (NARS). In formal seed production system, seed multiplication occurs through several generations rather than continually recycling the seed of one generation, to avoid building up physical or genetic contamination over time in the same lot of seed (Louwaars & van Marrewijk, 1996).

A major challenge for formal seed supply is to produce sufficient seed of all varieties needed, and deliver it to farmers in a timely manner. This requires considerable organization, time, and space, and incurs risks due to costs involved and seed production risks. To start with, significant area and effort is involved in seed production, though this varies by crop according to its multiplication rate. In other words, how much usable seed is produced per seed sown (McGuire, 2005). The study made by Baniya, Singh and Sthapit, (2003) signify that the formal system focuses more on the interests of the seed company, and has more access to biotechnology and plant breeding techniques, so this seed system generally neglects the indigenous knowledge. The market is dominated by a few suppliers with potentially serious implications for technology choice and price fixing.

Sofokleous (2007) investigated how a fresh pineapple production company implemented Lean strategies to improve processes including packaging and transportation. The author examined the implementation of Lean techniques including Value Stream Mapping in identifying bottlenecks as well as Kaizen events (events that target continuous improvement towards excellence) that the company could carry out. Furthermore, the study investigated how the storage room of the company could utilize **5S** (Sort, Straighten, Shine, Standardize, and Sustain) in its organization as well as analyzing costs for potential savings and benefits. The author proposed methods of redesigning the company's work area in order to create a better process flow. Options such as the use of trolleys, pallets, and hand trucks provided avenues for the reduction of cycle time and the number of workers in the facility needed to transport crates from one point to the other. This further helped to reduce the required man-hours in addition to saving company costs.

Sofokleous (2007) utilized **5S** methods including visual aids in training workers to keep storage rooms tidier and more accessible for their own use. The utilization of **5S** served as a Kaizen event since the researcher constituted a team to ensure continually that improvements such as updates to visual aids, equipment, and stocked items were implemented in the work area to help eliminate waste. In addition, after the Kaizen event, the team documented the process to create a standard and provide precedence for workers in other shifts. Overall, the study indicated that Lean methods could be implemented in areas other than manufacturing with a great degree of success.

2.3.2 Product Quality

Terziovski, Samson and Dow (1997) conducted a study whose objective was to test the relationship between ISO 9000 certification and organizational performance in the presence and absence of a total quality management (TQM) environment. The analysis was performed on a sample of 962 industrial companies in Australia and 379 from New Zealand and found that the ISO 9000 certification does not have a significantly positive effect on organizational performance on its own. The authors say that the main motivation for companies to have a quality certification is the ability of certification to open doors to new customers that would be difficult to achieve without the quality certification. In this sense, Youngdahl and Kellogg (1997), examined the relationship between customer service, quality assurance, satisfaction and effort, all this in the perspective of the costs of quality and found that the classification of costs to quality customer service and their relationship with both satisfaction and effort, provides important capabilities to the design and implementation of services. Thus, the cost of quality concept predicts that as quality increases the total cost of quality decreases (Hendricks & Singhal, 2001). The internal and managerial motivation to adopt ISO 9000 often has a positive effect on the likelihood of a certified organization to achieve a better-performing effectiveness configuration (Boiral & Amara, 2009).

Casadesús and Giménez (2000) carried out an empirical study in 288 companies in the Autonomous Community of Catalonia, certified by ISO 9000, determining the internal

and external benefits obtained after certification. They concluded that 65% of the companies acquired internal and external benefits, while 15% had more modest benefits. For the authors, there is no doubt that the process of certification according to ISO 9000, provides an evolution in how to manage a company, the organization, communication and quality system, in general are the key to success in business management. It takes a cultural change, which affects the whole organization, where continuous improvement has become a basic tool to advance business competitiveness.

Arawati, Ahmad and Muhammad (2009) conducted a study on the impact of quality management (QM) practices on productivity and profitability using a sample of manufacturing companies in Malaysia. The results of the study revealed that quality measurement, benchmarking in particular as well as employee focus, supplier relations and training appear to be of primary importance and exhibit significant impact toward productivity and profitability. In addition, the findings also suggest that productivity mediates the link between QM and profitability.

2.3.3 Product Pricing Strategies

Armstrong and Kotler (2009) defines price as a cost of producing, delivering and promoting the product charged by the organization. Zeithaml (2008) is of the view that monetary cost is one of the factors that influence consumer's perception of a product's value. Price can be stated as the actual or rated value of a valuable product which is up for exchange; some define it as amount of money paid for a product (Armstrong & Kotler, 2009). In the studies of Colpan (2006); Gbolagade, Adesola and Oyewale (2013), they establish significant relationship between price and business performance. The price set for a product or service plays a large role in its marketability. Pricing for products or services that are more commonly available in the market is more elastic, meaning that unit sales will go up or down more responsively in response to price changes (Johnson, Scholes & Whittington, 2008).

According to Hilton (2011), setting the price for an organization's product or service is one of the most crucial decisions a manager faces, and one of the most difficult, due to the number of factors that must be considered. Some of the factors that influence pricing decision are demand, competitors, cost, political, environmental, legal and image-related issues. Horngren, Datar and Rajan (2014), buttresses this point by stating that managers are frequently faced with crucial decisions on pricing and profitability of their products. In one survey, pricing was deemed to be "extremely important" by 78 percent of the respondents and ranked third among fifteen key marketing issues. Chen and McMillan (1992) reported that the likelihood of competitive response is higher, the response delay is shorter, and the likelihood of a matching response is higher for price cuts than they are for other competitive actions. Incumbent firms often reduce price when they encounter new market entry.

The pricing strategy is dependent on the nature of the product in question (for example, innovative versus imitative), and the product mix of the firm. For example, market skimming and market-penetration are two pricing strategies that can be employed for an innovative product or service. Products have to be positioned in the marketplace to be profitable and the following are some of the options that can be employed: product-line pricing, optional-product pricing, captive-product pricing, by-product pricing, and product-bundle pricing (Kotler & Armstrong, 2005). Prices can also be adjusted through the use of discount pricing (quantity, functional, seasonal discounts, payment terms) and allowances (trade-in, promotional); discriminatory pricing (customer-segment, product-form, location, time); psychological pricing; promotional pricing (loss leaders, special-event pricing, cash rebates, low-interest financing, longer warranties, free maintenance, discounts); and geographical pricing (FOB-Origin, uniform delivered, zone, basing point, freight absorption). However, both buyers' and competitors' reactions need to be considered before changing prices. A carefully crafted pricing strategy, supported by analytically-based pricing tactics can improve a company's revenue and profitability (Nagle, Hogan & Zale, 2013).

2.3.4 Production Strategies

Organizations can gain competitive advantage from lean production practices. Such practices enable the organization to get superior performance through reduction of wastes and other related costs (Ohno, 2008). Lean production refers to a business model that emphasizes on meeting customers' expectations by delivering quality products at the least cost when required. Womack and Jones (1996) states that implementing lean strategies can resolve severe organizational problems and additionally can be a powerful approach to gather and unite several change initiatives that are running through the organization. Bicheno (2005) claims that in batch production about 98% of time activities are not of value. In order to implement the concept of lean manufacturing successfully, many researchers emphasize on commitment by top management (Alavi, 2003).

Most organizations pursue lean production in response to their need to fundamentally improve business competitiveness by reducing cost while increasing quality and customer responsiveness including meeting delivery time. According to Boyer and Sovilla (2003), managers should also work to create interest in the implementation of lean operations. The business competitiveness needs can manifest through increase in direct global competition or from evolving customer or supply chain expectations. Lean practitioners often acknowledge that successful lean implementation can require a real or perceived business crisis to justify or foster receptiveness to the significant transformation that lean requires to an organization's culture and process. Studies have been done to show the role of lean production system. According to a case study of Kodak Canada Inc., Kodak's Director of Global Manufacturing and Logistics, Charlie Brown steered the company towards adopting lean productions in 1998, by adopting Kodak Operating System (KOS). Lean therefore, has not only improved procedure, reduced inventory and enhanced ergonomics, but it allows the company to fine-tune its chemistry and keep pace with changes in demand''

In a study to assess the success of methodologies geared at enhancing the sustainability of quality seed production and supply, Guei, Barra and Silue (2011) investigated how

smallholder seed enterprises could strengthen their capacities for rice, sorghum, maize, and millet seed production. The study involved mobilizing and training groups of farmers in technical aspects of seed production such as organization of farmers into autonomous seed producer groups, selection of seed production sites, crop management, weed control and crop protection. The focus of this training was to build the groups as business units to enhance the multiplication and supply of varieties of maize, sorghum, and millet. The study concluded that seed production required quite an amount of financial and technical support, especially in the beginning stages and therefore, it was crucial to sensitize and train seed producers' organizations while building alliances among all partners, producers, and local research and development agencies.

2.3.5 Seed Distribution Strategies

The different members in the distribution channel work more or less closely with each other and this is usually referred to as the degree of external integration. The advantages of integrating activities and functions amongst the actors in the distribution channel are perceived to be innumerable, one being increased performance. Promotion and distribution strategies play a crucial role in the launch of new products to the market. Distribution decisions are far reaching because changing them is both resource and time demanding and hence firms have to take great care in designing their distribution systems during the launch of innovations (Stern & Sturdivant, 1987). Distribution strategies play a crucial role in the launch of new products and their eventual acceptance and sales of product in the market as it determines the availability of the new product to customers. For an organization's competitiveness, distribution strategy plays a role in enabling the availability and application of the product in the marketplace and therefore the distribution strategy employed by the organization would impact the nature of "market support" capability that can be provided to the innovation (Cooper & Kleinschmidt, 1988).

As one of the key elements of a company's success, selecting the proper distribution channel strategy is a focal point in both supply chain and marketing channel structure in both local and international trade. The distribution channel strategy decision is usually

based on finding the most profitable way to reach a market and according to Lee, McGoldrick, Keeling and Doherty (2003), successful distribution channel strategy selection, implementation, and management cannot only help to meet the shopping needs and habits of the target customers efficiently under the cost constraints of the seller, they must also mitigate the disadvantages caused by distribution channel conflicts such as double marginalization.

Needham, Dransfield and Harris (2008) recommends that organizations come up with several distribution strategies that should address levels of channels, distribution scope, multiple channels, franchises and channel control strategies among others to be able to achieve their marketing objectives.

2.3.6 Organizational Performance of Seed Companies

The performance of any firm not only plays the role to increase the market value of that specific firm but also leads towards the growth of the whole industry which ultimately leads towards the overall prosperity of the economy. Assessing the determinants of performance of insurers has gained importance in the corporate finance literature because as intermediaries, these companies not only provide the mechanism of risk transfer, but also helps to channel the funds in an appropriate way to support the business activities in the economy. However, it has received little attention particularly in developing economies (Ahmed, Zaman & Shah, 2011).

The subject of organizational performance has received significant attention from scholars in the various areas of business and strategic management. It has also been the primary concern of business practitioners in all types of organizations since organizational performance has implications to the organization's health and ultimately its survival. High performance reflects management effectiveness and efficiency in making use of company's resources and this in turn contributes to the country's economy at large (Naser & Mokhtar, 2004).

Firm performance is the end result of the organization‘s activities which includes the actual outcomes of strategic management processes. Wheelen and Hunger (2008), allege that the practice of strategic management is justified in terms of its ability to improve an organization’s performance, which is typically measured in terms of profits and return on investments. Performance is more of a companywide measure, in the form of strategic and financial outcomes, across business units, divisions, functional departments and operating units. It is also a measure of a company‘s efficiency or effectiveness in conducting business operations for the accounting period. Different stakeholders require different performance indicators to enable them make informed decisions. As much as performance measures are mostly financial indicators, non-financial indicators are also important to use. Thompson, Strickland and Gamble (2007), notes that using financial indicators alone overlooks what enables a company to achieve these financial results, which could be the achievement of strategic objectives. Examples of these non-financial measures are innovativeness and market standing respectively.

Firm performance has over the years evolved to encompass wider definition and philosophies such as Profit Impact of Marketing Strategy (PIMS). The public, media and community groups now pay more attention on the impact of firms on the natural environment and on society as a whole. Firms are responsible for more than just economic value. The Triple Bottom Line (TBL) has emerged as a new tool for measuring firm performance. The TBL considers excellence along all the three lines of sustainable reporting (economic, social and environmental) (Hubbard, 2009).

2.4 Empirical Review

Protogerou et al. (2012) did a study on the relationship between dynamic capabilities and firm performance. In particular, it addresses the question of whether dynamic capabilities impact directly or indirectly on performance. Using data from manufacturing firms, the paper articulates and measures dynamic capabilities as a multi-dimensional construct with three underlying factors namely coordination, learning and strategic competitive response. Then, structural equation modeling is employed to explore the relationships

among dynamic capabilities, functional competences and firm performance. Empirical findings suggest that dynamic capabilities are antecedents to functional competences which in turn have a significant effect on performance. Direct effects on performance are found to be insignificant.

Neiroitti and Paolucci (2014) examined the antecedents and performance consequences of capabilities developed from the use of information technology (IT). The data set was randomly drawn from a sample of 186 Italian large enterprises. Attention was given to the influence of industry and firm characteristics on the creation of capabilities and on the returns from IT investments resulting to three principal contributions. First, the IT diffusion patterns revealed that these technologies have a dual nature. Some capabilities derived from IT use (administrative capabilities) diffuse evenly across industries because the underlying technologies easily adapt to industry- and firm-specific conditions. In contrast, the use of IT in supporting other capabilities (such as those related to product development) is less developed and more concentrated in the high-tech and information service sectors. Second, using a resource-based perspective, the results showed positive effects that firm-specific preconditions have on the accumulation of IT resources and capabilities that exhibit a rare diffusion at the industry level. Third, given industry-level differences in competitive environments, the value appropriation of capabilities that firms had developed using IT depended on industry type, with hi-tech and information services industries exhibiting lower profit returns. This was done in a developed economy, Italy. This may need to be investigated further in a developing economy. Furthermore, the current study looked at five variables as possible determinants of competitive advantage and organizational performance.

Huselid, Jackson and Schuler (1997) studied on the relationship between Human Resources (HR) practices and corporate performance. The study developed and validated indexes of high-involvement HR practices through factor analysis. Their work supports a configurationally view of HR practices, where techniques tend to work synchronously. The study found high-involvement HR practices to be strongly and positively linked to

various measures of organizational performance, including work attachment, firm financial performance, and productivity. In another study, Delaney and Huselid (1996), found that practices consistent with a high involvement HR strategy, such as highly selective staffing, incentive compensation and training, have been positively linked to organizational performance. However, Delaney and Huselid's efforts to establish the impact of internal consistency among such practices by considering the interaction effects on pairs of strategies were not particularly successful.

Omollo, Oginda and Otengah (2013) carried out a study to determine the influence of human resources practices on the performance of small scale enterprises. The researchers state that if particularly investigated, the influence of recruitment and selection, training and development, performance appraisals, employee voice and compensation individually and collectively create a competitive advantage for small scale enterprises. Competitive advantage is based on the scores of each small scale enterprise on life span, profits, sales volumes and expansion. The study found out that the overall average performance of small scale enterprises is 60.71%; and that recruitment and selection; training and development are significant predicators or determinants of the enterprises' competitive advantage.

Elius (2012) aimed to consider how major international company, Kentz Corporation is helping to overcome the shortage of skilled workers in the fast-growing South African construction and engineering industry by training people of its own. The study considered several training methods, both on- and off site, and looked at more innovative models of training. It claims that companies can work with national governments to address skills shortages and can obtain competitive advantage and customer satisfaction as a result of investment and innovation in training initiatives. The study explains that, to date, the Kentz scheme has enjoyed success in South Africa in providing trades people at all levels in the national construction and engineering industry. The study of O'Regan, Sims and Ghobadian (2005) reveals that there is a relationship between ownership and the competitive performance of SMEs in the United Kingdom. Oke, Burke and Myers (2007)

find that small and micro enterprises in the United Kingdom that focus on incremental innovation attain growth in sales turnover. Further, findings of Marques and Ferreira (2009) show that process innovation and research and development have influence on performance of small enterprises in Portugal.

Vonortas and Xue (2002), while studying the process innovations of small firms in the USA, observed that economic incentives, internal resources, technical and organizational competencies that a firm has developed or accumulated over time and a firm's linkage to external sources of expertise for learning about new technological developments were the major forces that influenced competitive advantage of firms. Danneels and Kleinschmidt (2001) in the context of new product development for competitive advantage argued that it consists of bringing together two main components: markets and technology.

2.5 Critique of Existing Literature

Although there are many studies on factors influencing organizational performance, the focus has been on large firms and very few studies that have been conducted in developing economies especially in Kenya.

For instance, Muogbo (2013) who investigated the place of strategic human resource management in improving competitive advantage among SMEs in Anambra State Nigeria found that strategic human resource management is an important and indispensable tool for any organization's performance and for any organization that wants to gain competitive advantage over others. Kavitha et al. (2013), examined the relationship between the competitive priorities and competitive advantage among small scale industries in Coimbatore and the results suggested that there is a significant relationship between the competitive priorities and competitive advantage among the small scale industries in Coimbatore. Nkonok (2012) on the other hand, examined the factors that limit the competitive advantage of small businesses in Tanzania, and the study examined variables such as; education, finances, organizational structure, business plans, government policy and bureaucratic processes. This study however sought to address the

strategic factors that influence organizational performance such as cost structures, product quality, product pricing, production strategies and seed distribution strategies.

Protogerou et al. (2012) did a study on the relationship between dynamic capabilities and the firm's performance. In particular, it addresses the question of whether dynamic capabilities impact directly or indirectly on performance. Using data from manufacturing firms, the paper articulates and measures dynamic capabilities as a multi-dimensional construct with three underlying factors namely; coordination, learning and strategic competitive response. Then, structural equation modeling was employed to explore the relationships among dynamic capabilities, functional competences and the firm's performance. Empirical findings suggest that dynamic capabilities are antecedents to functional competences which in turn have a significant effect on organizational performance. Direct effects on performance are found to be insignificant. The above study focused on one variable which is dynamic capabilities of the firm while the current study looked at five variables as determinants of organizational performance.

Neiroitti and Paolucci (2014) examined the antecedents and performance consequences of capabilities developed from the use of information technology (IT). The data set was randomly drawn from a sample of 186 Italian large enterprises. Attention was given to the influence of industry and firm characteristics on the creation of capabilities and on the returns from IT investments resulting to three principal contributions. First, the IT diffusion patterns revealed that these technologies have a dual nature. Some capabilities derived from IT use (administrative capabilities) diffuse evenly across industries because the underlying technologies easily adapt to industry- and firm-specific conditions. In contrast, the use of IT in supporting other capabilities (such as those related to product development) is less developed and more concentrated in the high-tech and information service sectors. Second, using a resource-based perspective, the results showed positive effects that firm-specific preconditions have on the accumulation of IT resources and capabilities that exhibit a rare diffusion at the industry level. Third, given industry-level differences in competitive environments, the value appropriation of capabilities that firms

had developed using IT depended on industry type, with hi-tech and information services industries exhibiting lower profit returns. The above study was done in a developed economy, Italy. There was need to investigate further in developing economies. Furthermore, the current study looked at five variables as possible determinants of organizational performance.

Huselid et al. (1997) studied on the relationship between HR practices and corporate performance. The study developed and validated indexes of high-involvement HR practices through factor analysis. Huselid's work supports a configurationally view of HR practices, where techniques tend to work synchronously. The study found high-involvement HR practices to be strongly and positively linked to various measures of organizational performance, including work attachment, firm financial performance, and productivity. In another study, Delaney and Huselid (1996) found that practices consistent with a high involvement HR strategy, such as highly selective staffing, incentive compensation and training, have been positively linked to organizational performance. The study established a significant relationship between HR practices and organizational performance. The findings from the above studies were only limited to effects of human resource practices on organizational performance. The current study looked at five variables as possible determinants of organizational performance. The above study was also done in Greece. The current study was carried out in Kenya.

Omollo et al. (2013) carried out a study to determine the influence of human resources practices on the performance of small scale enterprises. The researchers state that if particularly investigated the influence of recruitment and selection, training and development, performance appraisals, employee voice and compensation individually and collectively create a competitive advantage for small scale enterprises. Competitive advantage is based on the scores of each small scale enterprise on life span, profits, sales volumes and expansion. The study found out that the overall average performance of small scale enterprises is 60.71%; and that recruitment and selection; training and development are significant predicators or determinants of the enterprises' competitive

advantage. The finding from the above study was only limited to effects of human resource practices on performance of small scale enterprises. The current study looked at five variables as possible determinants of organizational performance specifically of maize seed companies in Kenya.

Elius (2012) aimed to consider how major international company, Kentz Corporation is helping to overcome the shortage of skilled workers in the fast-growing South African construction and engineering industry by training people of its own. The study considered several training methods, both on- and off site, and looked at more innovative models of training. It claims that companies can work with national governments to address skills shortages and can obtain competitive advantage and customer satisfaction as a result of investment and innovation in training initiatives. The study explains that, to date, the Kentz scheme has enjoyed success in South Africa in providing trades people at all levels in the national construction and engineering industry. The study of O'Regan et al. (2005) reveals that there is a relationship between ownership and the competitive performance of SMEs in the United Kingdom. Oke et al. (2007) find that small and micro enterprises in the United Kingdom that focus on incremental innovation attain growth in sales turnover. Further, findings of Marques and Ferreira (2009) show that process innovation and research and development have influence on performance of small enterprises in Portugal. The above studies looked at different factors as determinants of organizational performance such as ownership structure, innovation and training, whereas the current study looked at five variables altogether as the determinants of organizational performance.

2.6 Research Gaps

A critical review of relevant past studies showed that several conceptual, contextual and methodological research gaps existed in terms of the strategic determinants of organizational performance of maize seed companies in Kenya.

2.6.1 Conceptual gaps

Most of the research relating to maize seed companies has mainly focused on the technical factors that are important in producing improved seed of hybrids and how the organizations benefits. Studies by Langyintuo et al. (2008) highlight a lot of technical challenges as factors affecting performance of seed companies. These studies left out the strategic determinants of company performance, which presents a conceptual gap. Available literature does not provide strategies, policies and procedures that would help to improve performance. Previous studies such as Renkow, Hallstrom and Karanja (2004) showed that widespread access to improved seeds, fertilizers and other agricultural technologies have a profound impact on aggregate incomes, including the incomes of smallholder farmers. However, there exists little information on maize seed market channels structure, the bottlenecks to them operating more efficiently, effectively and equitably. Protogerou et al. (2012) study focused on one variable which is dynamic capabilities of the firm. These presents huge conceptual gaps. The current study used five independent variables as possible strategic determinants of organizational performance.

2.6.2 Contextual gaps

Most studies on company performance have been done in large developed economies and very few were done in developing countries. For example, Neiroitti and Paolucci (2014) examined the antecedents and performance consequences of capabilities developed from the use of information technology (IT). This study was done in Italy which is a developed country. The current study was done in Kenya which is a developing economy. As reported by Langyintuo et al. (2009) most of the efforts to enhance seed supply focused on increasing the number of companies involved. However, this failed to provide the ultimate solution as most of the companies remained small in terms of seed volumes supplied (MacRobert, 2009). The current study focused on five variables with potential to influence business growth and profitability.

2.6.3 Methodological gaps

Most of the past studies explored the relationship of one or very few independent variables with the dependent variable. To bridge this gap, this study included five independent variables and linear as well as multiple regression models were run to determine the significance and relationship of individual variables as well as the joint variables with the dependent variable. The correlation analysis used in the current study further helped to evaluate the strength of the relationship between the independent and dependent variables. The reviewed literature also showed that most data was collected using questionnaires. In the current study, additional data was obtained through interviews with seed experts which helped to provide in-depth data on the study variables.

2.7 Chapter Summary

This chapter reviewed the various theories and concepts that explain the independent and dependent variables. The reviewed theories were then critiqued for relevance to specific variables. The chapter also explored the conceptualization of the independent and the dependent variables by analyzing the relationships between the two set of variables. In addition, an empirical review was conducted in which past studies both global and local were reviewed in line with the following criteria; title, scope and methodology resulting into a critique. It is from these critiques that the research gaps were identified.

From the reviewed literature it was established that various theoretical and empirical studies were conducted in the past to explore the influence of technical and other factors on performance of the seed industry. Most of the technical factors were examined specifically on their influence on the seed quality and quantities produced. Some of these past studies showed that indeed there is some influence of some factors such as strategic human resource management, organizational structure, business plans and government policies on organizational performance. However, a significant portion of these past studies focused on performance of organizations in developed economies. This study filled in the gap by focusing on maize seed companies in Kenya which is a developing

economy. Also, the current study sought to address different strategic factors that influence organizational performance such as cost structures, product quality, product pricing, production and seed distribution strategies.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlined the methodology used to capture the data for the research. Methodology is a related set of assumptions that reflect how a researcher views reality and how this reality is articulated through research. The choice of a method is reflective of what the researcher wants to uncover. To concretize research methodology, this chapter covered research design, research philosophy, population, sampling technique, sample size, data collection instruments, pilot testing, data analysis and presentation.

3.2 Research Philosophy

In research methodology, philosophical aspect in social science research is classified into two main opposites which are namely objectivism and subjectivism. Objectivism originated from an American writer Ayn Rand in 1905–1982. From a philosophical point of view, objectivism is the belief that certain things, especially moral truths, exist independently of human knowledge or perception of them (Saunders & Lewis, 2012). Subjectivism on the other hand is that knowledge is merely subjective and that there is no external or objective truth. Subjectivism accords primacy to subjective experience as a fundamental of all measure and law. This study exercised objectivity aspect. Further, two common variations are phenomenology and positivism. Phenomenology seeks to understand social contexts by focusing on the immediate experience (Rainer & Watson, 1995). The underlying assumption of this philosophy was to uncover meanings and understanding of a phenomena being studied. It starts from a premise of no theory and observes evolving patterns from collected data to arrive at a theory.

Positivism contends that only “factual” knowledge from observation (the senses) is trustworthy. Further, a positivist approach to research is based on knowledge gained from 'positive' verification of observable experience where there is an objective reality and

ability of people to know this reality. The disadvantage of positivism is that there are many things that are not concrete. These methods ensure that there is a distance between the subjective biases of the researcher and the objective reality she or he studies. This generally involves hypothesis generation and testing: proving or refuting (Cohen & Crabtree, 2006). This study adopted positivist as it aimed at testing hypotheses derived from a predetermined conceptual framework.

3.3 Research Design

Research design refers to how data collection and analysis are structured in order to meet the research objectives through empirical evidence economically (Chandran, 2004). According to Cooper and Schindler (2008), research design is the plan and structure of investigation so conceived as to obtain answers to research questions. Kumar (2011) defines research design as a procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically. He asserted that the definitions given by scholars on research design are suggestive of the fact that research designs have two main functions. The first function relates to the identification and or development of procedures and logistical arrangements required to undertake the study. The second function relates to the importance of quality in these procedures to ensure their validity, objectivity and accuracy.

This study used a cross-sectional survey research design. A survey research design was an attempt to collect data from the members of a population in order to determine the current status of that population with respect to one or more variables. It was therefore, a self-report study which required the collection of quantifiable information from the sample. A survey research can be descriptive, exploratory or involving advanced statistical analyses (Mugenda & Mugenda, 2003). The correlation approach involved collecting data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables. The degree of relationship was expressed as a correlation coefficient (r). Since this study was concerned with discovery and deeper understanding of associations among different variables that affect seed business growth

and financial performance, a descriptive study with correlational approach was used (Cooper & Schindler, 2011).

3.4 Target Population

According to Cooper and Schindler (2011), a population is the total collection of elements about which the researcher wish to make some inferences. Bryman and Bell (2011) described a population as a full universe of people or things from which a sample is selected. Fraenkel and Wallen (2008), state that there are two categories, the target and the accessible populations. The target population is the actual population to which the researcher would really like to generalize.

The target population of this study comprised of 24 units of analysis which are the maize seed companies that are registered with the Seed Trade Association of Kenya [STAK] (2014) from which the accessible population was drawn (Appendix IV). These maize seed companies were able to articulate seed issues and provide relevant information to the study that helped to address strategic issues in maize seed business management.

3.5 Sampling Frame

A sampling frame is a list of population from which a sample is drawn (Leary, 2001). It is the source material or device from which the list of all elements within a population that can be sampled is drawn (Särndal, Swensson & Wretman, 1992), and may include individuals, households or institutions. It is a published list or a set of directions for identifying a population (Gall, Gall & Borg, 2007).

For the purpose of this study, the sampling frame for the study population was the employee data base of all the 24 maize seed companies registered with the seed trade association of Kenya (STAK, 2014) as indicated on Appendix IV. The employee data base was derived from human resource records of the seed companies in liaison with the human resource departments.

3.6 Sampling Technique and Sample Size

3.6.1 Sampling Techniques

According to Upagade and Shende (2012), sampling design is a definite plan for obtaining a sample from a given population upon which data is collected from. Kothari (2004) defines a sample as the selected respondents who represent the entire population. To select the respondents, the study used purposive sampling technique first to select the relevant departments in the seed companies. The simple random sampling technique was then used to select the actual respondents from the departments. According to Mugenda and Mugenda (2003), purposive sampling is a sampling technique that allows a researcher to use cases that have required information with respect to the objectives of the study. Cases or subjects are therefore, selected because they are informative and have the required characteristics that conform to the seed business experience and expertise.

The study also included interviews conducted with seed experts to help on elaboration of the study variables. The snowballing technique in conjunction with the judgement technique were used to select the seed experts. In the initial stages the known seed experts in the seed industry were selected using the judgment technique. Thereafter, the required sample of seed experts was obtained by snowballing technique through referral networks (Cooper & Schindler, 2011).The initial seed experts were used to refer the researcher to others who had similar characteristics of expertise in the seed business.

3.6.2 Sample Size

The listing of all population elements from which a sample was taken is called the sample frame (Cooper and Schindler, 2011). This study comprised of 24 units of analysis (Appendix IV), which are the seed maize companies registered with the seed trade association of Kenya (STAK, 2014) from which the target population was drawn. The unit of observation was the staff in selected departments within those seed companies. Within the seed companies, staff lists and organograms kept by the Human Resources (HR) department were used as the sampling frame for the actual respondents in the

selected departments according to the five variables chosen in this study. This two-stage sampling frame ensured that there was no bias and the sample frame was representative of the target population.

The target respondents were the supervisors, middle and senior managers in maize seed businesses in Kenya. These are believed to understand and articulate seed supply strategic issues and give informed responses to the research questions. The study also incorporated interviews with seed experts working in various organizations in Kenya, especially those involved in seed systems were included in this study for their wide experiences in seed supply issues.

The sample size for this study was 96 employees who were obtained first by selecting through purposive sampling four departments from each seed company, namely; production department, marketing department, finance department and warehousing department. The actual respondents comprised of four employees randomly selected from each company. The four employees included each respondent from production department, marketing department, finance department and warehousing department.

The sample size for the seed experts was 30, and it was obtained through the snowballing technique. In the initial stages the known seed experts were selected using the judgment technique. Hence the first seed expert was settled on using the judgment technique. The snowballing stopped once the sample size of 30 seed experts in Kenya was attained.

3.7 Data Collection Instruments

Primary data was gathered from seed companies' respondents by use of structured questionnaires. Likert scale with closed-ended questions was distributed to respondents after approval to collect data from the management of the maize seed companies. Likert scale is an interval scale that specifically uses five anchors of Strongly Disagree, Disagree, Neutral (neither agree nor disagree), Agree and Strongly Agree. This type of questionnaire was more appropriate because it enabled consistency in the questions asked and the data

obtained was easy to analyze. Likert scales are good in measuring perception, attitude, values and behaviour. The Likert scale has scales that assist in converting the qualitative responses into quantitative values (Mugenda & Mugenda, 2003; Upagade & Shende, 2012). An interview guide was used to conduct interviews with the seed experts. The interview guide approach ensured that the same general areas of information were collected from each interviewee. This provided more focus but still allowing a degree of freedom and adaptability in getting the information from the seed experts.

3.8 Data Collection Procedure

Burns and Grove (2003) define data collection as the precise, systematic gathering of data relevant to the research problems, using methods such as interviews, participant observations, focus group discussion, narratives and case histories. Initially the researcher used self-introductions and also used internal informants within the seed companies. A total of 96 questionnaires were sent to the respondents with a questionnaire forwarding letter accompanied by an introduction letter from the University. The researcher trained the research assistants on how and to whom to administer the questionnaires. The researcher then made follow ups and the fully completed questionnaires were picked from the respondents later by use of the research assistants.

Thirty interviews were also conducted with selected seed experts. Interviews assisted the researcher to get in-depth information and clarify issues from people with expertise or deep knowledge on specific aspects of the study. An interview guide (Appendix III) was used to ensure that uniform set of issues were discussed across the various sampled interviewees.

3.9 Pilot Testing

The questionnaire was pilot tested to determine its validity and reliability. Pilot test was conducted in order to determine approximate length of the survey in terms of time, as well as to further refine the instrument. Pilot testing of the instrument provided opportunities for comments relating to the clarity and content of the instrument.

Pilot testing is a crucial step in conducting a research. Even modest pretesting can avoid costly errors and therefore, the questionnaire was tested for its reliability and validity. A pilot test is an evaluation of the specific questions, format, question sequence and instructions prior to use in the main survey. Questions answered by the pilot test include: Is each of the questions measuring what it is intended to measure? Are questions interpreted in a similar way by all respondents? Do close-ended questions have a response which applies to all respondents? Are the questions clear and understandable? Is the questionnaire too long? How long does the questionnaire take to complete? Are the questions obtaining responses for all the different response categories or does everyone respond the same?

Ten questionnaires were piloted by issuing them to 10 managers of randomly selected maize seed companies. The pilot test sample of 10 managers represented the required 10% of the targeted final sample size of 96 respondents (Connelly, 2008). The questionnaires were then coded and responses input into SPSS which was used to generate the reliability coefficient.

3.9.1 Validity Test

According to Mugenda and Mugenda (2003), validity is the accuracy and meaningfulness of inferences, which are based on the research results. In other words, validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. The purpose of validity test was to measure the accuracy with which the questions measure the factors under study. The study research instrument was subjected to a panel of experts to assess if it captured all the items it was intended to measure and their expert opinion was incorporated to ensure face validity. This study used both construct and content validity. For construct validity, the questionnaire was divided into several sections to ensure that each section assessed information for a specific objective, and also ensured the same close ties to the conceptual framework for this study. Content validity was sought by pre-testing the questionnaire on a section of the study sample and arising modifications were incorporated for clarity, comprehensiveness,

relevance, meaning and requisite depth. Validity of the questionnaire was initially tested by reviewing it with the supervisors. The research instrument was also validated by discussing it with two middle level managers within randomly selected maize seed companies in Kenya and the study supervisors. The comments from the managers and supervisors were reviewed and incorporated to enhance the validity of the questionnaire.

3.9.2 Reliability Test

Reliability is the consistency of a set of measurement items (Cronbach, 1951). Reliability relates to the precision and accuracy of the instrument. If used on a similar group of respondents in a similar context, the instrument should yield similar results (J. Cohen, P. Cohen, West & Aiken, 2003). Accurate and careful phrasing of each question to avoid ambiguity and leading respondents to a particular answer ensured reliability of the tool. A measure is considered reliable if a person's score on the same test given twice is similar. Ten questionnaires were piloted by issuing them to 10 managers of randomly selected maize seed companies. The questionnaires were then coded and responses input into SPSS which was used to generate the reliability coefficient. The researcher used the most common internal consistency measure known as Cronbach's Alpha (α) which was generated by SPSS. The recommended Cronbach's Alpha value of 0.7 was used as a cut–off of reliability for this study.

The formula for Cronbach's alpha is:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

Where:

- N = the number of items.
- $\bar{c}$ = average covariance between item-pairs.
- $\bar{v}$ = average variance.

3.10 Data Analysis and Presentation

Data Analysis is the processing of data collected to make meaningful information out of them (Saunders, Lewis & Thornhill, 2009). This is necessary as raw data convey little meaning to most people. After data was obtained through questionnaires, it was prepared in readiness for analysis by editing, handling blank responses, coding, categorizing and keyed in using SPSS statistical package (Version 20). Burns and Grove (2003) define data analysis as a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher. Descriptive statistics in various formats were used to summarize the analyzed results and these included the mean, standard deviation, coefficient of variation, frequency tables, bar and pie charts for clear projections and comparisons to be made. Inferential statistics were also used. The inferential statistics included the use of bivariate analysis and the study used the Pearson correlation coefficient.

The analyzed data was presented using tables, bar graphs and pie charts to give a clear picture of the research findings. The purpose of putting results of experiments into graphs, charts and tables is two-fold. First, it is a visual way to look at the data and see what happened and make interpretations. Second, it is usually the best way to show the data to others. Graphical displays and tables, therefore, impart information to the reader in a more easily digestible form than the raw data.

3.10.1 Quantitative Data

Quantitative data is usually analyzed through statistical procedures. Statistical analyses cover a broad range of techniques, from simple procedures that we all use regularly (for example, computing an average) to complex and sophisticated methods. Although some methods are computationally formidable, the underlying logic of statistical tests is relatively easy to grasp, and computers have eliminated the need to get bogged down with detailed mathematical operations (Polit & Beck, 2003). Statistical analyses were used for the quantitative data obtained through the questionnaires.

3.10.2 Qualitative Data

Qualitative modes of data analysis provide ways of discerning, examining, comparing and contrasting, and interpreting meaningful patterns or themes. Meaningfulness is determined by the particular goals and objectives of the project at hand: the same data can be analyzed and synthesized from multiple angles depending on the particular research or evaluation questions being addressed. Content analysis was used for qualitative data that was obtained through interviews with seed experts. The data obtained from seed experts was presented and discussed under relevant study variables.

3.10.3 Factor Analysis

Factor analysis was used to establish the appropriateness of the questionnaire constructs. Specifically, factor loadings were used to establish the weights of the various statements on extracted factors. Before factor analysis was conducted, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was conducted to determine whether adequate correlation exists between the individual items contained within each of the sections of the questionnaire. A KMO statistic, an associated Bartlett's p-value and an Anti-image correlation statistic was determined when using this test.

This study used both the simple linear and the multiple linear regression analyses to predict the value of the dependent variable as well as to test the statistical significance of the various independent variables on the chosen dependent variable. Faraway (2002), states that multiple linear regressions are used in situations where the number of independent variables are more than one. According to IBM (2010), the assumptions of linear regression must be met by the data to be analyzed. These assumptions state that the coefficients must be linear in nature, the response errors should follow a Gaussian distribution and the errors should have a common distribution.

The following regression model aided in determination of coefficients of the independent variables in relation to the dependent variable;

The multivariate model was as follows;

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon}$$

Where;

Y = Performance of Maize Seed Companies

X_1 = Cost Structure

X_2 = Product Quality

X_3 = Product Pricing Strategy

X_4 = Production Strategy

X_5 = Seed Distribution Strategy

$\boldsymbol{\varepsilon}$ **=** Error term

In the model, $\beta 0$ = the constant term while the coefficient $\beta i = 1 \ldots 5$ was used to measure the sensitivity of the dependent variable (Y) to unit change in the predictor variables. **ε =** is the error term which captures the unexplained variations in the model.

3.10.4 Hypothesis Testing

This section presents the approach that was adopted in the study to test the five objectives as presented in chapter one. Table 3.1 shows how the various hypotheses were attained.

Table 3.1: Hypothesis Testing

Hypotheses	Hypothesis Test	Linear Regression Model
Hypothesis 1: H_{01}: Cost structures have no influence on organizational performance of maize seed companies in Kenya.	$H_{0:}$ $\beta_1=0$ vs Ha: $\beta_1 \neq 0$ Reject H_0 if p <0.05, Otherwise fail to reject the H_0	$Y = \beta_0 + \beta_1 X_1 + \varepsilon$ Where: Y= Organizational performance. β_0= intercept β_1 = Coefficient for X_1 X_1= cost structure ε = Error term
Hypothesis 2: $H_{o2:}$ Product quality has no influence on organizational performance of maize seed companies in Kenya.	$H_{0:}$ $\beta_2=0$ vs $H_{a:}$ $\beta_2 \neq 0$ Reject H_0 if p <0.05, Otherwise fail to reject the H_0	$Y = \beta_0 + \beta_2 X_2 + \varepsilon$ Where: Y= Organizational performance. β_0= intercept β_2= Coefficient for X_2 X_2= Product quality ε = Error term
Hypothesis 3: $H_{o3:}$ Product pricing strategy has no influence on organizational performance of maize seed companies in Kenya.	$H_{0:}$ $\beta_3=0$ vs $H_{a:}$ $\beta_3 \neq 0$ Reject H_0 if p <0.05, Otherwise fail to reject the H_0	$Y = \beta_0 + \beta_3 X_3 + \varepsilon$ Where: Y= Organizational performance β_0= intercept β_3= Coefficient for X_3 X_3= Product pricing strategy ε = Error term
Hypothesis 4: $H_{o4:}$ Production strategy has no influence on organizational performance of maize seed companies in Kenya.	$H_{0:}$ $\beta_4=0$ vs $H_{a:}$ $\beta_4 \neq 0$ Reject H_0 if p <0.05, Otherwise fail to reject the H_0	$Y = \beta_0 + \beta_4 X_4 + \varepsilon$ Where: Y= Organizational performance β_0= intercept β_4= Coefficient for X_4 X_4= Production strategy ε = Error term
Hypothesis 5: $H_{o5:}$ Seed distribution strategy has no influence on organizational performance of maize seed companies in Kenya .	$H_{0:}$ $\beta_5=0$ vs $H_{a:}$ $\beta_5 \neq 0$ Reject H_0 if p <0.05, Otherwise fail to reject the H_0	$Y = \beta_0 + \beta_5 X_5 + \varepsilon$ Where: Y= Organizational performance β_0= intercept β_5= Coefficient for X_5 X_5= Seed distribution strategy ε = Error term

Using SPSS, the regression model was tested on how well it fits the data. The significance of each independent variable was also tested. Fischer distribution test called F-test was

applied. It refers to the ratio between the model mean square divided by the error mean square. Analysis of Variance (ANOVA) using the F-test was used to test the significance of the overall model at a 5 percent confidence level. The p-value for the F-statistic was applied in determining the robustness of the model. The conclusion was based on the basis of p-value where if the null hypothesis of the beta was rejected then the overall model was significant and if null hypothesis was accepted the overall model was insignificant. In other words, if the p-value was less than 0.05 then it was concluded that the model was significant and had good predictors of the dependent variable and that the results are not based on chance. If the p-value was greater than 0.05 then the model was not significant and was not used to explain the variations in the dependent variable.

Similarly the t-test statistic was used to test the significance of each individual predictor or independent variable and hypothesis. The p-value for the F-statistic was applied in determining the robustness of the model. The benchmark for this study for failure to reject or failure to accept the null hypothesis was a level of significance of 5 percent. If the p-value was less than 5 percent the null hypothesis failed to be accepted and the alternate hypothesis would fail to be rejected. Also if the p-value was greater than 5 percent the null hypothesis failed to be rejected and the alternate hypothesis failed to be accepted, thus,

Reject H_0: $\beta x = 0$; if $p < 0.05$,

Otherwise fail to reject the H_0: $\beta x = 0$

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter deals with the analysis of data collected, presentation and discussion of the results obtained. The data analysis is in harmony with the specific objectives where patterns were investigated, interpreted and inferences drawn on them.

4.2 Reliability Test from the Pilot Study

Reliability is the consistency of a set of measurement items (Cronbach, 1951). Reliability relates to the precision and accuracy of the research instrument. If used on a similar group of respondents in a similar context, the research instrument should yield similar results (Cohen et al., 2003). Accurate and careful phrasing of each question to avoid ambiguity and leading respondents to a particular answer ensured reliability of the tool. A measure is considered reliable if a person's score on the same test given twice is similar.

Ten questionnaires were piloted by issuing them to 10 managers of randomly selected maize seed companies. The 10 managers represented the recommended 10% of the sample size for pilot test (Connelly, 2008). The questionnaire responses were analyzed using SPSS which generated the reliability coefficients. The most common internal consistency measure known as Cronbach's Alpha (α) generated by SPSS was used. The recommended reliability coefficient value of 0.7 was used as a cut–off of reliability for this study. All the variables under this study had Cronbach's Alpha reliability coefficients that were above 0.7 (Table 4.1). Therefore, the statements under the variables organizational performance, cost structure, product quality, product pricing strategy, production strategy and seed distribution strategy were concluded to have adequate internal consistency, therefore, reliable for the analysis and generalization of the results on the study population.

Table 4.1: Pilot Study Reliability Test

Variable	Cronbach's Alpha	N of Items
Organizational Performance	0.712	6
Cost Structure	0.708	7
Product Quality	0.704	6
Product Pricing Strategy	0.713	7
Production Strategy	0.773	7
Seed Distribution Strategy	0.846	7

4.3 Response Rate

The number of questionnaires administered to all the respondents was 96. A total of 79 questionnaires were properly filled and returned from the seed companies' staff. This represented an overall successful response rate of 82% (Table 4.2). According to Mugenda and Mugenda (2003), a response rate of 50% or more is adequate. Babbie (2004) also asserted that return response rates of 50% are acceptable to analyze and publish, 60% is good and 70% is very good. This high response rate implies that the results can be generalized to the whole population and is a good representative of the target population. Interviews were successfully conducted with all the selected 30 seed experts.

Table 4.2: Response Rate

Response Rate	Frequency	Percent
Returned	79	82%
Unreturned	17	18%
Total	**96**	**100%**

4.4 Demographic Characteristics

4.4.1 Length of Service

The respondents were asked to indicate the length of period they had worked in the companies. Figure 4.1 illustrates that 42% of the respondents had worked for a period of between 3 to 5 years, 38% indicated less than 2 years and 20% indicated over 5 years. This indicates that 62% of the respondents had worked in the seed companies for more than 3 years. The findings imply that the respondents had worked long enough in the seed companies and hence had knowledge about the variables under study. This is in agreement with the findings by Braxton (2008) who asserts that respondents with a high working experience assist in providing reliable data since they have technical experience on the problem being studied.

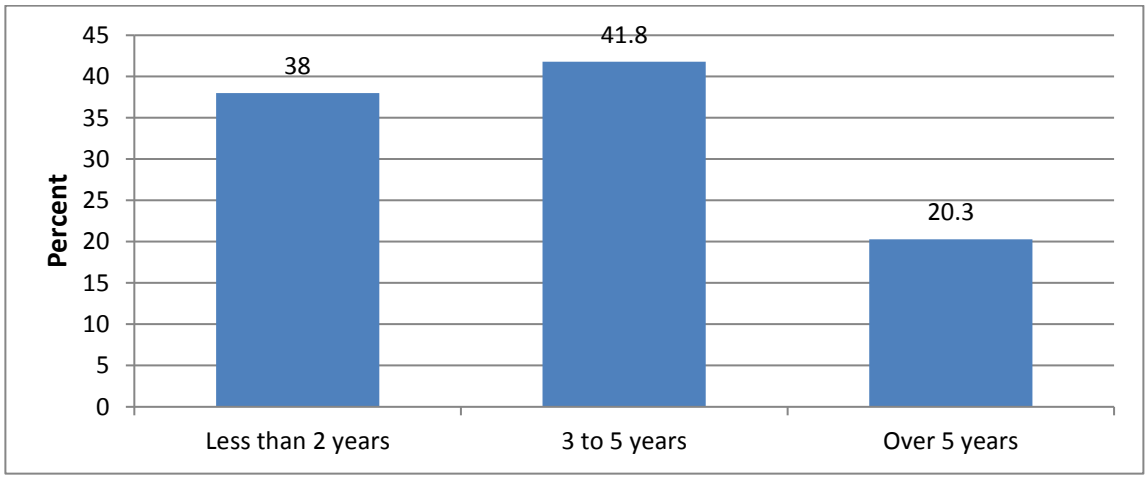

Figure 4.1: Period Worked in the Company

4.4.2 Department of the Respondents

The respondents were asked to indicate the departments they worked in. Figure 4.2 illustrates that 30.4% of the respondents were in Marketing department, while 25.3% of the respondents were in Production department and 22.8% were in Processing & Warehouse department. An almost similar proportion of 21.5% of the respondents were

from Finance department. The findings imply that the respondents were well distributed among the departments of the researcher's interest which could have contributed to accurate responses since the variables studied cut across all the departments.

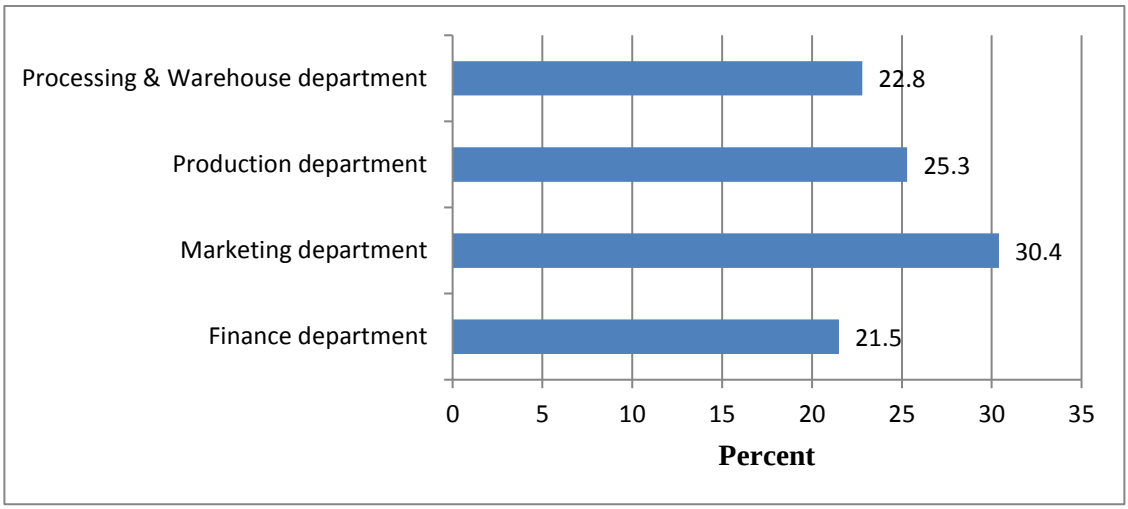

Figure 4.2: Department in the Company

4.4.3 Years of Company Operation

The respondents were asked to indicate the number of years the seed companies were in operation. Figure 4.3 illustrates that 53% of the respondents indicated that the companies had been in operation for a period of between 2 to 5 years, 24% indicated over 10 years and 23% indicated between 6 to 10 years. The findings imply that the seed companies had been in operation long enough and hence understand strategic factors that affect organizational performance.

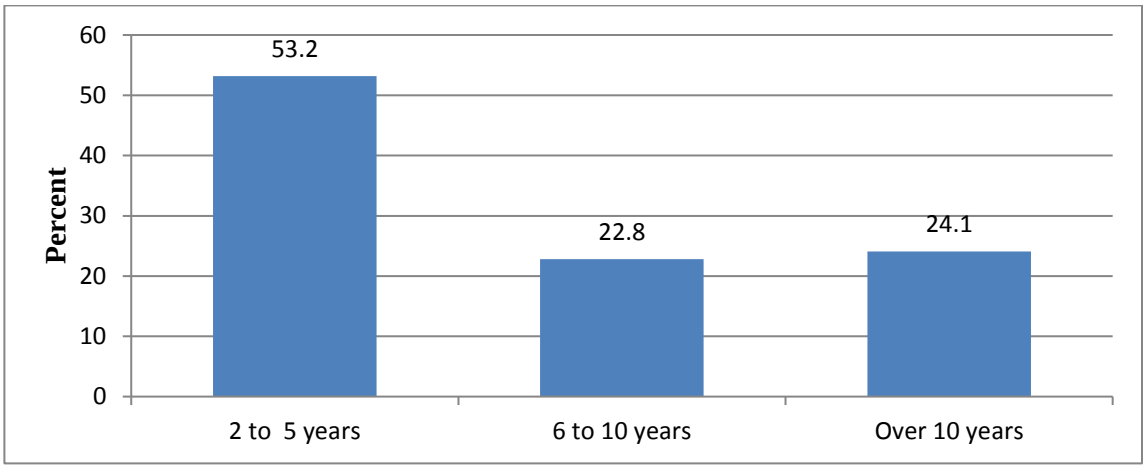

Figure 4.3: Years of Company Operation

4.5 The Study Variables

The influence of five independent variables on one dependent variable was studied. The five independent variables studied are; cost structures, product quality, product pricing strategy, production strategy and seed distribution strategy. The influence of the variables on organizational performance of maize seed companies in Kenya was studied and the research findings are presented in this thesis.

4.6 Organizational Performance

In order to get data on organizational performance of maize seed companies in Kenya, the respondents were asked to indicate performance levels on several business parameters. The levels of performance and treads over the five year period, from 2010 to 2014 are presented in this section.

i) Profit Achievement

The respondents were asked to indicate the profit performance level against set targets that the company had achieved over the last 5 years. Figure 4.4 indicates that in the year 2010 the companies achieved a mean of 62.34%, the following year the profit decreased slightly to 59.55% and shot up to 65.74% in 2012. The profit mean decreased consistently

to 64.14% and 59.58% in 2013 and 2014 respectively. This can be associated with the maize seed demand cycles influenced by cycles of adverse weather such as drought. In drought years the demand for seed and other agricultural inputs go down as farmers try to mitigate the risk of crop failure.

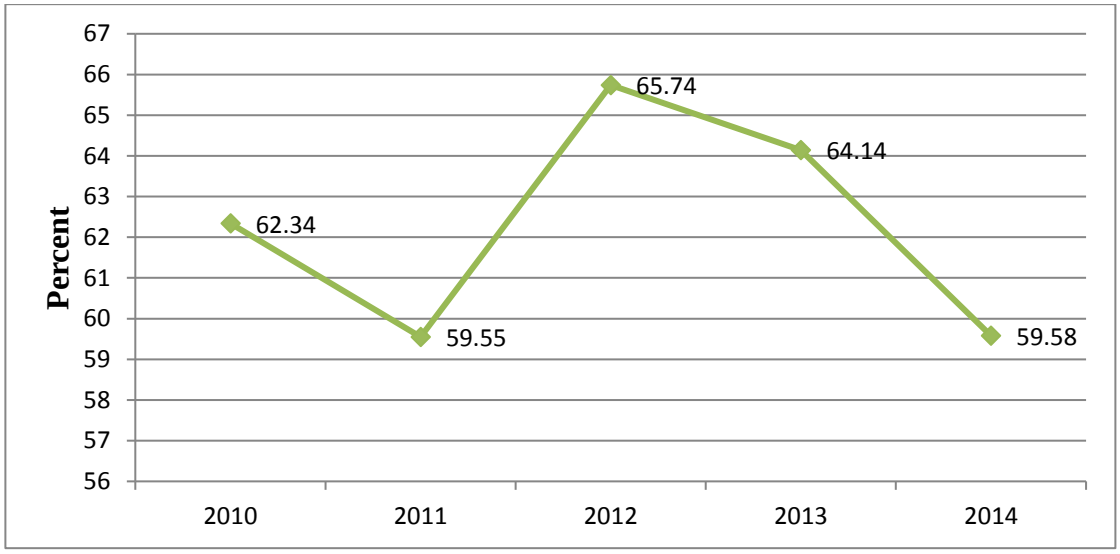

Figure 4.4: Profit Levels Trends

ii) Gross Profit

Figure 4.5 shows the trend results for the companies' gross profit for a period of 5 years. In 2010, the companies had a mean of 477,571,507.10 shillings which increased slightly to 505,653,400 in 2011 followed by consistent decrease to a low of 372,287,100 shillings in 2014. The findings imply that the gross profits were waving across the years which can be associated with the harsh business environment and economic conditions. This trend is also attributed to the increase in total expenses relative to gross revenue over the period. The findings are in line with Naser and Mokhtar (2004) who asserted that high performance reflects management effectiveness and efficiency in making use of company's resources and this in turn contributes to the country's economy at large.

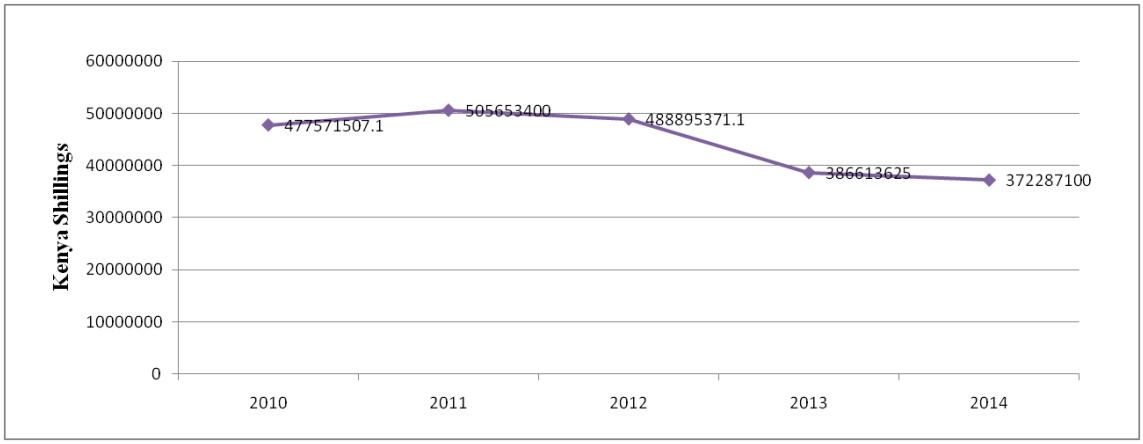

Figure 4.5: Gross Profits

iii) Level of Loss

The respondents were also asked to indicate the level of loss the company experienced over the last 5 years. Table 4.3 illustrates that 54.4% of the respondents indicated more than 10 million shillings loss, 24.1% indicated between 3 to10 million shillings loss, while 15.2% indicated less than 3 million shillings loss and only 6.3% indicated no loss. The findings imply that only a small fraction (6.3%) of the seed companies was performing well in as far as profit targets were concerned. The majority (93.7%) of the seed companies were not meeting their profit set targets.

Table 4.3: Level of Loss

	Frequency	Percent
No loss	5	6.3
Less than Kshs. 3 Million	19	24.1
Between Kshs. 3 and 10 Million	12	15.2
More than Kshs. 10 Million	43	54.4
Total	**79**	**100**

iv) Volume of Sales

The study sought to find out the volume of seed sales that the company recorded in the last financial year. Table 4.4 revealed that 54.4% indicated above 500 tonnes, 21.5% indicated between 100 and 250 tonnes, while 12.7% indicated less than 100 tonnes and 11.4% indicated between 251 and 500 tonnes. This shows that 45.6% of the seed companies are still very small as they sell maize seed volumes less than 500 tonnes. The findings are in line with MacRobert (2009) who reported that new seed entrepreneurs remain small, selling less than 500 tonnes annually.

Table 4.4: Volume of Sales

	Frequency	Percent
Less than 100 tonnes	10	12.7
Between 100 and 250 tonnes	17	21.5
Between 251 and 500 tonnes	9	11.4
Above 500 tonnes	43	54.4
Total	**79**	**100**

v) Market Share

The study sought to find out the market share for the organizations over the period from 2010 to 2014. Figure 4.6 illustrates that 78% of the respondents indicated that their market share was between 0 to 10%, 13% indicated over 40% market share, while 5% indicated between 10% to 20% and 4% of the respondents indicated between 20% to 40% market shares. This shows a seed industry with a bigger market share dominated by few (13%) seed companies. Majority (78%) of the seed companies command small market shares. The findings are again in line with what was reported by MacRobert (2009) that new seed entrepreneurs are remaining small, producing less volume of seed.

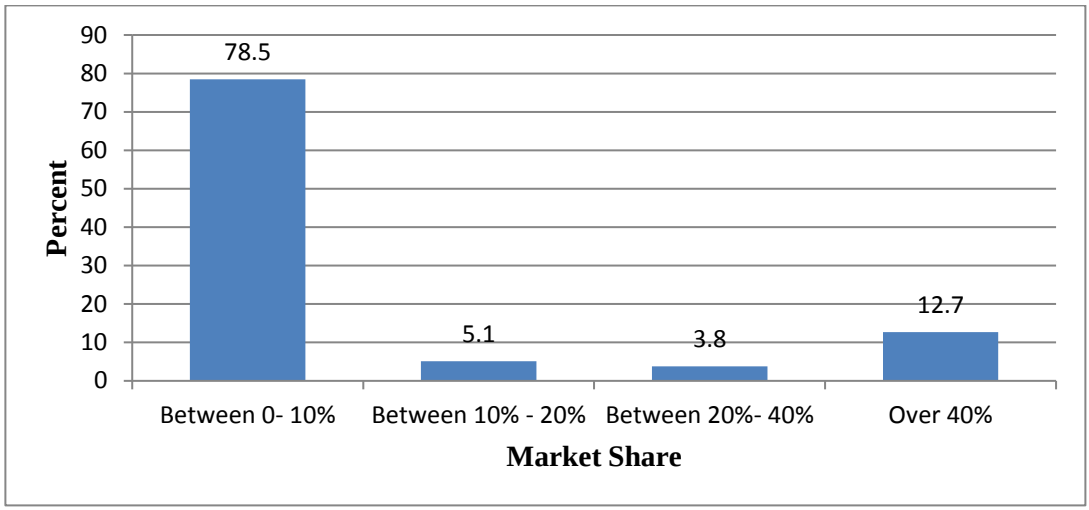

Figure 4.6: Market Share

vi) Production Capacity Utilization

The study sought to find out production capacity utilization in the organizations over the period from 2010 to 2014. The results in Figure 4.7 indicates that 41.8% had a production capacity utilization between 0-10%, while 30.4% indicated between 20% - 40% and 20.3% indicated over 40% capacity utilization. Only 7.6% of the respondents indicated their organizations had a production capacity of between 10% - 20%. This shows that only few of the seed companies had good production capacity utilization. These could be the same few with high market share. The findings are in tandem with those of Oke, et al. (2007) who found that small and micro enterprises in the United Kingdom that focus on incremental innovation attained growth in sales turnover. Further, findings of Marques and Ferreira (2009) showed that process innovation and research and development had influence on performance of small enterprises in Portugal.

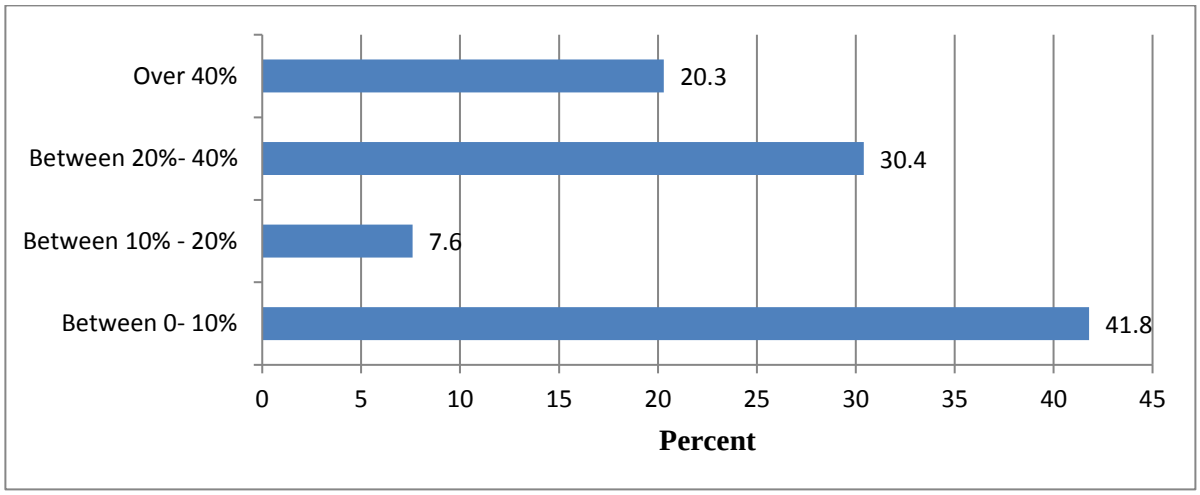

Figure 4.7: Production Capacity Utilization

vii) Revenue and Total Expenses

The respondents were asked to indicate the gross revenue and total expenses for their organizations over the past five years (2010 – 2014). Figure 4.8 illustrates that both trend lines on gross revenue and total expenses had waving trends since they had a slight increase from 2010 to 2011 and the following years decreased consistently and a slight increase in 2014.

The trend also shows the results of total expenses as a percentage of revenue that had a mean of 29.31% in 2010 and increased gradually to 42.79% in 2011 and in the following years, the mean increased steadily to hit 64.81% in 2014. This indicates that the total expenses were increasing at a higher rate than the growth in revenues over the period. Such trends reduce the profitability of companies. The findings of Oke et al. (2007) show that small and micro enterprises in the United Kingdom that focus on incremental innovation reduced expenses and attained growth in sales turnover.

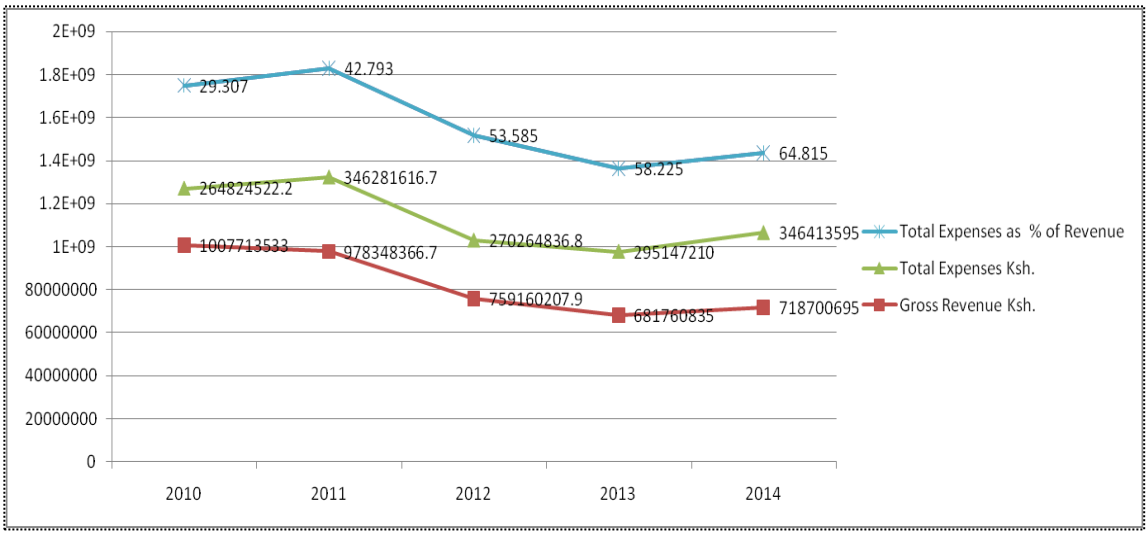

Figure 4.8: Revenue and Total Expenses

4.6.1 Reliability Tests for Organizational Performance

Using Cronbach's Alpha Coefficient test on organizational performance, a coefficient of 0.803 was found as shown in Table 4.5. These results corroborates findings by Saunders et al. (2009) and Christensen, Johnson and Turner (2011) who stated that scales of 0.7 and above, indicate satisfactory reliability. Based on these recommendations, the statements under the organizational performance variable of this study were concluded to have adequate internal consistency, therefore, reliable for the analysis and generalization on the population.

Table 4.5: Reliability Test for Organizational Performance

Variable	Organizational performance
Number of items	6
Cronbach's Alpha	0.803

4.6.2 Sampling Adequacy

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests,

two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity. For a data set to be regarded as adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2009).

Findings in Table 4.6 showed that the KMO statistic was 0.762 which was significantly high and greater than the critical level of significance of the test which was set at 0.5 (Field, 2009). In addition to the KMO test, the Bartlett's Test of Sphericity was also highly significant (Chi-square = 153.918 with 15 degrees of freedom, at $p < 0.05$). The results of the KMO and Bartlett's Test are summarized in Table 4.6. These results provided an excellent justification for further statistical analysis to be conducted.

Table 4.6: Organizational Performance KMO Sampling Adequacy and Bartlett's Sphericity Tests

Indicator	Coefficient
Kaiser-Meyer-Olkin Measure	0.762
Bartlett's Chi- Square	153.918
Bartlett's df	15
Bartlett's Sig.	0.000

4.6.3 Factor Analysis

Factor analysis was conducted after successful testing of validity and reliability using KMO coefficient and Cronbach's alpha results. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more, indicates a unique factor. Total Variance analysis indicates that the 6 statements on organizational performance can be factored into 1 factor. The total variance explained by the extracted factor is 51.19% as shown in Table 4.7.

Table 4.7: Organizational Performance Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.072	51.192	51.192	3.072	51.192	51.192
2	1.077	17.953	69.146			
3	0.621	10.344	79.49			
4	0.541	9.014	88.504			
5	0.397	6.624	95.128			
6	0.292	4.872	100			

Extraction Method: Principal Component Analysis

Table 4.8 shows the factor loadings for sub-constructs of organizational performance. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Malakouti, Fatollahi, Mirabzadeh, Salavati and Zandi (2006) a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Morley, Williams and Black (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.

Table 4.8: Factor Loading for Organizational Performance

Statement	Component
The company has experienced an increase in total revenue over the last 5 years.	0.778
We meet the time deadlines for our customers	0.705
There is an upward trend in our business growth	0.658
Our company has a competitive advantage compared to its peers due to product differentiation strategy	0.753
Our company is highly profitable	0.688
The company has experienced an increase in number of employees over the last 5 years	0.705

Extraction Method: Principal Component Analysis

4.6.4 Descriptive Analysis for Organizational Performance

The study sought to determine the organizational performance of maize seed companies in Kenya. Table 4.9 shows that 76% of the respondents agreed that the company had experienced an increase in total revenue over the last 5 years, 40.5% agreed that they meet the time deadlines for their customers and 78.5% agreed that there was an upward trend in their business growth. In addition, 46.8% of the respondents disagreed that their company had a competitive advantage compared to its peers due to product differentiation strategy, 41.8% were neutral that their company was highly profitable and 54.5% agreed that the company had experienced an increase in number of employees over the last 5 years. The mean score for responses for this section was 3.31 which indicates that the majority of the respondents agreed to the statements regarding organizational performance of seed companies in Kenya. However, the data on revenues showed that growth only happened in year 2014 from the all-time low in 2013 during the 5 year period (2010 – 2104) analyzed (Figure 4.7). Also, the gross profit trend shows a general decline over years. This is attributed to the overall increase in total expenses as a percentage of revenue as shown in figure 4.7. The findings are in line with Naser and Mokhtar (2004) who asserted that high performance reflects management effectiveness and efficiency in making use of company's resources and this in turn contributes to the country's economy at large. The findings are in tandem with those of Oke et al. (2007) who found that small and micro enterprises in the United Kingdom that focus on incremental innovation attained growth in sales turnover. Further, findings of Marques and Ferreira (2009) showed that process innovation and research and development had influence on performance of small enterprises in Portugal.

Further, the respondents from various seed companies highlighted that selling maize seed is a seasonal business with a number of months without any sales. This affects management of cash flows and organizational performance. The unpredictable seasonal seed demand which invariably results in carried over stocks also affects profitability at the end of the year.

Table 4.9: Organizational Performance Descriptive Statistics

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Likert mean
The company has experienced an increase in total revenue over the last 5 years.	1.3%	13.9%	8.9%	70.9%	5.1%	3.65
We meet the time deadlines for our customers	0.0%	12.7%	46.8%	39.2%	1.3%	3.29
There is an upward trend in our business growth	0.0%	6.3%	15.2%	74.7%	3.8%	3.76
Our company has a competitive advantage compared to its peers due to product differentiation strategy	0.0%	46.8%	17.7%	32.9%	2.5%	2.91
Our company is highly profitable	0.0%	31.6%	41.8%	25.3%	1.3%	2.96
The company has experienced an increase in number of employees over the last 5 years	1.3%	26.6%	17.7%	49.4%	5.1%	3.30
Average	0.4%	23.0%	24.7%	48.7%	3.2%	3.31

The interviewed seed experts argued that for a company to improve its performance it depends on size/capacity of the seed company. For example, a small seed company may not have same problems as a large seed company. The experts stated that there are various issues affecting the performance of seed companies such as access to improved crop varieties with desired characteristics that make them adaptable to different agro-ecologies. For example, the current lack of varieties that are tolerant to the devastating maize disease called Maize Lethal Necrosis (MLN). Any seed company that will develop and quickly put a maize variety tolerant or resistant to MLN will significantly improve sales due to the current demand for such varieties in Kenya and the whole of East Africa.

Poor seed purchasing power and limited access to appropriate funding/credit by farmers was also cited as one of the major reasons affecting organizational performance. This is

mainly due to the fact that most maize production in Kenya and other African countries is done by rural resource poor smallholder farmers (Kamidi et al., 1999).

Studies by Mundlak, Larson and Butzer (2004) and Chalermphol, Bastakoti and Bastakoti (2014) in Thailand, Indonesia and the Philippines showed that farmers can only realize the benefits of using new improved varieties if they also purchase and use required fertilizers, chemicals and use irrigation to supplement water. The low purchase and use of new maize seed varieties by the smallholder farmers could therefore, be explained by the lack of capacity to purchase these complementary inputs such as fertilizers and crop chemicals. This is in agreement with the Economic Constraint Paradigm, which holds that economic constraints as reflected in different resource endowments are the major determinants of new technology adoption decisions (Adesina & Zinnah, 1993).

Other seed experts highlighted that the highly unpredictable weather patterns in the tropics make it difficult to forecast the market performance with a high degree of precision from one agricultural season to the other. Dry weather or drought seasons usually result in low purchase of agricultural inputs, including seed as farmers mitigate the risk of crop failure. This is exacerbated by climate change effects that are causing frequent droughts and hence crop failure in smallholder farming systems that rely on seasonal rainfall.

Government intervention through input supply programmes was reported to be useful as such programmes give the opportunity to many farmers to plant and experience the benefits of improved seed. However, the same intervention can result in market distortion if the inputs are subsidized and sold below market prices undercutting the seed industry players.

Some respondents pointed out to the dynamic fragmentation of the seed industry leading to poor economies of scale, which results in poor performance by the individual small to medium seed companies. Contrary to the fragmentation happening in the seed industry in Kenya, regional and multinational seed companies are currently entering into mergers and

acquisitions to leverage on synergies and enhance their organizational performance. Current examples include; DuPont/Panner, Seed Co Ltd/ Limagrain, Syngenta/Maize Research Institute (MRI), and Bayer/Monsanto. Such business integration strategies will offer synergistic advantages and competitiveness.

Based on their experience, seed experts reported that farmers' skepticism and slow receptiveness to new seed technologies affects the demand for new seed brands thereby affecting the performance of especially new seed companies offering new varieties to the customers. Such low adoption of new improved varieties and continued use of very old varieties such as H614 was also reported in Kenya (Ouma, Murithi, Mwangi, Verkuijl, Gethi & De Groote, 2002). In addition, the experts argued that limited financial capacity of the small seed companies results in failure to attract self-motivated skilled professionals and retaining them in the system. This affects business operations and overall performance. Also financial limitation for other operations, physical capacity like storage and cold rooms to keep early generation seeds over seasons/years result in inefficient business processes.

Some seed experts noted that there is lack of product differentiation in the seed varieties marketed in Kenya as well as lack of customer focus, limited market development and generally poor marketing strategies. These factors result in limited growth in sales volumes and affect the overall performance of seed companies. The lack of product differentiation and limited market development by seed companies is attributed to limited access to suitable funding as indicated by the seed experts. Multinational seed companies are competitive and dominate the market place due to robust marketing strategies.

Further, the seed experts argued that limited or deficiencies in some of the key infrastructure that is critical for the success of any seed business affect performance. Such infrastructure includes suitable warehousing facilities for seed storage to maintain its viability, seed production and processing facilities and distribution networks. Such infrastructure will guarantee seed quality and efficient seed distribution to reach out to

many farmers/customers. Seed companies are therefore, recommended to invest in state of the art seed production, processing and storage facilities.

Planning and demand projections by some seed companies becomes difficult when marketing open pollinated varieties (OPVs) as farmers buy once and save own seed from the harvest for next season's planting. This results in reduced sales in some seasons and hence affecting business performance and viability. The seed experts further advised that low maize grain prices during bumper production years may affect maize seed demand as farmers' produce will be bought at giveaway prices that discourage investment in purchase of farm inputs.

4.6.5 Organizational Performance Normality Test

To check for normality, the study adopted the skewness and kurtosis statistic as recommended by (George & Mallery, 2010). The skew value of a normal distribution is zero, usually implying symmetric distribution. On the other hand, Kurtosis is a measure of the peakedness of a distribution. West, Finch and Curran (1995) proposed a reference of substantial departure from normality as an absolute skew value > 2 and an absolute kurtosis value > 7. However, this study used the recommendation of George and Mallery (2010) who asserted that as a rule of thumb a variable is reasonably close to normal if its skewness and kurtosis have values between -3.0 and + 3.0. The results presented in Table 4.10 show that organizational performance had a skewness coefficient of -0.146 and its kurtosis coefficient being -1.095. Based on these, it was concluded that the data on organizational performance was normally distributed since it lies within the ± 3 range recommended by (George & Mallery, 2010).

Table 4.10: Organizational Performance Normality Test

	Statistic	Std. Error
Skewness	-0.146	0.271
Kurtosis	-1.095	0.535

4.7 Cost Structures

4.7.1 Reliability Tests

Using Cronbach's Alpha Coefficient test on cost structures, a coefficient of 0.741 was found as shown in Table 4.11. These results corroborates findings by Saunders et al. (2009) and Christensen et al. (2011) who stated that scales of 0.7 and above, indicate satisfactory reliability. Based on these recommendations, the statements under the cost structures variable of this study were concluded to have adequate internal consistency, therefore, reliable for the analysis and generalization on the population.

Table 4.11: Reliability Test for Cost Structures

Variable	Cost structures
Number of items	7
Cronbach's Alpha	0.741

4.7.2 Sampling Adequacy

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests, two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity. For a data set to be regarded as adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2009).

Findings in Table 4.12 showed that the KMO statistic was 0.679 which was significantly high and greater than the critical level of significance of the test which was set at 0.5 (Field, 2009). In addition to the KMO test, the Bartlett's Test of Sphericity was also highly significant (Chi-square = 175.451 with 21 degrees of freedom, at $p < 0.05$). The results of the KMO and Bartlett's Test are summarized in Table 4.12. These results provided an excellent justification for further statistical analysis to be conducted on the data.

Table 4.12: Cost Structures KMO Sampling Adequacy and Bartlett's Sphericity Tests

Indicator	Coefficient
Kaiser-Meyer-Olkin Measure	0.679
Bartlett's Chi- Square	175.451
Bartlett's df	21
Bartlett's Sig.	0.000

4.7.3 Factor Analysis

Factor analysis was conducted after successful testing of validity and reliability using KMO coefficient and Cronbach's Alpha results. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 7 statements on Cost Structures can be factored into 1 factor. The total variance explained by the extracted factor is 40.43% as shown in Table 4.13.

Table 4.13: Cost Structures Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.83	40.436	40.436	2.83	40.436	40.436
2	1.764	25.202	65.637			
3	0.669	9.557	75.194			
4	0.614	8.776	83.97			
5	0.459	6.56	90.53			
6	0.421	6.021	96.551			
7	0.241	3.449	100			

Extraction Method: Principal Component Analysis

Table 4.14 shows the factor loadings for sub-constructs of cost structures. All the statements attracted coefficients of more than 0.4 hence all the statements were retained

for analysis. According to Rahn (2010) and Malakouti et al. (2006) a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Morley et al. (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.

Table 4.14: Factor Loading for Cost Structures

Statement	Component
Staff costs are relatively high in seed companies	0.574
Costs of inputs such as pesticides & fertilizers are a small component of the total costs of a seed business	0.693
The seed distribution and marketing costs are always the highest in our business	0.797
Our firm incurs low-cost in securing licenses required to operate the seed business	0.498
The cost of compliance with Government regulation are manageable	0.439
Packaging and branding materials for our seeds are relatively high	0.746
The storage costs that our company incurs are tolerable	0.623

Extraction Method: Principal Component Analysis

4.7.4 Descriptive Analysis for Cost Structures

The first objective of the study was to determine the influence of cost structures on organizational performance of maize seed companies in Kenya. Table 4.15 indicates that 72.1% of the respondents agreed that staff costs are relatively high in seed companies, 49.4% agreed that costs of inputs such as pesticides and fertilizers are a small component of the total costs of a seed business and 64.6% agreed that the seed distribution and marketing costs are always the highest in their business. Furthermore, 51.9% of the respondents agreed that their firm incurs low cost in securing licenses required to operate the seed business, 53.2% agreed that the cost of compliance with Government regulation are manageable and 74.7% agreed that packaging and branding materials for their seeds are relatively high. Finally, 67.1% of the respondents agreed that the storage costs that their company incurs are tolerable. The mean score for responses for this section was 3.41 which indicates that the majority of the respondents agreed to the statements regarding

influence of cost structures on organizational performance of maize seed companies in Kenya. Due to difficulties in predicting seasonal demand, some respondents highlighted that maize seed companies end up with carry over seed and incur storage costs as well as some product write offs that add to business costs.

The study findings are in line with those of Sofokleous (2007) who utilized **5S** methods including visual aids in training workers to keep storage rooms tidier and more accessible for their own use. The utilization of **5S** served as a kaizen event since the researcher constituted a team to ensure continually that improvements such as updates to visual aids, equipment, and stocked items were implemented in the work area to help eliminate waste and reduce costs. The study indicated that Lean methods could be implemented in areas other than manufacturing with a great degree of success. In support of this, Baniya et al. (2003) signified that, the formal system focuses more on the interests of the seed company, and has more access to biotechnology and plant breeding techniques that can help to reduce Research and Development (R& D) costs.

The interviewed seed experts criticized the long variety release process in Kenya, which they argued is costly and not easy to complete in order to bring new varieties onto the market, particularly for small seed companies. They reported that it can take 5 years to release a new variety that is, 3 years testing by the seed company and additional 2 years undergoing national performance trials (NPTs) by the regulator. Effective implementation of the harmonized variety release process under COMESA, EAC and SADC could help to reduce the time and costs involved in the release of new varieties. In addition to the long and costly variety release process, the experts also criticized the high charges levied by the seed regulators for seed certification which contributes to high costs for the business and further eroding the profit margins.

Further, both the seed experts and respondents from seed companies indicated that there is limited access to suitable capital to run seed business efficiently in terms of facilitating seed production, processing, marketing, management of contract growers and

maintenance of seed parental lines. The seed companies end up borrowing loans attracting very high interest rates which increase the costs of running a seed business.

Table 4.15: Cost Structures Descriptive Statistics

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Likert mean
Staff costs are relatively high in seed companies	3.8%	15.2%	8.9%	69.6%	2.5%	3.52
Costs of inputs such as pesticides & fertilizers are a small component of the total costs of a seed business	8.9%	30.4%	11.4%	44.3%	5.1%	3.06
The seed distribution and marketing costs are always the highest in our business	0.0%	20.3%	15.2%	49.4%	15.2%	3.59
Our firm incurs low-cost in securing licenses required to operate the seed business	0.0%	25.3%	22.8%	46.8%	5.1%	3.32
The cost of compliance with Government regulation are manageable	1.3%	36.7%	8.9%	41.8%	11.4%	3.25
Packaging and branding materials for our seeds are relatively high	3.8%	12.7%	8.9%	67.1%	7.6%	3.62
The storage costs that our company incurs are tolerable	1.3%	17.7%	13.9%	60.8%	6.3%	3.53
Average	2.7%	22.6%	12.9%	54.3%	7.6%	3.41

4.7.5 Cost Structures Normality Test

To check for normality, the study adopted the skewness and kurtosis statistic as recommended by George and Mallery (2010). The skew value of a normal distribution is zero, usually implying symmetric distribution. On the other hand Kurtosis is a measure of the peakedness of a distribution. West et al. (1995) proposed a reference of substantial departure from normality as an absolute skew value > 2 and an absolute kurtosis value > 7. However, this study used the recommendation of George and Mallery (2010) who

asserted that as a rule of thumb a variable is reasonably close to normal if its skewness and kurtosis have values between -3.0 and + 3.0. The results presented in Table 4.16 show that cost structures had a skewness coefficient of -0.643 and its kurtosis coefficient being 0.429. Based on these it was concluded that cost structures data is normally distributed since it lies within the ± 3 range recommended by George and Mallery (2010).

Table 4.16: Cost Structures Normality Test

	Statistic	Std. Error
Skewness	-0.643	0.271
Kurtosis	0.429	0.535

4.7.6 Cost Structures Linearity Test

Linearity of variables was tested using correlation coefficients as suggested by Cohen et al. (2003).To establish whether there is a linear relationship, the study adopted the Pearson product-moment correlation coefficients, which are presented in Table 4.17. The results indicate that the variables organizational performance and cost structures had a strong positive relationship as indicated by a correlation coefficient of 0.680. This implies that there is a linear positive relationship.

Table 4.17: Cost Structures Correlations Coefficients

		Organizational performance	Cost structures
Organizational performance	Pearson Correlation	1	.680**
	Sig. (2-tailed)		.000
	N	79	79
Cost structures	Pearson Correlation	.680**	1
	Sig. (2-tailed)	.000	
	N	79	79

**. Correlation is significant at the 0.01 level (2-tailed).

4.7.7 Influence of Cost Structures on Organizational Performance

Regression analysis was conducted to empirically determine whether cost structures were a significant determinant of organizational performance of maize seed companies in Kenya. Regression results in Table 4.18 indicate that the goodness of fit for the regression between cost structures and organizational performance was satisfactory. An R squared of 0.462 indicates that 46.2% of the variations in organizational performance are explained by the variations in cost structures.

Table 4.18: Model Summary for Cost Structures

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.680[a]	.462	.455	.48525

a. Predictors: (Constant), Cost structures

The overall model significance is presented in Table 4.19. An F- statistic of 66.124 indicated that the overall model was significant. The findings imply that cost structures were statistically significant in explaining organizational performance of maize seed companies in Kenya. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^1)

which states that cost structures have no influence on organizational performance of maize seed companies in Kenya is rejected and accept the alternate hypothesis (H_A^1) implying that cost structures have significant influence on organizational performance of maize seed companies in Kenya.

The study findings are in agreement with those of Sofokleous (2007) who investigated how a fresh pineapple production company implemented Lean strategies to improve processes including packaging and transportation. The author examined the implementation of Lean techniques including Value Stream Mapping in identifying bottlenecks as well as kaizen events (events that target continuous improvement towards excellence) that the company could carry out. The author proposed methods of redesigning the company's work area in order to create a better process flow. The options chosen helped to reduce the required man-hours in addition to saving company costs.

Table 4.19: ANOVA for Cost Structures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.570	1	15.570	66.124	.000[b]
	Residual	18.131	77	.235		
	Total	33.701	78			

a. Dependent Variable: Organizational performance
b. Predictors: (Constant), Cost structures

The cost structures coefficients are presented in Table 4.20. The results show that cost structures contribute significantly to the model since the p-value for the constant and gradient are less than 0.05. The findings imply that one positive unit change in cost structures effectiveness leads to a change in organizational performance at the rate of 70.7%. This confirms the positive effect of cost structures on organizational performance. The fitted equation is as shown below:

$$\mathbf{Y = 1.187 + 0.707X_1}$$

Table 4.20: Coefficients of Cost Structures

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.187	.298		3.984	.000
	Cost structures	.707	.087	.680	8.132	.000

a. Dependent Variable: Organizational performance

4.8 Product Quality

4.8.1 Reliability Tests

Using Cronbach's Alpha Coefficient test on product quality, a coefficient of 0.943 was found as shown in Table 4.21. These results corroborates findings by Saunders et al. (2009) and Christensen et al. (2011) who stated that coefficient scales of 0.7 and above, indicate satisfactory reliability. Based on this recommendation, the statements under the product quality variable of this study were concluded to have adequate internal consistency, and therefore, reliable for the analysis and generalization on the population.

Table 4.21: Reliability Test for Product Quality

Variable	**Product Quality**
Number of items	6
Cronbach's Alpha	0.943

4.8.2 Sampling Adequacy

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests, two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity. For a data set to be regarded as adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2009). Findings in Table 4.22 showed that the KMO statistic was 0.895 which

was significantly high and greater than the critical level of significance of the test which was set at 0.5 (Field, 2009). In addition to the KMO test, the Bartlett's Test of Sphericity was also highly significant (Chi-square = 460.684 with 15 degrees of freedom, at $p < 0.05$). The results of the KMO and Bartlett's Test are summarized in Table 4.22. These results provided an excellent justification for further statistical analysis to be conducted.

Table 4.22: Product Quality KMO Sampling Adequacy and Bartlett's Sphericity Tests

Indicator	Coefficient
Kaiser-Meyer-Olkin Measure	0.895
Bartlett's Chi- Square	460.684
Bartlett's df	15
Bartlett's Sig.	0.000

4.8.3 Factor Analysis

Factor analysis was conducted after successful testing of validity and reliability using KMO coefficient and Cronbach's Alpha results. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 6 statements on product quality can be factored into 1 factor. The total variance explained by the extracted factor is 78.695% (Table 4.23).

Table 4.23: Product Quality Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.722	78.695	78.695	4.722	78.695	78.695
2	0.553	9.216	87.911			
3	0.279	4.646	92.557			
4	0.192	3.205	95.763			
5	0.151	2.524	98.287			
6	0.103	1.713	100			

Extraction Method: Principal Component Analysis

Table 4.24 shows the factor loadings for sub-constructs of product quality. All the statements had coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Malakouti et al. (2006), a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Morley et al. (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.

Table 4.24: Factor Loading for Product Quality

Statement	Component
The original source of seed can affect product credibility and sales	0.919
Seed certification standards influence product credibility and sales	0.921
Characteristics of seed varieties affect product performance	0.878
Use of trained personnel influences seed sales	0.898
Existence of physical locations for customer feedback gathering influence seed & company credibility	0.932
Use of hotlines to report seed failure influences the credibility of the seed and the distributor	0.764

Extraction Method: Principal Component Analysis

4.8.4 Descriptive Analysis for Product Quality

The second objective of the study was to determine the influence of product quality on organizational performance of maize seed companies in Kenya. Table 4.25 indicates that 88.6% of the respondents agreed that the original source of seed can affect product credibility and sales, 88.6% agreed that seed certification standards influence product credibility and sales and 86% agreed that characteristics of seed varieties affect product performance. Eighty four point eight percent of the respondents agreed that use of trained personnel influences seed sales, 86.1% agreed that existence of physical locations for customer feedback gathering influence seed and company credibility, and 51.9% agreed that use of hotlines to report seed failure influences the credibility of the seed and the distributor. The mean score for the responses was 3.96 which indicates that many employees agreed to the statements regarding influence of product quality on organizational performance of maize seed companies in Kenya. The study findings are

consistent with those of Arawati et al. (2009) who conducted a study on the impact of quality management (QM) practices on productivity and profitability using a sample of manufacturing companies in Malaysia. The results of the study revealed that quality measurement, benchmarking in particular as well as employee focus, supplier relations and training appear to be of primary importance and exhibit significant impact towards productivity and profitability.

The seed experts highlighted that inconsistent policies to regulate seed systems and poor seed quality control affects the supply of high quality seed to farmers by the seed industry. This is exacerbated by the supply of fake seed by unregistered players. Experts argued that the supply of poor quality and fake seed results in farmers being frustrated by poor performance of such seed and affects repeat sales. New and small seed companies are affected the most by such challenges. Besides incurring poor quality costs and customer compensation due to poor product performance, most respondents from seed companies mentioned that supply of poor quality seed results in loss of customers to competitors and lack of repeat sales. In order to discourage the supply of fake seed to farmers, the seed experts recommended highly deterrent punishments for dealing in fake seed since the current ones are too light. Fake seed dealers affect the volume of sales for certified seed and also use of such seed reduces the productivity of farmers.

The limited internal technical capacity of small seed companies on implementing quality management systems (QMS) was also reported to cause poor seed quality. The reliance on Government seed regulators was also reported to be not enough due to limited resources and personnel in the relevant Government department. The Government seed inspectors cannot cope with the increased number of seed companies, seed out-growers and seed crops. Self-regulation which allows the regulator to train and gazette selected private seed company inspectors in order to enable them to carryout seed certification effectively would result in greater compliance to seed standards ensuring high quality seed is produced.

Table 4.25: Product Quality Descriptive Statistics

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Likert mean
The original source of seed can affect product credibility and sales	3.8%	5.1%	2.5%	45.6%	43.0%	4.19
Seed certification standards influence product credibility and sales	3.8%	5.1%	2.5%	49.4%	39.2%	4.15
Characteristics of seed varieties affect product performance	3.8%	5.1%	5.1%	54.4%	31.6%	4.05
Use of trained personnel influences seed sales	3.8%	5.1%	6.3%	35.4%	49.4%	4.22
Existence of physical locations for customer feedback gathering influence seed & company credibility	3.8%	5.1%	5.1%	82.3%	3.8%	3.77
Use of hotlines to report seed failure influences the credibility of the seed and the distributor	5.1%	6.3%	36.7%	51.9%	0.0%	3.35
Average	**4.0%**	**5.3%**	**9.7%**	**53.2%**	**27.8%**	**3.96**

4.8.5 Product Quality Normality Test

To check for normality, the study adopted the skewness and kurtosis statistic as recommended by George and Mallery (2010). The skew value of a normal distribution is zero, usually implying symmetric distribution. On the other hand, Kurtosis is a measure of the peakedness of a distribution. West et al. (1995) proposed a reference of substantial departure from normality as an absolute skew value > 2 and an absolute kurtosis value > 7. However, this study used the recommendation of George and Mallery (2010) who asserted that as a rule of thumb a variable is reasonably close to normal if its skewness and kurtosis have values between -3.0 and + 3.0. The results presented in Table 4.26 show that product quality had a skewness coefficient of -1.172 and its kurtosis coefficient

being 0.311. Based on these results it was concluded that product quality data is normally distributed since it lies within the ± 3 range recommended by George and Mallery (2010).

Table 4.26: Product Quality Normality Test

	Statistic	Std. Error
Skewness	-1.172	0.271
Kurtosis	0.311	0.535

4.8.6 Product Quality Linearity Test

Linearity of variables was tested using correlation coefficients as suggested by Cohen et al. (2003). To establish whether there is a linear relationship, the study adopted the Pearson product-moment correlation coefficients, which are presented in Table 4.27. The results indicate that the variables organizational performance and product quality had a strong positive relationship as indicated by a correlation coefficient of 0.813. This implies that there is a linear positive relationship.

Table 4.27: Product Quality Correlations Coefficients

		Organizational performance	Product Quality
Organizational performance	Pearson Correlation	1	.813**
	Sig. (2-tailed)		.000
	N	79	79
Product Quality	Pearson Correlation	.813**	1
	Sig. (2-tailed)	.000	
	N	79	79

**. Correlation is significant at the 0.01 level (2-tailed).

4.8.7 Influence of Product Quality on Organizational Performance

Regression analysis was conducted to empirically determine whether product quality was a significant determinant of organizational performance of maize seed companies in Kenya. Regression results in Table 4.28 indicate that the goodness of fit for the regression between product quality and organizational performance was satisfactory. An R squared of 0.662 indicates that 66.2% of the variations in organizational performance are explained by the variations in product quality. The results are in support of Youngdahl and Kellogg (1997) who examined the relationship between customer service, quality assurance, satisfaction and effort, all this in the perspective of the costs of quality and found that the classification of costs to quality customer service and their relationship with both satisfaction and effort, provides important capabilities to the design and implementation of services. Thus, the cost of quality concept predicts that as quality increases the total cost of quality decreases (Hendricks & Singhal, 2001). The internal and managerial motivation to adopt ISO 9000 often has a positive effect on the likelihood of a certified organization to achieve a better-performing effectiveness configuration (Boiral & Amara, 2009).

Table 4.28: Model Summary for Product Quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.813[a]	.662	.657	.38489

a. Predictors: (Constant), Product Quality

The overall model significance is presented in Table 4.29. An F- statistic of 150.492 indicates that the overall model is significant. The findings imply that product quality was statistically significant in explaining organizational performance of maize seed companies in Kenya. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^2) which states that product quality has no influence on organizational performance of maize seed companies in Kenya is rejected and accepts the alternate hypothesis (H_A^2) implying that

product quality has significant influence on organizational performance of maize seed companies in Kenya.

The study findings disagree with those of Terziovski et al. (1997) who conducted a study whose objective was to test the relationship between ISO 9000 certification and organizational performance in the presence and absence of a total quality management (TQM) environment. The study found out that the ISO 9000 certification does not have a significantly positive effect on organizational performance on its own. The authors say that the main motivation for companies to have a quality certification is the ability of certification to open doors to new customers that would be difficult to achieve without the quality certification.

Table 4.29: ANOVA for Product Quality

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.294	1	22.294	150.492	.000[b]
	Residual	11.407	77	.148		
	Total	33.701	78			

a. Dependent Variable: Organizational performance
b. Predictors: (Constant), Product Quality

The coefficients for product quality are presented in Table 4.30. The results show that product quality contributes significantly to the model since the p-value for the constant and gradient are less than 0.05. The findings imply that one positive unit change in product quality effectiveness leads to a change in organizational performance at the rate of 56.4 percent. This confirms the positive effect of product quality on organizational performance. The fitted equation is as shown below:

$$\mathbf{Y = 1.484 + 0.564X_2}$$

Table 4.30: Coefficients of Product Quality

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.484	.175		8.459	.000
	Product Quality	.564	.046	.813	12.268	.000

a. Dependent Variable: Organizational performance

4.9 Product Pricing Strategy

4.9.1 Reliability Tests

Using Cronbach's Alpha Coefficient test on product pricing strategy, a coefficient of 0.904 was found as shown in Table 4.31. These results corroborates findings by Saunders et al. (2009) and Christensen et al. (2011) who stated that scales of 0.7 and above, indicate satisfactory reliability. Based on these recommendations, the statements under the product pricing variable of this study were concluded to have adequate internal consistency, therefore, reliable for the analysis and generalization on the population studied.

Table 4.31: Reliability Test for Product Pricing Strategy

Variable	Product pricing strategy
Number of items	7
Cronbach's Alpha	0.904

4.9.2 Sampling Adequacy

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests, two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity. For a data set to be regarded as

adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2009).

Findings in Table 4.32 showed that the KMO statistic was 0.918 which was significantly high and greater than the critical level of significance of the test which was set at 0.5 (Field, 2009). In addition to the KMO test, the Bartlett's Test of Sphericity was also highly significant (Chi-square = 437.778 with 21 degrees of freedom, at $p < 0.05$). The results of the KMO and Bartlett's Test are summarized in Table 4.32. These results provided an excellent justification for further statistical analysis to be conducted.

Table 4.32: Product Pricing Strategy KMO Sampling Adequacy and Bartlett's Sphericity Tests

Indicator	Coefficient
Kaiser-Meyer-Olkin Measure	0.918
Bartlett's Chi- Square	437.778
Bartlett's df	21
Bartlett's Sig.	0.000

4.9.3 Factor Analysis

Factor analysis was conducted after successful testing of validity and reliability using KMO coefficient and Cronbach's Alpha results. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 7 statements on product pricing strategy can be factored into 1 factor. The total variance explained by the extracted factor is 69.70% as shown in Table 4.33.

Table 4.33: Product pricing Strategy Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.88	69.709	69.709	4.88	69.709	69.709
2	0.874	12.487	82.195			
3	0.415	5.934	88.129			
4	0.258	3.687	91.816			
5	0.24	3.425	95.241			
6	0.205	2.928	98.169			
7	0.128	1.831	100			

Extraction Method: Principal Component Analysis

Table 4.34 shows the factor loadings for sub-constructs of product pricing strategy. All the statements attracted coefficients of more than 0.4 hence all the statements were retained for analysis. According to Rahn (2010) and Malakouti et al. (2006), a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Morley et al. (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.

Table 4.34: Factor Loading for Product Pricing Strategy

Statement	Component
Low price of seeds can influence the volume of sales	0.857
Variety of pack sizes with different prices can boost performance by meeting quantity needs for various buyers	0.932
High price for premium seed varieties creates better margins from high net worth farmers	0.897
Availability of credit facilities can boost sales and performance	0.905
Volume discounts on large purchase of seeds are useful to your company	0.888
Competitor pricing strategy affect our business	0.835
Lack of government control on pricing of seeds can create unfair competition among sellers	0.408

Extraction Method: Principal Component Analysis

4.9.4 Descriptive Analysis for Product Pricing Strategy

The third objective of the study was to determine the influence of product pricing strategy on organizational performance of maize seed companies in Kenya. Table 4.35 indicates that 84.6% of the respondents agreed that low price of seeds can influence the volume of sales, 89.8% agreed that variety of pack sizes with different prices can boost sales performance by meeting quantity needs for various buyers while 86.1% of the respondents agreed that high price for premium seed varieties creates better margins from high net worth farmers and 88.6% agreed that availability of credit facilities can boost sales and performance. Seventy eight point five percent of the respondents agreed that volume discounts on large purchase of seeds are useful to their company, 81% agreed that competitor pricing strategy affect their business and 57% disagreed that lack of government control on pricing of seeds can create unfair competition among sellers. The mean score for the responses was 3.87 which indicates that many employees agreed to the statements regarding influence of product pricing strategy on organizational performance of maize seed companies.

The findings are in agreement with the studies of Colpan (2006); Gbolagade et al. (2013) who established significant relationship between price and business performance. The price an organization sets for its product or service plays a large role in its marketability. Pricing for products or services that are more commonly available in the market is more elastic, meaning that unit sales will go up or down more responsively in response to price changes (Johnson et al., 2008).

Wrong seed pricing models by some seed companies were reported by both seed experts and respondents as causing poor organizational performance. In particular, the low selling prices charged by small seed companies in order to gain market share from regional and multinational seed companies that dominate the market, results in lower business margins and poor financial performance. Most maize seed is sold to resource poor smallholder farmers and the seed experts argued that poverty reduces the ability to buy improved

seeds. This could explain why there is still a large proportion (80%) of farmers in Western Kenya that are still using farm saved seed as reported by Wambugu et al. (2012).

The seed experts also mentioned that selling maize seed is a seasonal business, which makes it very difficult to manage cash-flows throughout the year. This could affect seed companies that do not have other products that are sold throughout the year to realize some cash streams every month. The factors highlighted by the interviewed seed experts on pricing and limited cash resources by the target customers, who are the smallholder farmers require robust seed pricing strategies to encourage repeat purchase by the farmers and to ensure good margins to cover for the seasonality of such businesses.

The seed experts underscored the Government involvement in the parastatal seed company called Kenya Seed Company (KSC) as one major contributor to selling price distortions in the market as seed from KSC is sold to farmers at lower than the market prices. They said this is possible because most of the fixed costs of the parastatal are covered by Government. This undercuts and disadvantages other seed companies as seed prices are kept artificially low. Some of the seed experts felt that Government involvement in seed business through parastatal seed companies such as KSC reduces competitiveness and creates monopoly in the seed industry and also it increases barriers to entry for small new seed companies by charging subsidized prices. Government involvement in seed industry skews product marketing in its favour thus creating some bias, sometimes detrimentally towards its inferior products.

Table 4.35: Product Pricing Strategy Descriptive Statistics

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Likert mean
Low price of seeds can influence the volume of sales	5.1%	3.8%	6.3%	69.6%	15.2%	3.86
Variety of pack sizes with different prices can boost performance by meeting quantity needs for various buyers	5.1%	2.5%	2.5%	54.4%	35.4%	4.13
High price for premium seed varieties creates better margins from high net worth farmers	5.1%	3.8%	5.1%	36.7%	49.4%	4.22
Availability of credit facilities can boost sales and performance	5.1%	2.5%	3.8%	48.1%	40.5%	4.16
Volume discounts on large purchase of seeds are useful to your company	5.1%	3.8%	12.7%	67.1%	11.4%	3.76
Competitor pricing strategy affect our business	5.1%	6.3%	7.6%	31.6%	49.4%	4.14
Lack of government control on pricing of seeds can create unfair competition among sellers	15.2%	41.8%	7.6%	19.0%	16.5%	2.8
Average	**6.5%**	**9.2%**	**6.5%**	**46.6%**	**31.1%**	**3.87**

4.9.5 Product Pricing Strategy Normality Test

To check for normality, the study adopted the skewness and kurtosis statistic as recommended by George and Mallery (2010). The skew value of a normal distribution is zero, usually implying symmetric distribution. On the other hand Kurtosis is a measure of the peakedness of a distribution. West et al. (1995) proposed a reference of substantial departure from normality as an absolute skew value > 2 and an absolute kurtosis value > 7. However, this study used the recommendation of George and Mallery (2010) who asserted that as a rule of thumb a variable is reasonably close to normal if its skewness

and kurtosis have values between -3.0 and + 3.0. The results presented in Table 4.36 show that product pricing strategy had a skewness coefficient of -1.845 and its kurtosis coefficient being 3.247. Based on these it was concluded that product pricing strategy data is normally distributed since it lies within the ± 3 range recommended by George and Mallery (2010).

Table 4.36: Product Pricing Strategy Normality Test

	Statistic	Std. Error
Skewness	-1.845	0.271
Kurtosis	3.247	0.535

4.9.6 Product Pricing Strategy Linearity Test

Linearity of variables was tested using correlation coefficients as suggested by Cohen et al. (2003). To establish whether there is a linear relationship, the study adopted the Pearson product-moment correlation coefficients, which are presented in Table 4.37. The results indicate that the variables organizational performance and product pricing strategy had a strong positive relationship as indicated by a correlation coefficient of 0.748. This implies that there is a linear positive relationship.

Table 4.37: Product Pricing Strategy Correlations Coefficients

		Organizational performance	Product Pricing strategy
Organizational performance	Pearson Correlation	1	.748**
	Sig. (2-tailed)		.000
	N	79	79
Product Pricing strategy	Pearson Correlation	.748**	1
	Sig. (2-tailed)	.000	
	N	79	79

**. Correlation is significant at the 0.01 level (2-tailed).

4.9.7 Influence of Product Pricing Strategy on Organizational Performance

Regression analysis was conducted to empirically determine whether product pricing strategy was a significant determinant of organizational performance of maize seed companies in Kenya. Regression results in Table 4.38 indicate that the goodness of fit for the regression between product pricing strategy and organizational performance was satisfactory. An R squared of 0.56 indicates that 56% of the variations in organizational performance are explained by the variations in product pricing strategy. The findings are in agreement with the studies of Colpan (2006); Gbolagade et al. (2013) who established significant relationship between price and business performance.

Table 4.38: Model Summary for Product Pricing Strategy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.748[a]	.560	.554	.43905

a. Predictors: (Constant), Product Pricing Strategy

The overall model significance is presented in Table 4.39. An F- statistic of 97.836 indicates that the overall model is significant. The findings imply that product pricing strategy was statistically significant in explaining organizational performance of maize seed companies in Kenya. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^3) which states that product pricing strategy has no influence on organizational performance of maize seed companies in Kenya is rejected and accepts the alternate hypothesis (H_A^3) implying that product pricing strategy has significant influence on organizational performance of maize seed companies in Kenya.

The study findings are consistent with those of Horngren, et al. (2014) who stressed that managers are frequently faced with difficult decisions on pricing and profitability of their products. In one survey, pricing was deemed to be “extremely important” by 78 percent of the respondents and ranked third among fifteen key marketing issues.

Table 4.39: ANOVA for Product Pricing Strategy

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.859	1	18.859	97.836	.000[b]
	Residual	14.843	77	.193		
	Total	33.701	78			

a. Dependent Variable: Organizational performance
b. Predictors: (Constant), Product Pricing Strategy

The product pricing strategy coefficients are presented in Table 4.40. The results show that product pricing strategy contributes significantly to the model since the p-value for the constant and gradient are less than 0.05. The findings imply that one positive unit change in product pricing strategy effectiveness leads to a change in organizational performance at the rate of 0.551 (55.1%). This confirms the positive effect of product pricing strategy on organizational performance. The findings confirm the results of Chen and McMillan (1992) who reported that the likelihood of competitive response is higher, the response delay is shorter, and the likelihood of a matching response is higher for price cuts than they are for other competitive actions. Incumbent firms often reduce price when they encounter new market entry. The fitted equation is as shown below:

$$\mathbf{Y = 1.477 + 0.551X_3}$$

Table 4.40: Coefficients of Product Pricing Strategy

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.477	.217		6.798	.000
	Product Pricing strategy	.551	.056	.748	9.891	.000

a. Dependent Variable: Organizational performance

4.10 Production Strategy

4.10.1 Reliability Tests

Using Cronbach's Alpha Coefficient test on production strategy, a coefficient of 0.957 was found as shown in Table 4.41. These results corroborates findings by Saunders et al. (2009) and Christensen et al. (2011) who stated that scales of 0.7 and above, indicate satisfactory reliability. Based on these recommendations, the statements under the production strategy variable of this study were concluded to have adequate internal consistency, therefore, reliable for the analysis and generalization on the population studied.

Table 4.41: Reliability Test for Production Strategy

Variable	Production Strategy
Number of items	7
Cronbach's Alpha	0.957

4.10.2 Sampling Adequacy

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests, two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity. For a data set to be regarded as

adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2009).

Findings in Table 4.42 showed that the KMO statistic was 0.919 which was significantly high and greater than the critical level of significance of the test which was set at 0.5 (Field, 2009). In addition to the KMO test, the Bartlett's Test of Sphericity was also highly significant (Chi-square = 586.027 with 21 degrees of freedom, at $p < 0.05$). The results of the KMO and Bartlett's Test are summarized in Table 4.42. These results provided an excellent justification for further statistical analysis to be conducted.

Table 4.42: Production Strategy KMO Sampling Adequacy and Bartlett's Sphericity Tests

Indicator	Coefficient
Kaiser-Meyer-Olkin Measure	0.919
Bartlett's Chi- Square	586.027
Bartlett's df	21
Bartlett's Sig.	0.000

4.10.3 Factor Analysis

Factor analysis was conducted after successful testing of validity and reliability using KMO coefficient and Cronbach's Alpha results. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 7 statements on production strategy can be factored into 1 factor. The total variance explained by the extracted factor is 80.09% as shown in Table 4.43.

Table 4.43: Production Strategy Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.606	80.09	80.09	5.606	80.09	80.09
2	0.508	7.251	87.341			
3	0.271	3.875	91.216			
4	0.198	2.824	94.04			
5	0.158	2.255	96.295			
6	0.148	2.109	98.405			
7	0.112	1.595	100			

Extraction Method: Principal Component Analysis

Table 4.44 shows the factor loadings for sub-constructs of production strategy. All the statements had coefficients of more than 0.4, hence all the statements were retained for analysis. According to Rahn (2010) and Malakouti et al. (2006) a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Morley et al. (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.

Table 4.44: Factor Loading for Production Strategy

Statement	Component
Manual methods of seed production can create volume deficiencies in the market	0.925
Mechanized production methods can ensure bulk output leading to low cost per unit and hence improve business margins	0.884
Cost of inputs affect cost of production and eventually the selling price	0.896
Location of production unit can influence the retail price of seeds	0.856
Use of experienced production and field staff can influence the quality of seed output	0.927
Investment in seed research can influence the quality of seed produced and affect the sales	0.862
Investment in state of the art seed processing infrastructure pays off in the quality of seed produced	0.911

4.10.4 Descriptive Analysis for Production Strategy

The fourth objective of the study was to determine the influence of production strategy on organizational performance of maize seed companies in Kenya. Table 4.45 indicates that 86% of the respondents agreed that manual methods of seed production can create volume deficiencies in the market, 87.3% agreed that mechanized production methods can ensure bulk output leading to low cost per unit and hence improve business margins and 87.4% agreed that cost of inputs affect cost of production and eventually the selling price. Furthermore, 83.5% agreed that location of the production unit can influence the retail price of seeds, 88.7% agreed that use of experienced production and field staff can influence the quality of seed output and 84.9% agreed that investment in seed research can influence the quality of seed produced and affect the sales. Finally, 84.8% of the respondents agreed that investment in state of the art seed processing infrastructure pays off in the quality of seed produced. The mean score for the responses was 4.11 which indicates that many employees agreed to the statements regarding influence of production strategy on organizational performance of maize seed companies.

The results agree with those of Guei et al. (2011) who investigated how smallholder seed enterprises could strengthen their capacities for rice, sorghum, maize, and millet seed production. The study involved mobilizing and training groups of farmers in technical aspects of seed production such as organization of farmers into autonomous seed producer groups, selection of seed production sites, crop management, weed control and crop protection. The study concluded that seed production required quite an amount of financial and technical support, especially in the beginning stages and therefore, it was crucial to sensitize and train seed producers' organizations while building alliances among all partners, producers, and local research and development agencies.

The findings further agree with those of Womack and Jones (1996) who stated that Lean strategies can resolve severe organizational problems and additionally can be a powerful approach to gather and unite several change initiatives. Lean therefore has not only improved procedure, reduced inventory and enhanced ergonomics, but it allows the

company to fine-tune its chemistry and keep pace with changes in demand as established in the Kodak case study.

The interviewed seed experts highlighted the inefficient seed production function as one of the factors affecting performance of maize seed companies. They attributed this to limited human resource skills and relevant technologies for parent seed production and maintenance. Limited seed production facilities such as isolated irrigable land and processing infrastructure were also cited to cause the inefficiencies in seed production.

In addition, the seed experts observed that in Kenya there is limited access to suitable out-growers to produce seed on contract as most of them have small land holdings making the required isolation of seed fields difficult. The out-growers also lack the required farm resources and facilities for productive farming. The experts alluded to low business margins due to high production and other operational costs in maize seed companies.

Table 4.45: Production Strategy Descriptive Statistics

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Likert mean
Manual methods of seed production can create volume deficiencies in the market	0.0%	10.1%	3.8%	75.9%	10.1%	3.86
Mechanized production methods can ensure bulk output leading to low cost per unit and hence improve business margins	0.0%	8.9%	3.8%	51.9%	35.4%	4.14
Cost of inputs affect cost of production and eventually the selling price	0.0%	8.9%	3.8%	49.4%	38.0%	4.16
Location of production unit can influence the retail price of seeds	0.0%	10.1%	6.3%	73.4%	10.1%	3.84
Use of experienced production and field staff can influence the quality of seed output	0.0%	8.9%	2.5%	20.3%	68.4%	4.48
Investment in seed research can influence the quality of seed produced and affect the sales	0.0%	10.1%	5.1%	64.6%	20.3%	3.95
Investment in state of the art seed processing infrastructure pays off in the quality of seed produced	0.0%	8.9%	6.3%	27.8%	57.0%	4.33
Average	**0.0%**	**9.4%**	**4.5%**	**51.9%**	**34.2%**	**4.11**

4.10.5 Production Strategy Normality Test

To check for normality, the study adopted the skewness and kurtosis statistic as recommended by George and Mallery (2010). The skew value of a normal distribution is zero, usually implying symmetric distribution. On the other hand Kurtosis is a measure of

the peakedness of a distribution. West et al. (1995) proposed a reference of substantial departure from normality as an absolute skew value > 2 and an absolute kurtosis value > 7. However, this study used the recommendation of George and Mallery (2010) who asserted that as a rule of thumb a variable is reasonably close to normal if its skewness and kurtosis have values between -3.0 and + 3.0. The results presented in Table 4.46 show that production strategy had a skewness coefficient of -1.094 and its kurtosis coefficient being 0.293. Based on these it was concluded that production strategy data is normally distributed since it lies within the ± 3 range recommended by George and Mallery (2010).

Table 4.46: Production Strategy Normality Test

	Statistic	Std. Error
Skewness	-1.094	0.271
Kurtosis	0.293	0.535

4.10.6 Production Strategy Linearity Test

Linearity of variables was tested using correlation coefficients as suggested by Cohen et al. (2003). To establish whether there is a linear relationship, the study adopted the Pearson product-moment correlation coefficients. The results in Table 4.47 indicate that the variables organizational performance and production strategy had a strong positive relationship as indicated by a correlation coefficient of 0.821. This implies that there is a linear positive relationship.

Table 4.47: Production Strategy Correlations Coefficients

		Organizational performance	Production Strategy
Organizational performance	Pearson Correlation	1	.821**
	Sig. (2-tailed)		.000
	N	79	79
Production Strategy	Pearson Correlation	.821**	1
	Sig. (2-tailed)	.000	
	N	79	79

**. Correlation is significant at the 0.01 level (2-tailed).

4.10.7 Influence of Production Strategy on Organizational Performance

A Regression analysis was conducted to empirically determine whether production strategy was a significant determinant of organizational performance of maize seed companies in Kenya. Regression results in Table 4.48 indicate that the goodness of fit for the regression between production strategy and organizational performance was satisfactory. An R squared of 0.674 indicates that 67.4% of the variations in organizational performance are explained by the variations in production strategy. The results are in support of Vonortas and Xue (2002) who while studying the process innovations of small firms in the USA, observed that economic incentives, internal resources, technical and organizational competencies that a firm has developed or accumulated over time and a firm's linkage to external sources of expertise for learning about new technological developments were the major forces that influenced competitive advantage of firms.

Table 4.48: Model Summary for Production Strategy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.821[a]	.674	.670	.37785

a. Predictors: (Constant), Production Strategy

The overall model significance is presented in Table 4.49. The F- statistic of 159.052 indicates that the overall model is significant. The findings imply that production strategy was statistically significant in explaining organizational performance of maize seed companies in Kenya. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^4) which states that production strategy has no influence on organizational performance of maize seed companies in Kenya is rejected and accepts the alternate hypothesis (H_A^4) implying that production strategy has significant influence on organizational performance of maize seed companies in Kenya.

Table 4.49: ANOVA for Production Strategy

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.708	1	22.708	159.052	.000[b]
	Residual	10.993	77	.143		
	Total	33.701	78			

a. Dependent Variable: Organizational performance
b. Predictors: (Constant), Production Strategy

The production strategy coefficients that are presented in Table 4.50 show that production strategy contributes significantly to the model since the p-value for the constant and gradient are less than 0.05. The findings imply that one positive unit change in production strategy effectiveness leads to a change in organizational performance at the rate of 0.646 (64.6%). This confirms the positive effect of production strategy on organizational performance. The findings are in support of Danneels and Kleinschmidt (2001) who asserted that new product development for competitive advantage consists of bringing together two main components which are markets and technology. The fitted equation is as shown below:

$$\mathbf{Y = 1.07 + 0.646X_4}$$

Table 4.50: Coefficients of Production Strategy

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.070	.203		5.281	.000
	Production Strategy	.646	.051	.821	12.612	.000

a. Dependent Variable: Organizational performance

4.11 Seed Distribution Strategy

4.11.1 Reliability Tests

Using Cronbach's Alpha Coefficient test on seed distribution strategy, a coefficient of 0.808 was found as shown in Table 4.51. These results corroborates findings by Saunders et al. (2009) and Christensen et al. (2011) who stated that scales of 0.7 and above, indicate satisfactory reliability. Based on these recommendations, the statements under the seed distribution strategy variable of this study were concluded to have adequate internal consistency, therefore, reliable for the analysis and generalization on the population studied.

Table 4.51: Reliability Test for Seed Distribution Strategy

Variable	Seed Distribution Strategy
Number of items	7
Cronbach's Alpha	0.808

4.11.2 Sampling Adequacy

To examine whether the data collected was adequate and appropriate for inferential statistical tests such as the factor analysis, regression analysis and other statistical tests, two main tests were performed namely; Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test of Sphericity. For a data set to be regarded as

adequate and appropriate for statistical analysis, the value of KMO should be greater than 0.5 (Field, 2009).

Findings in Table 4.52 showed that the KMO statistic was 0.793 which is significantly high and greater than the critical level of significance of the test which was set at 0.5 (Field, 2009). In addition to the KMO test, the Bartlett's Test of Sphericity was also highly significant (Chi-square = 248.765 with 21 degrees of freedom, at $p < 0.05$). The results of the KMO and Bartlett's Test are summarized in Table 4.52. These results provided an excellent justification for further statistical analysis to be conducted.

Table 4.52: Seed Distribution Strategy KMO Sampling Adequacy and Bartlett's Sphericity Tests

Indicator	Coefficient
Kaiser-Meyer-Olkin Measure	0.793
Bartlett's Chi- Square	248.765
Bartlett's df	21
Bartlett's Sig.	0.000

4.11.3 Factor Analysis

Factor analysis was conducted after successful testing of validity and reliability using KMO coefficient and Cronbach's Alpha results. Factor analysis was conducted using Principal Components Method (PCM) approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. Total Variance analysis indicates that the 7 statements on seed distribution strategy can be factored into 1 factor. The total variance explained by the extracted factor is 51.6% as shown in Table 4.53.

Table 4.53: Seed Distribution Strategy Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.613	51.608	51.608	3.613	51.608	51.608
2	1.379	19.707	71.315			
3	0.703	10.041	81.355			
4	0.403	5.753	87.108			
5	0.374	5.338	92.446			
6	0.304	4.348	96.794			
7	0.224	3.206	100			

Extraction Method: Principal Component Analysis

Table 4.54 shows the factor loadings for sub-constructs of seed distribution strategy. All the statements had coefficients of more than 0.4, hence all the statements were retained for analysis. According to Rahn (2010) and Malakouti et al. (2006), a factor loading equal to or greater than 0.4 is considered adequate. This is further supported by Morley et al. (2002) who asserts that a factor loading of 0.4 has good factor stability and deemed to lead to desirable and acceptable solutions.

Table 4.54: Factor Loading for Seed Distribution Strategy

Statement	Component
Type of distribution channel can influence level of sales	0.785
Use of agents to distribute seeds can improve seed access and boost sales	0.696
Establishment of own distribution network reduces seed distribution costs	0.425
Well maintained storage facilities secures seed from damage and improve seed performance and its credibility	0.825
Seasonal mobile vans or pick-ups used during planting seasons can enhance the level of seed sales	0.689
A distribution channel that has a feedback mechanism enhances seed credibility	0.838
Seed distributors closer to the farmers record high sales	0.689

Extraction Method: Principal Component Analysis

4.11.4 Descriptive Analysis for Seed Distribution Strategy

The fifth and last objective of the study was to determine the influence of seed distribution strategy on organizational performance of maize seed companies in Kenya. Table 4.55 indicates that 92.4% of the respondents agreed that type of distribution channel can influence level of sales, 87.3% agreed that use of agents to distribute seeds can improve seed access and boost sales and 59.3% agreed that establishment of own distribution network reduces seed distribution costs. Eighty nine point nine percent of the respondents agreed that well maintained storage facilities secure seed from damage and improve seed performance and its credibility, 77.2% agreed that seasonal mobile vans or pick-ups used during planting seasons can enhance the level of seed sales while 91.1% agreed that a distribution channel that has a feedback mechanism enhances seed credibility and 88.6% agreed that seed distributors closer to the farmers record high sales. The mean score for the responses was 3.88 which indicates that many employees agreed to the statements regarding influence of seed distribution strategy on organizational performance of maize seed companies.

The results corroborate with those of Cooper and Kleinschmidt (1988) who opined that for an organization's competitiveness, distribution strategy plays a role in enabling the availability and application of the product in the marketplace and therefore, the distribution strategy employed by the organization would impact the nature of "market support" capability that can be provided to the innovation. Needham et al. (2008) also recommend that organizations should come up with several distribution strategies that should address levels of channels, distribution scope, multiple channels, franchises and channel control strategies among others to be able to achieve their marketing objectives.

Most respondents were very critical of the delayed payments by the agro-dealers who are given seed on consignment terms to distribute to farmers. The consignment basis coupled with delayed payments result in difficulties in managing cash flows and impact on business viability. The responses by seed experts on seed distribution highlighted the challenge of limited access to effective and robust seed distribution networks in the smallholder farming communities. They argued that this limits the market space into which the seed companies reach out to and hence reduces the sales volumes.

The seed experts asserted that the Government involvement in seed distribution is at times favourable as it increases the market size for the seed industry by giving seed to almost all the farming communities. This normally happens in seasons following drought years as drought relief programmes and also for political mileage in some years especially those towards elections. However, the experts recommended that Government should do more in the promotion of use of improved seed technologies through its Agricultural Extension Agents in order to develop the market further which results in increased seed sales.

They also pointed out that there are challenges in terms of restrictive policies governing seed trade and movement, both imports and exports. In addition, lack of good road infrastructure especially in the smallholder sector affects seed distribution, availability and cost. Therefore, the government should put the infrastructure in place to facilitate effective distribution of seed.

Table 4.55: Seed Distribution Strategy Descriptive Statistics

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Likert mean
Type of distribution channel can influence level of sales	3.8%	3.8%	0.0%	57.0%	35.4%	4.16
Use of agents to distribute seeds can improve seed access and boost sales	6.3%	5.1%	1.3%	40.5%	46.8%	4.16
Establishment of own distribution network reduces seed distribution costs	3.8%	55.7%	10.1%	19.0%	11.4%	2.78
Well maintained storage facilities secures seed from damage and improve seed performance and its credibility	0.0%	6.3%	3.8%	65.8%	24.1%	4.08
Seasonal mobile vans or pick-ups used during planting seasons can enhance the level of seed sales	1.3%	3.8%	17.7%	63.3%	13.9%	3.85
A distribution channel that has a feedback mechanism enhances seed credibility	0.0%	3.8%	5.1%	69.6%	21.5%	4.09
Seed distributors closer to the farmers record high sales	0.0%	5.1%	6.3%	70.9%	17.7%	4.01
Average	**2.2%**	**11.9%**	**6.3%**	**55.2%**	**24.4%**	**3.88**

4.11.5 Seed distribution Strategy Normality Test

To check for normality, the study adopted the skewness and kurtosis statistic as recommended by George and Mallery (2010). The skew value of a normal distribution is zero, usually implying symmetric distribution. On the other hand Kurtosis is a measure of the peakedness of a distribution. West et al. (1995) proposed a reference of substantial departure from normality as an absolute skew value > 2 and an absolute kurtosis value > 7. However, this study used the recommendation of George and Mallery (2010) who asserted that as a rule of thumb a variable is reasonably close to normal if its skewness

and kurtosis have values between -3.0 and + 3.0. The results presented in Table 4.56 show that seed distribution strategy had a skewness coefficient of -1.167 and its kurtosis coefficient being 1.477. Based on these it was concluded that seed distribution strategy data is normally distributed since it lies within the ± 3 range recommended by George and Mallery (2010).

Table 4.56: Seed distribution Strategy Normality Test

	Statistic	Std. Error
Skewness	-1.167	0.271
Kurtosis	1.477	0.535

4.11.6 Seed Distribution Strategy Linearity Test

Linearity of variables was tested using correlation coefficients as suggested by Cohen et al. (2003). In order to establish whether there is a linear relationship, the study adopted the Pearson product-moment correlation coefficients, which are presented in Table 4.57. The results indicate that the variables organizational performance and seed distribution strategy had a strong positive relationship as indicated by a correlation coefficient of 0.797. This implies that there is a linear positive relationship.

Table 4.57: Seed Distribution Strategy Correlations Coefficients

		Organizational performance	Seed Distribution Strategy
Organizational performance	Pearson Correlation	1	.797**
	Sig. (2-tailed)		.000
	N	79	79
Seed Distribution Strategy	Pearson Correlation	.797**	1
	Sig. (2-tailed)	.000	
	N	79	79

**. Correlation is significant at the 0.01 level (2-tailed).

4.11.7 Influence of Seed Distribution Strategy on Organizational Performance

A Regression analysis was conducted to empirically determine whether seed distribution strategy was a significant determinant of organizational performance of maize seed companies in Kenya. The regression analysis results in Table 4.58 indicate that the goodness of fit for the regression between seed distribution strategy and organizational performance was satisfactory. An R squared of 0.635 indicates that 63.5% of the variations in organizational performance are explained by the variations in seed distribution strategy. The results corroborate with those of Cooper and Kleinschmidt (1988) who opined that for an organization's competitiveness, distribution strategy plays a role in enabling the availability and application of the product in the marketplace and therefore, the distribution strategy employed by the organization would impact the nature of "market support" capability that can be provided to the innovation.

Table 4.58: Model Summary for Seed Distribution Strategy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797[a]	.635	.630	.39993

a. Predictors: (Constant), Seed Distribution Strategy

The overall model significance is presented in Table 4.59. An F- statistic of 133.711 indicates that the overall model is significant. The findings imply that seed distribution strategy was statistically significant in explaining organizational performance of maize seed companies in Kenya. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^5) which states that seed distribution strategy has no influence on organizational performance of maize seed companies in Kenya is rejected and accepts the alternate hypothesis (H_A^5) implying that seed distribution strategy has significant influence on organizational performance of maize seed companies in Kenya.

The study findings are consistent with those of Lee et al. (2003) who argued that successful distribution channel strategy selection, implementation and management

cannot only help to meet the shopping needs and habits of the target customers efficiently under the cost constraints of the seller, they must also mitigate the disadvantages caused by distribution channel conflicts such as double marginalization.

Table 4.59: ANOVA for Seed Distribution Strategy

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.386	1	21.386	133.711	.000[b]
	Residual	12.316	77	.160		
	Total	33.701	78			

a. Dependent Variable: Organizational performance
b. Predictors: (Constant), Seed Distribution Strategy

The coefficients for seed distribution strategy are presented in Table 4.60. The results show that distribution strategy contributes significantly to the model since the p-value for the constant and gradient are less than 0.05. The findings imply that one positive unit change in seed distribution strategy effectiveness leads to a change in organizational performance at the rate of 0.743 (74.3%). This confirms the positive effect of seed distribution strategy on organizational performance. The results corroborate with those of Cooper and Kleinschmidt (1988) who opined that for an organization's competitiveness, distribution strategy plays a role in enabling the availability and application of the product in the marketplace. Needham et al. (2008) also recommends that organizations should come up with several distribution strategies that should address levels of channels, distribution scope, multiple channels, franchises and channel control strategies among others to be able to achieve their marketing objectives. The fitted equation is as shown below:

$$\mathbf{Y = 0.745 + 0.743X_5}$$

Table 4.60: Coefficients of Seed Distribution Strategy

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.745	.248		2.999	.004
	Seed Distribution Strategy	.743	.064	.797	11.563	.000

a. Dependent Variable: Organizational performance

4.12 Multivariate Regression

A multiple regression analysis was conducted to investigate the joint causal relationship between the independent and dependent variables. The regression results in Table 4.61 indicate that the goodness of fit for the regression of independent variables and organizational performance of maize seed companies is satisfactory. An R squared of 0.812 indicates that 81.2% of the variations in organizational performance of maize seed companies are jointly accounted for by the variations in cost structures, product quality, product pricing strategy, production strategy as well as seed distribution strategy. From this it can thus be asserted that the variables adopted in the study jointly explained a greater proportion of the variation in organizational performance of maize seed companies in Kenya and that the unexplained variation is small.

Table 4.61: Model Summary for Organizational Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.901[a]	.812	.799	.29474

a. Predictors: (Constant), Seed Distribution Strategy, Cost structures, Product Pricing Strategy, Production Strategy, Product Quality

Prior to estimation of the regression model, the goodness of fit was performed and the results are presented in Table 4.62 where the results indicate that the overall model is

significant, that is, cost structures, product quality, product pricing strategy, production strategy as well as seed distribution strategy are good joint explanatory variables for organizational performance of maize seed companies in Kenya (F = 62.988, p-value<0.05). The study findings agree with those of Kavitha et al. (2013) who examined the relationship between the competitive priorities and competitive advantage among small scale industries in Coimbatore and the results suggested that there is a significant relationship between the competitive priorities and competitive advantage among the small scale industries in Coimbatore.

Table 4.62: ANOVA for Organizational Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.360	5	5.472	62.988	.000[b]
	Residual	6.342	73	.087		
	Total	33.701	78			

a. Dependent Variable: Organizational performance
b. Predictors: (Constant), Seed Distribution Strategy, Cost structures, Product Pricing Strategy, Production Strategy, Product Quality

The results in Table 4.63 show the multiple regression analysis of strategic determinants of organizational performance of maize seed companies in Kenya. First, the results indicate that cost structures have a positive (β=0.372) and significant (p-value =0.000) effect on organizational performance. This implies that an increase in cost structures effectiveness by 1 unit leads to an increase in organizational performance at the rate of 37.2%. The study findings are in agreement with those of Sofokleous (2007) who investigated how a fresh pineapple production company implemented Lean strategies to improve processes including packaging and transportation and found out that Lean strategies helped to reduce the required man-hours in addition to saving company costs.

Also the results indicate that product pricing strategy has a positive (β=0.177) and significant (p-value =0.032) effect on organizational performance. This implies that an

increase in product pricing strategy effectiveness by 1 unit leads to an increase in organizational performance at a rate of 17.7%. The study findings are consistent with those of Horngren et al. (2014) who stressed that managers are frequently faced with crucial decisions on pricing and profitability of their products.

Further, the results also indicate that seed distribution strategy had a positive and significant relationship with organizational performance (β=0.221, p-value = 0.037). This implies that an increase in seed distribution strategy effectiveness by 1 unit leads to an increase in organizational performance at a rate of 22.1%. These results corroborate with those of Cooper and Kleinschmidt (1988) who opined that in an organization's competitiveness, distribution strategy plays a role in enabling the availability and application of the product in the marketplace and therefore the distribution strategy employed by the organization would impact the nature of "market support" capability that can be provided to the innovation.

However, the results indicate that product quality and production strategy had a positive though insignificant relationship with organizational performance (β =0.066, p-value = 0.451 and β =0.118, p-value = 0.237) respectively.

The fitted multiple regression equation is as shown below:

$$\mathbf{Y= 0.105+ 0.372X_1 +0.066X_2 + 0.177X_3+ +0.188X_4 + 0.221X_5+ e}$$

Table 4.63: Model Summary and Parameter Estimates

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.105	.236		.444	.658
	Cost structures	.372	.067	.358	5.575	.000
	Product Quality	.066	.088	.096	.758	.451
	Product Pricing strategy	.177	.081	.240	2.185	.032
	Production Strategy	.118	.099	.150	1.191	.237
	Seed Distribution Strategy	.221	.104	.236	2.130	.037

a. Dependent Variable: Organizational performance

4.13 Optimal Model

The optimal regression model estimated in the study therefore, excluded product quality and production strategy as they were found to be insignificant. The results presented in Table 4.64 thus indicate that cost structures, product pricing strategy and seed distribution strategy jointly accounted for the highest (80.6%) variation on organizational performance as indicated by squared multiple correlation (R^2) of 0.806. The Results confirm those of Neiroitti and Paolucci (2014) who examined the antecedents and performance consequences of capabilities developed from the use of information technology (IT). Attention was given to the influence of industry and firm characteristics on the creation of capabilities and on the returns from IT investments resulting to three principal contributions. The IT diffusion patterns revealed that these technologies have a dual nature. Some capabilities derived from IT use (administrative capabilities) diffuse evenly across industries because the underlying technologies easily adapt to industry- and firm-specific conditions. In contrast, the use of IT in supporting other capabilities (such as those related to product development) is less developed and more concentrated in the high-tech and information service sectors.

Table 4.64: Model Summary Optimal Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.898[a]	.806	.798	.29524

a. Predictors: (Constant), Seed Distribution Strategy, Cost structures, Product Pricing Strategy

The overall optimal model's significance is presented in Table 4.65. The results indicate that the overall model was significant, that is, cost structures, product pricing strategy and seed distribution strategy are good joint explanatory variables for organizational performance of maize seed companies in Kenya ($F = 10.878$, p-value<0.05). The findings imply that cost structures, product pricing strategy and seed distribution strategy were statistically significant in explaining organizational performance of maize seed companies in Kenya. The study findings agree with those of Smale and Jayne (2003) who argued that growth in smallholder maize production was attributed to successful diffusion of improved maize seed in Kenya. They further asserted that development and release of new maize varieties was matched with investment in agronomic research, extension, seed distribution systems, rural infrastructure and institutions to coordinate grain marketing with seed and credit delivery.

Table 4.65: ANOVA (Optimal Model)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.164	3	9.055	103.878	.000[b]
	Residual	6.538	75	.087		
	Total	33.701	78			

a. Dependent Variable: Organizational performance
b. Predictors: (Constant), Seed Distribution Strategy, Cost structures, Product Pricing Strategy

The regression analysis results of the optimal model presented in Table 4.66 show the effect of cost structures, product pricing strategy and seed distribution strategy on

organizational performance. The results are supported by a report from the Ministry of Agriculture (2007) which used value chain analysis to study the status of maize seed industry in Kenya. The study employed the value chain analysis to identify the key maize seed market channels, their function, roles and relationships. It identified legal and regulatory constraints, seed pricing, poor infrastructure, inadequate promotion of new varieties as well as poor quality of the seed in the market as the major bottlenecks in the seed value chains.

The fitted optimal model equation is as shown below:

$$\mathbf{Y= -0.025+ 0.415X_1 +0.255X_3 + 0.323X_5+ e}$$

Table 4.66: Regression Coefficients (Optimal Model)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.025	.212		-.117	.907
	Cost structures	.415	.060	.399	6.932	.000
	Product Pricing strategy	.255	.058	.347	4.407	.000
	Seed Distribution Strategy	.323	.078	.346	4.146	.000

a. Dependent Variable: Organizational performance

The seed experts were asked to mention and advise on the most effective strategies to improve seed business performance. The respondents indicated business mergers and acquisitions in order to get access to established brands and goodwill as one of the major strategies currently being used to improve business performance. Franchising and licensing crop varieties were also mentioned as strategies to reduce costs of entry into new markets. Sharing of distribution channels in order to reduce costs and risks associated with product promotion and delivery to the customers was the other option recommended. The results are supported by a report from the Ministry of Agriculture (2007) which used value chain analysis to study the status of maize seed industry in Kenya. The study employed the value chain analysis to identify the key maize seed market channels, their

function, roles and relationships. It identified legal and regulatory constraints, seed pricing, poor infrastructure, inadequate promotion of new varieties as well as poor quality of the seed in the market as the major bottlenecks in the seed value chains.

Some of the other strategies that the seed experts felt seed companies should embrace are to establish links with relevant structures/institutions that would address both demand and supply side of the maize value chain to proactively encourage sustainability and growth of the whole maize industry as this would foster growth in maize seed sales.

In addition, the seed experts recommended that the companies should embark on Quality Management System (QMS) to enhance seed quality, which is the cornerstone of success for a seed business through establishment of well-known brands that farmers stick to and the business enjoy repeat sales. Establishment of both high quality product and corporate brands would empower local seed companies to compete effectively with multinational companies. The seed experts also argued that implementation of QMS would allow for product differentiation that fosters customer loyalty and repeat sales. In line with QMS, the experts emphasized a focus on a deliberate effort for continual improvement in all aspects and processes of the seed business with commensurate rewards for champions of the continual improvement efforts in order to be ahead of competition. The study findings agree with those of Smale and Jayne (2003) who argued that growth in smallholder maize production was attributed to successful diffusion of improved maize seed in Kenya. They further asserted that development and release of new maize varieties was matched with investment in agronomic research, extension, seed distribution systems, rural infrastructure and institutions to coordinate grain marketing with seed and credit delivery.

Effective marketing strategies and market development initiatives in conjunction with the Government were encouraged in order to grow sales volumes. In addition, strategic and effective seed distribution networks were recommended to reach more farmers, hence growing sales and market share. The experts pointed out that such investments in market development and distribution networks would be possible if the seed businesses are

facilitated to have access to suitable funding options from the banks at sustainable interest rates and of long tenure to match the long seed production and supply cycles.

Further, the seed experts encouraged frequent strategic reviews of the seed supply value chain covering product development, seed production, processing & warehousing and marketing in order to continually improve the processes which lead to competitiveness. Such process reviews and upgrades are envisaged to develop innovative seed varieties that have qualities and characteristics to meet farmers demand as well as mitigate challenges faced by farmers such as climate change and biotic stresses such as plant diseases. Such innovative seed varieties would offer farmers the potential and opportunity to enhance their productivity on the farm. Development and supply of high quality seed that solve farmers' problems and performs consistently was also recommended as a way for the seed companies to achieve higher profits through charging premium prices for such seed varieties.

To address the issue of low business margins and profitability, the seed experts indicated that production costs should be reduced through embracing new technologies that automate most processes making them more effective and efficient. The reduction in production costs would increase the value wedge and profitability. Related product portfolio diversification to take care of the ups and downs in the seed market (diversifying market risk) as well as entering into regional markets to mitigate risk of market failure in one country were also put forward as strategies to stabilize income streams and improve overall organizational performance. The findings are in support of Neiroitti and Paolucci (2014) who reported better performance through capabilities developed from the use of information technology (IT).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study aimed at establishing the strategic determinants of organizational performance of maize seed companies in Kenya. Specifically, the study sought to find out the influence of cost structures, product quality, product pricing strategy, production strategy and seed distribution strategy on organizational performance of maize seed companies in Kenya. This section provides the summary, conclusions and the recommendations based on the findings as indicated in the preceding chapter four.

5.2 Summary of the Findings

5.2.1 Organizational Performance of Maize Seed Companies in Kenya

The study results showed that the majority of the seed companies had small market shares and few large companies dominate the market. This was also reflected by the few number of companies that had good production capacity utilization. Most of the companies were small and selling low volumes of maize seed. The respondents highlighted that their companies do not achieve competitive advantage on the market because they do not use product differentiation strategy to differentiate the attributes of their products from the competitors. During the 5 year period studied, there were waving trends in total revenues and business growth. The total expenses were increasing at a higher rate than the growth in revenues. As a result, most of the companies failed to achieve set profit targets.

5.2.2 Influence of Cost Structures on Organizational Performance of Maize Seed Companies

The study findings indicated that cost structures had a positive influence on organizational performance of maize seed companies. The majority of the respondents agreed that staff costs are relatively high in seed companies, costs of inputs such as pesticides & fertilizers are a small component of the total costs of a seed business, the seed distribution and

marketing costs are always the highest in their business. Furthermore, the respondents agreed that their firms incurred low cost in securing licenses required to operate the seed business, the cost of compliance with Government regulation are manageable, packaging and branding materials for their seeds are relatively high and storage costs that their company incurred were tolerable. Correlation and regression analysis results indicated that there was a positive and significant relationship between cost structures and organizational performance. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^1) which states that cost structures have no influence on organizational performance of maize seed companies in Kenya was rejected and accepted the alternate hypothesis (H_A^1) implying that cost structures have significant influence on organizational performance of maize seed companies in Kenya.

5.2.3 Influence of Product Quality on Organizational Performance of Maize Seed Companies

The results indicated that product quality is a key determinant of organizational performance in seed companies. This was supported by the responses from the respondents who agreed that the original source of seed can affect product credibility and sales, seed certification standards influenced product credibility and sales, characteristics of seed varieties affect product performance, use of trained personnel influences seed sales and use of hotlines to report seed failure influences the credibility of the seed and the distributor. Correlation and regression analysis results indicated that there was a positive and significant relationship between product quality and organizational performance. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^2) which states that product quality has no influence on organizational performance of maize seed companies in Kenya was rejected and accepted the alternate hypothesis (H_A^2) implying that product quality has significant influence on organizational performance of maize seed companies in Kenya.

5.2.4 Influence of Product Pricing Strategy on Organizational Performance of Maize Seed Companies

The results indicated that product pricing strategy had a positive influence on organizational performance of maize seed companies in Kenya. This was evidenced by the overwhelming responses from respondents who agreed that low price of seeds can influence the volume of sales, variety of pack sizes with different prices can boost sales performance by meeting quantity needs for various buyers while high prices for premium seed varieties creates better margins from high net worth farmers and availability of credit facilities boost sales and performance. In addition the respondents agreed that volume discounts on large purchase of seeds are useful to their company and competitor pricing strategy affect their business. However, the respondents did not agree that lack of government control on pricing of seeds can create unfair competition among sellers. Correlation and regression analysis results indicated that there was a positive and significant relationship between product pricing strategy and organizational performance. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^3) which states that product pricing strategy has no influence on organizational performance of maize seed companies in Kenya was rejected and accepted the alternate hypothesis (H_A^3) implying that product pricing strategy has significant influence on organizational performance of maize seed companies in Kenya.

5.2.5 Influence of Production Strategy on Organizational Performance of Maize Seed Companies

The study findings indicated that production strategy was a key determinant of organizational performance. Results indicated that manual methods of seed production created volume deficiencies in the market, mechanized production methods ensured bulk output leading to low cost per unit and hence improve business margins and cost of inputs affected cost of production and eventually the selling price. Furthermore, the respondents agreed that location of production unit influenced the retail price of seeds, use of experienced production and field staff influences the quality of seed output, investment in

seed research influences the quality of seed produced and affect the sales, and investment in state of the art seed processing infrastructure pays off in the quality of seed produced. Correlation and regression analysis results indicated that there was a positive and significant relationship between production strategy and organizational performance. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^4) which states that production strategy has no influence on organizational performance of maize seed companies in Kenya was rejected and accepted the alternate hypothesis (H_A^4) implying that production strategy has significant influence on organizational performance of maize seed companies in Kenya.

5.2.6 Influence of Seed Distribution Strategy on Organizational Performance of Maize Seed Companies

The study findings indicated that seed distribution strategy was a key determinant for organizational performance of seed companies. The results indicated that type of distribution channel influenced level of sales, use of agents to distribute seeds improved seed access and boost sales, while establishment of own distribution network reduced seed distribution costs and well maintained storage facilities secured seed from damage and improve seed performance and its credibility. The study findings further indicated that seasonal mobile vans or pick-ups used during planting seasons can enhance the level of seed sales, a distribution channel that has a feedback mechanism enhances seed credibility and seed distributors closer to the farmers record high sales. Correlation and regression analysis results indicated that there was a positive and significant relationship between seed distribution strategy and organizational performance. Therefore, at $p < 0.05$ level of significance, the null hypothesis (H_0^5) which states that seed distribution strategy has no influence on organizational performance of maize seed companies in Kenya was rejected and accepted the alternate hypothesis (H_A^5) implying that seed distribution strategy has significant influence on organizational performance of maize seed companies in Kenya.

5.2.7 Influence of Joint Variables on Organizational Performance of Maize Seed Companies

The results of the optimal model indicated that three variables; cost structures, pricing strategy and seed distribution strategy jointly accounted for the highest variation on organizational performance of maize seed companies in Kenya.

5.3 Conclusions

The study's findings made it possible to conclude that maize seed companies in Kenya successfully implemented product quality, pricing, production and seed distribution strategies that resulted in slight positive growth in sales and revenues in year 2014 from the all-time low in 2013 during the 5 year period that was analyzed. A significant number of the seed companies are also still small as they are selling small quantities of maize seed per year. It is also concluded that current strategies on cost structures are not producing the desired results as the companies experienced an increase in total expenses as a percentage of revenue and also a general decline in gross profits.

Cost structures were found to be statistically significant in explaining organizational performance of seed companies. The decline in gross profit, failure to achieve set profit targets and increased expenses as a percentage of revenue, made it possible to conclude that there were no efficient and sound management strategies on cost structures to ensure reduced operational costs. The poor management of cost structures resulted in general poor organizational performance.

Product quality had a significant effect on organizational performance and it was concluded that managers can increase profitability by putting in place appropriate quality management systems (QMS) and product quality standardization of seeds produced to ensure high quality seed. This therefore, can be achieved by ensuring that the original source of seeds is credible, enhancing seed certification standards to increase product credibility and sales. The study further concluded that by provision of seed varieties with

different adaptable characteristics, use of trained personnel and existence of physical locations for customer feedback gathering, influenced seed and company credibility.

Product pricing strategy was statistically significant in explaining organizational performance of seed companies. The study concluded that the firms embraced effective product pricing strategies that resulted in enhanced sales volumes and growth in revenue. The study led to a conclusion that low price of seeds and a variety of pack sizes with different prices will result in increased sales performance. Also, increasing the prices for premium seed varieties creates better margins from high net worth farmers and result in increased profit.

The study also led to a conclusion that production strategy was statistically significant in explaining organizational performance of seed companies. This implies that mechanized production methods ensure bulk output leading to low cost per unit and hence improved business margins. The investment in state of the art processing facilities, use of experienced production & field staff and investment in seed research which influenced the quality of seed produced and results in enhanced seed sales.

Further, the study showed that seed distribution strategy was statistically significant in explaining the organizational performance of maize seed companies in Kenya. It was concluded that type of seed distribution channel influenced the level of seed sales. In addition, the study concluded that use of agents to distribute seeds and seasonal mobile vans or pick-ups during planting seasons improved seed access and enhanced the level of seed sales. Further, the study concluded that establishment of own distribution network reduced seed distribution costs and that well maintained storage facilities secured seed from damage which results in improved seed performance and high credibility.

Finally, the study colluded that cost structures, pricing strategy and seed distribution strategy jointly accounted for the highest variation on organizational performance of maize seed companies in Kenya.

5.4 Recommendations

Since cost structures had a significant effect on organizational performance and generally total expenses were increasing in the seed companies, it is therefore, recommended that the seed companies should frequently analyze their cost structures to ensure that they work towards reducing their operational costs by putting in place effective cost structures. The staff costs were relatively high in seed companies and the seed distribution and marketing costs are always the highest in seed maize businesses, hence realigning and streamlining such costs and others, would increase profitability and general organizational performance. The seed companies, especially the smaller ones are recommended to use the product differentiation strategy to come up with varieties that are unique and can help them to gain market share.

Seed business is driven by the supply of high quality seed, the study therefore, recommends that the management of seed companies should ensure they embark on improving the product quality of seeds produced so as to meet customer requirements and enhance the firm's performance. This can be achieved by implementing appropriate QMS to enhance seed quality thus building a well-known brand since farmers stick to known brands, securing contracts with large farmers who have irrigation facilities to guarantee adequate seed fields isolation, high productivity and quality seed production. This would also result in high seed yields, hence reduction in the cost of production per tonne. The seed companies should also ensure strong follow-up by the regulatory body for credible seed certification in compliance with set seed standards, giving technical advice, continuous training and creating awareness to seed out-growers. Employment and retention of experienced field staff also would result in consistently high quality seed.

The study recommends that the seed companies should embrace competitive pricing strategies to ensure that they gain superior advantage. This can be achieved by production of high quality seed to meet customer requirements and build brand loyalty, put adequate resources into marketing and market development in order to grow market share as well as achieve brand differentiation which will ensure high prices for premium seed varieties

creating better margins from high net worth farmers and availability of credit facilities which will boost sales and performance in return. The study also recommends that there is need for the Ministry of Agriculture to design and deliver conducive credit packages suitable for small holder farmers to enable them engage in farming as a business. These credit packages can be delivered through specific farmer friendly lending agencies including commercial banks as well as tailor made financial institutions. These packages must be designed in consultation with the farmers and the credit provider with the extension agents providing the link. These packages should be focused to the needs of various farmer categories across the country.

Production strategy was found to be statistically significant in explaining organizational performance of maize seed companies. The study therefore, recommends that investing in mechanization and state of the art processing facilities results in efficiencies and economies of scale. This leads to reduction in production costs per unit and hence resulting in good business margins. Further, automation of processing facilities ensures high quality seed. In addition, the study recommends securing of low cost business loans that are long term to take care of the long maize seed production cycles.

The study recommends that the seed companies should embark on the best seed distribution strategy that supports its corporate strategic plan to achieve competitive advantage. The seed companies should ensure use of agents to distribute seeds to improve seed access by farmers, and use of seasonal mobile vans or pick-ups during planting seasons to enhance market penetration and the level of seed sales. The seed companies can also ensure establishment of own distribution networks so as to reduce seed distribution costs and emphasize on well-maintained storage facilities to secure the seeds from damage that will result in improved seed performance and its credibility. Generally minimizing seed distribution costs would lead to increased profits and overall organizational performance.

Finally the experts recommended recruitment and retention of skilled personnel in all the processes of the seed supply value chain in order to provide quality products and services to the customers. Structured training and refresher courses to keep abreast with seed business technological advancements as well as organizational development aspects were emphasized as critical to increase overall business competitiveness.

5.5 Areas for Further Research

The study identified some gaps since the strategic determinants of organizational performance studied pertained to maize seed companies in Kenya only. The studied factors may have different influences on organizational performance of seed companies that are involved in horticultural seeds and other open pollinated field crops in other countries or regions of Africa. Further, the strategic determinants studied did not cover all the critical factors that affect business management and performance. It is therefore, recommended that similar studies should be carried out by expanding the scope to include other seed companies dealing with other crops besides maize seed in East Africa, Central Africa and Southern Africa regions to find out whether the findings in Kenya on maize seed companies will hold true in Sub-Saharan Africa. The scope of the strategic determinants of organizational performance can also be widened to evaluate the effect of factors such as leadership, human resources competences, corporate governance, business systems and procedures on seed companies' performance.

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APPENDICES

Appendix I: Letter of Introduction

Date……
To…….
……..
Dear Sir/Madam,

RE: COLLECTION OF RESEARCH DATA

My name is Munyaradzi Jonga and I am a PhD student in Business Administration at Jomo Kenyatta University of Agriculture and Technology. Currently, I am carrying out a research on the "***Strategic Determinants of Organizational Performance of Maize Seed Companies in Kenya***". I am in the process of gathering relevant data for this study. You have been identified as one of the collaborators and respondents in this study and kindly request for your assistance towards making this study a success.

I therefore, kindly request you to take some time to respond to the attached questionnaire. I wish to assure you that your responses will be treated with confidentiality and will be used solely for the purpose of this study.

I thank you in advance for your time and responses.

Yours Sincerely

Munyaradzi Jonga
+254735992202

Appendix II: Questionnaire

Instructions: This questionnaire seeks to collect data on the various aspects of the study. It will only be used for the study purposes. Kindly respond to all the questions honestly and to the best of your knowledge.

SECTION 1: BASIC INFORMATION

1. How many years have you worked in the organization?

   a) Less than 2 years [ ]

   b) 3 to 5 years [ ]

   c) Over 5 years [ ]

2. What is your department in the organization?

   a) Marketing [ ]

   b) Finance [ ]

   c) Production [ ]

   d) Warehouse [ ]

3. Number of years the organization has been in operation

   a) less than 1 year [ ]
   b) 2 to 5 years [ ]
   c) 6 to 10 years [ ]
   d) Over 10 years [ ]

SECTION 2: STRATEGIC DETERMINANTS AND ORGANIZATION PERFORMANCE

Organizational Performance

i. What profit performance level against target has the company achieved over the last 5 years?

2010 [……%]

2011 [……%]

2012 [……%]

2013 [……%]

2014 [……%]

ii. What level of loss did the company experience over the last 5 years?

No loss [ ]

Less than Kshs. 3 Million [ ]

Between Kshs. 3 and 10 Million [ ]

More than Kshs. 10 Million [ ]

iii. What volume of sales has the company recorded in the last financial year?

Less than Kshs. 20,000,000 [ ]

Between Kshs. 20,000,001 and 50,000,000 [ ]

Between Kshs. 50,000,001 and 100,000,000 [ ]

Above Kshs. 100,000,001 [ ]

iv. What is the market share for your organization?

Between 0- 10% [ ]

Between 10% - 20% [ ]

Between 20%- 40% [ ]

Over 40% [ ]

v. What is the production capacity utilization in your organization?

Below 10% [ ]

Between 10% - 20% [ ]

Between 20%- 40% [ ]

Over 40% [ ]

vi. Please indicate the Gross revenue and total expenses for your organization over the past five years

Year	**Gross Revenue (Kshs.)**	**Total Expenses (Kshs.)**
2010		
2011		
2012		
2013		
2014		

Please indicate on the scale provided below by ticking the extent to which you agree with the following statements: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree =4, Strongly agree =5

No	Statement	1	2	3	4	5
		Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	The company has experienced an increase in total revenue over the last 5 years.					
3	We meet the time deadlines for our customers					
4	There is an upward trend in our business growth					
5	Our company has a competitive advantage compared to its peers due to product differentiation strategy					
6	Our company is highly profitable					
7	The company has experienced an increase in number of employees over the last 5 years					

What are the other factors that affect organizational performance in your organization?

……

……

……

Cost Structures

Please indicate on the scale provided below by ticking the extent to which you agree with the following statements on effects of cost structures and organization performance: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree =4, Strongly agree =5

No	Statement	1	2	3	4	5
		Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	Staff costs are relatively high in seed companies					
2	Costs of inputs such as pesticides & fertilizers are a small component of the total costs of a seed business					
3	The seed distribution and marketing costs are always the highest in our business					
4	Our firm incurs low-cost in securing licenses required to operate the seed business					
5	The cost of compliance with Government regulation are manageable					
6	Packaging and branding materials for our seeds are relatively high					
7	The storage costs that our company incurs are tolerable					

In your opinion, what other costs affect the performance of your firm?……

……

……

Product Quality

Please indicate on the scale provided below by ticking the extent to which you agree with the following statements: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree =4, Strongly agree =5

No	Statement	1	2	3	4	5
		Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	The original source of seed can affect product credibility and sales					
2	Seed certification standards influence product credibility and sales					
3	Characteristics of seed varieties affect product performance					
4	Use of trained personnel influences seed sales					
5	Existence of physical locations for customer feedback gathering influence seed &company credibility					
6	Use of hotlines to report seed failure influences the credibility of the seed and the distributor					

In your opinion, how else do product quality affect the performance of your firm?

……

……

Product Pricing Strategy

Please indicate on the scale provided below by ticking the extent to which you agree with the following statements: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree =4, Strongly agree =5

No	Statement	1	2	3	4	5
		Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	Low price of seeds can influence the volume of sales					
2	Variety of pack sizes with different prices can boost performance by meeting quantity needs for various buyers					
3	High price for premium seed varieties creates better margins from high net worth farmers					
4	Availability of credit facilities can boost sales and performance					
5	Volume discounts on large purchase of seeds are useful to your company					
6	Competitor pricing strategy affect our business					
7	Lack of government control on pricing of seeds can create unfair competition among sellers					

In your opinion, what other ways do product pricing strategies affect the performance of your firm?

……
……

Production Strategy

Please indicate on the scale provided below by ticking the extent to which you agree with the following statements: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree =4, Strongly agree =5

No	Statement	1	2	3	4	5
		Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	Manual methods of seed production can create volume deficiencies in the market					
2	Mechanized production methods can ensure bulk output leading to low cost per unit and hence improve business margins					
3	Cost of inputs affect cost of production and eventually the selling price					
4	Location of production unit can influence the retail price of seeds					
5	Use of experienced production and field staff can influence the quality of seed output					
6	Investment in seed research can influence the quality of seed produced and affect the sales					
7	Investment in state of the art seed processing infrastructure pays off in the quality of seed produced					

In what other ways do production strategies affect the performance of your firm?

……

……

Seed Distribution Strategy

Please indicate on the scale provided below by ticking the extent to which you agree with the following statements: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree =4, Strongly agree =5

No	Statement	1	2	3	4	5
		Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
1	Type of distribution channel can influence level of sales					
2	Use of agents to distribute seeds can improve seed access and boost sales					
3	Establishment of own distribution network reduces seed distribution costs					
4	Well maintained storage facilities secures seed from damage and improve seed performance and its credibility					
5	Seasonal mobile vans or pick-ups used during planting seasons can enhance the level of seed sales					
6	A distribution channel that has a feedback mechanism enhances seed credibility					
7	Seed distributors closer to the farmers record high sales					

In what other ways do seed distribution strategies affect the performance of your firm?

……

……

Thank you for your time and participation

Appendix III: Interview Guide

Dear Sir/Madam,

My name is Munyaradzi Jonga and I am a PhD student at Jomo Kenyatta University of Agriculture and Technology. In partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business Administration, I am conducting a research on: ***Strategic Determinants of Organizational Performance of Maize Seed Companies in Kenya.*** Your participation in this research by responding to some few statements will be appreciated. All your responses will be treated with utmost confidentiality and the information will only be used for academic purposes.

Thank you for your willingness to participate in this study.

1. What are the various issues affecting the performance of seed companies?

   ……

   ……

   ……

   ……

2. What do you think are the various strategies that can be used to improve the performance of seed companies?

   ……

   ……

   ……

   ……

3. What can you comment about the government involvement in the promotion of seed companies and their performance?

   ……

   ……

4. Given an opportunity what are the top five issues you feel the seed companies have not addressed well and why do you think this is the case?

   ……

   ……

   ……

5. Which strategies are most effective in improving seed business performance and why do you think so?

   ……

   ……

   ……

6. Are there other strategies you think can be used to effectively promote organizational performance?

   ……

   ……

7. Kindly list down other seed experts you know who can assist in this research:

Name	Organization	Telephone #	Email address

Munyaradzi Jonga

Mobile: +254735992202

Appendix IV: List of Maize Seed Companies in Kenya

1 Pannar Seed (Kenya) Ltd
2 Monsanto Kenya Ltd
3 Agri - Seed Co
4 Crop Africa
5 Syngenta East Africa Ltd
6 Dryland Seeds Ltd
7 Kenya Highland Seed Company Ltd.
8 Alphega Seeds
9 GNASS Kenya Ltd
10 Ultravetis East Africa Limited
11 VetAgro
12 Leldet
13 Kenya Seed Company Limited (KSC)
14 Faida Seeds Kenya
15 Pioneer Hi-Bred
16 East African Seed Company
17 Western Seed Company
18 Olerai Seeds Limited
19 Freshco Kenya Ltd
20 Gicheha Farms Ltd
21 Elgon Kenya Limited
22 Advanta
23 Egerton Seed Unit
24 KALRO Seed Unit