FACTORS AFFECTING THE EARNINGS OF SMALLHOLDER COFFEE FARMERS- A CASE OF NYERI COUNTY

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DECLARATION

I hereby declare that this thesis is my original work and has never been submitted to any university for any degree.

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This thesis has been duly submitted for examination with my approval as the University supervisor.

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Dedan Kimathi University of Technology.

DEDICATION

I dedicate this work to my family- My wife Mary Wanjiru and my two sons Morris Gichigi and Graham Maina for their understanding during this course as I robbed their time, my brother Moses Nyaga as well as my Mother Alice Njeri for their moral support.

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ABBREVIATIONS AND ACRONYMS

CBK- **Coffee Board of Kenya**

CDA- **Coffee Development Authority**

CODF- **Coffee Development Fund**

CRF- **Coffee Research Foundation**

FAO- **Food Agricultural organization**

ICA- **International Coffee Agreement**

ICO- **International Coffee Organization**

KCTA- **Kenya Coffee Trader Association**

KPCU- **Kenya Planters Co-operative Union**

SACCO- **Savings and Credit Cooperative**

SCIP- **Small-holders Coffee Improvement Programs**

ABSTRACT

The returns on coffee sales have been low over the years, characterized by low revenues to the farmers from the coffee societies which market the coffee, inability to cover costs of production, low savings as well as investment in the production process. This has left many families in Nyeri county as well as other parts of the country, where livelihoods relied on coffee farming in abject poverty. The study aimed at determining the factors affecting the earnings of small holder coffee farmers in Nyeri County. The study focused on: evaluating how coffee production process affects earnings of the small holder farmers, investigating the effects of management of coffee societies on smallholder coffee earnings, determining how government policies and regulations have affected earnings of small holder coffee farmers and analyzing the effects of social economic factors on earnings of smallholder coffee farmers. Theoretical profit function and stochastic frontier model and the diffusion of technology in agriculture theories were applied in the study. Further, the study adopted a descriptive survey of the Coffee Farmers in Mathira, Othaya, Mukurue-ini and Tetu regions of Nyeri County, Central Kenya. The target population was the eighty six thousand smallholder farmers who are members of cooperative societies in the Nyeri County and since the population was large, stratified sampling was used to ensure the sample is a true representation of the whole population. The data collected was analyzed using statistical measures of means, correlation, and regression analysis and presented in form of tables, graphs, and pie charts using the scientific program for social studies (SPSS). The findings of this study showed that production factors affect farmers' earnings the most followed by socio economic factors such as poor coffee prices, leading to poor pay to farmers. However, lack of credit facilities and farm inputs was also an important factor affecting the success of the coffee sector. It was recommended that co-operative societies should formulate programs to regulate coffee production and organize farmer's education programs, while the government should enable farmer's access subsidized farms inputs and liberalize the market further through direct market access.

CHAPTER ONE

INTRODUCTION

1.1Background of the study

Coffee was first brought to Kenya in 1883 and as early as 1910 it was the largest export earner and the industry had build a reputation of its own. After independence, the new government expanded smallholder's production by providing the farmers with land, financial support to grow coffee, encouraged the growth of cooperatives and funding of the cooperatives so as to build processing factories, technical support to farmers as well as the cooperatives. By 1978, production by smallholders had exceeded estate production which by then was in the hand of some white farmers, indigenous Kenyans who had acquired large tracts of land as well as some multinational farms (Kate, Wangari, Claire and Love, 2008). By 1980's production of coffee in the country reached the peak of 129000metric tons which was 40% of Kenyans export and it was ranked number one in export earnings. Since then production has continued to decline as well as earnings and many smallholders as well as large scale coffee farmers have closed down or left coffee farming. This decline has affected the earnings of between 500000-700000 smallholders coffee farmers as well as large scale coffee farmers. Coffee is now ranked fourth in export earnings after tea, tourism and horticulture (Kate, Wangari, Claire and Love, 2008).

Available data shows that production in 1997/98 was 100,000 metric tons but by 2005 it had dropped to 45000metric tons. Since then production has been fluctuating in the ranges of 54000 metric tons in the year 2009 to as low as 38000metric tons in the year 2011. Prices on the other had during the period ranged from US dollar121.45 in the year 2005, US dollar 188 in the year 2008/09 to 329 US dollar in the year 2010/11 which were the highest prices in the recent past. However, production in the same period was at one of its lowest level which in the end translated to less earnings to smallholder coffee farmers (Ministry of Agriculture report, 2008, 2009, 2010 and 2011).

As the prices and earnings from coffee decline the cost of coffee production has been rising. This has translated into small scale holders no longer investing in farm inputs. As a result Kenya coffee quality has been falling since 1993 (Gitau, 2009). The end result of all this is declining coffee earnings. Nevertheless, while yields in Kenya have fallen from 899kgs/ha in 1980 to 284kgs/ha in 2006, yields in our neighboring countries of Ethiopia and Rwanda during the same

period have been increasing. In 2006 the two countries produced 995Kg/ha and 1160Kg/ha respectively (FAO, 2008).

Measures put in place by the government to address the sector such as repealing of the Coffee Act Cap 333 and replacing it with Coffee Act No 9 of 2001, establishment of Coffee Development Fund (CODF) in 2006 as part of reforms which would lead to vibrant, efficient and effective coffee industry aimed at benefiting the coffee farmers, writing off of loans owed by primary cooperative societies in Cooperative Bank where Kshs5.8billion was written off in 2004 and individual smallholder loans in Sacco's and District Cooperative Unions where over Kshs2billion has been written off in 2012 seems not to have borne fruits so far (Chege, 2012).

Major factors affecting coffee farming earnings include comparatively poor coffee prices, poor coffee husbandry, erratic weather pattern, marketing as well as global warming. However these factors need to be researched (Kate, Wangari, Claire and Love, 2008). This is more so especially because as coffee prices have been fluctuating in the world market, countries like Ethiopia have adopted strategic measures to address the same. The government of Ethiopia has introduced Cooperatives Farmers Unions to protect farmers, started labeling of their coffee depending on its geographical origin, and entered into ethical coffee trading practices through fair trade, growing environmentally friendly coffee as well as encouraging local consumption which has lead to higher revenues (Furman, 2012).

Stakeholders and experts in the coffee sector namely the producers, government ministries, research organizations, private sector (millers, marketing agents, extension agents) need to work together in identifying the challenges facing the coffee sector and to discuss and document sustainable solutions to the identified challenges.

1.2 Statement of the problem

Coffee farming in the years 1970s and 1990s used to be the main economic activity for thousands of households in Nyeri County and was central in wealth creation. Income from coffee used to be utilized to meet the household's daily basic needs by over 80% of the households, pay school fees as well as households other economic needs. Earnings for coffee farmers have declined over the years and the farmers are unable to sustain production or even support their livelihoods from the earnings of coffee. They have been left poorer, indebted to their cooperative

societies as well as to financial institutions and meeting their daily needs has become a challenge.

Many farmers have abandoned production and have sought other agricultural ventures like dairy farming and horticulture. Despite the above measures put in place by the government and the stake holders, the earnings of small holders coffee farmers are still low.

The study intended to determine the factors affecting the earnings of smallholder coffee farmers in Nyeri County and propose strategic intervention measures which should be adopted to improve their earnings.

1.3 Objectives

The main objective of the study was to assess the factors affecting the earnings of small holder coffee farmers in Nyeri County.

1.4 Specific objectives

1) To evaluate how coffee production process on the incomes of the small holder farmers in Nyeri County.
2) To investigate the effects of management of coffee societies on the incomes of smallholder coffee farmers in Nyeri County.
3) To assess the effect of government policies and regulations on the incomes of the small holder farmers earnings of small holder coffee farmers in Nyeri County.
4) To analyze the effects of social economic factors on the incomes of the small holder farmers in Nyeri County.

1.5 Research Questions

The research paper sought to answer the following research questions.

1) How does coffee production process affect the incomes of the small holder farmers in Nyeri County?
2) How has the management of coffee cooperative societies affected the incomes of small holder farmers in Nyeri County?

3) How have government policies and regulations affected the incomes of small holder coffee farmers in Nyeri County?
4) How have the social economic factors influenced the incomes of smallholder coffee farmers in Nyeri County?

1.6 Justification of the study

The reason for choosing this line of investigation was based on qualitative information that farmers are not making profits from coffee, and some quantitative data on the fact that the price is actually based on the quality of the coffee sold at the coffee auction houses. A baseline survey conducted by the researcher in Muranga County and from relevant secondary data and interviews with some local farmers revealed that the main constraints on farmers' earnings included the production methods and costs, financial management capacities of the cooperative societies which market the coffee, social-economic issues, government policies and regulations on coffee farming as well as market factors. These major constraints formed the objectives the researcher aimed at achieving.

The study will be of great significance to the administrators of Nyeri County as well as administrators of other Counties where Coffee is grown as the country adopts a devolved system of government. Over 80% of the arable land in Nyeri County is conducive for coffee farming and if measures are taken to revive this industry and farmers went back to coffee farming, production will increase and the income of the county will also increase. If no measures are put in place to address this problem, Nyeri County will be affected as one of its major sources of income to sustain its operation will be from coffee farming.

The study will provide the coffee farmer with relevant information regarding the sector. Government ministries will get relevant information on the sector and they can use the same when coming up with government policies.

Researchers and academicians can use the materials as references as well as furthering the research. Other Counties where coffee is grown can use the research in addressing the coffee sector in their Counties.

1.7 Delimitations of the study

The study was carried out at Nyeri County, an area well known to the researcher and carried out on registered members of the coffee societies in Othaya, Mukurue-ini, Mathira and Tetu. To ensure timely undertaking, the researcher recruited, trained and engaged research assistants who administered the research instruments and collected the data in the time allocated. The researcher and assistants communicated the relevance, nature and importance of the study to individual respondents to ensure their confidence, and objective responses.

1.8 Limitations of the Study.

In carrying out the research, the following limitations may hinder success. First, the sparse geographical distribution of the coffee farmers may affect timely data collection as the researcher has to move from place to place to visit the farms. The researchers however recruited, trained and engaged research assistants who covered the various regions and enable timely data collection. Some of the respondents might not wish to reveal relevant details concerning their farming practices and others might refuse to cooperate due to the academic nature of the study (terming the exercise as time wasting).

1.9 Scope of the Study

The study was done in Nyeri County covering the areas where coffee is grown. These included Othaya, Mukurue-ini, Mathira and Tetu as these are the only areas under coffee in the County. The study confined itself to the factors affecting earnings of smallholder coffee farmers, guided by the four mentioned objectives of the study.

1.10Assumptions of the Study

The assumptions taken is researcher would get cooperation from the respondents and they would participate positively in the research by answering all the questions without any bias and do so in the time allocated.

1.11 Definition of Operating Terms

Coffee-House - A place where coffee is sold to consumers as a drink, (Kegode, 2005).

Credit- Money advanced on credit from financial institutions, Bruce, M. (2010).

Earnings- are revenues (sales) less the cost of sales, operating expenses and taxes over a period of time, (Lasse, 2006).

Depression - Period of low productivity and business activities, Chege (2012).

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter will trace the history of the coffee sector in Kenya and present the views of researchers, scholars, academicians and all relevant works and various reports written by government agencies and people concerning the performance of the coffee sector. It will include both the theoretical as well as empirical reviews on the coffee sector. Finally the paper will examine the performance of the coffee sector in the country and identity the research gaps left by those studies.

2.1 Coffee History

According to Kegode (2005), the story of how coffee growing and drinking spread around the world is one of the greatest and most romantic in history. It starts in the Horn of Africa, in Ethiopia, the country bordering Kenya in the Northern Frontier, where the coffee tree probably originated in the province of Kaffa. There are various fanciful but unlikely stories surrounding the discovery of the properties of roasted coffee beans. One story has it that an Ethiopian goat herder was amazed at the lively behavior of his goats after chewing red coffee berries. What we know with more certainty is that the succulent outer cherry flesh was eaten by slaves taken from present day Sudan into Yemen and Arabia, through the great port of its day, Mocha; now synonymous with coffee. Coffee was certainly being cultivated in Yemen by the 15th century and probably much earlier than that.

At first coffee was mainly sold by lemonade vendors and was believed to have medicinal qualities. The first European coffeehouse opened in Venice in 1683, with the most famous, Caffe Florian in Piazza San Marco, opening in 1720. It is still open for business today. The largest insurance market in the world, Lloyd's of London, began life as a coffeehouse. It was started in 1688 by Edward Lloyd, who prepared lists of the ships that his customers had insured. Initially, the authorities in Yemen actively encouraged coffee drinking as it was considered preferable to the extreme side effects of Kat, a shrub whose buds and leaves were chewed as a stimulant.

The first coffeehouses were opened in Mecca and were called 'kaveh kanes'. They quickly spread throughout the Arab world and became successful places where chess was played, gossip was exchanged, and singing, dancing and music were enjoyed (Kegode, 2005).

Coffee was first brought to Kenya in 1883 by French missionaries. Once it was planted it was by the British who were the colonizer of Kenya. The British encouraged the White settlers to invest in coffee farms around Nairobi. As early as 1910 coffee was the largest export and the industry had build a reputation of its own. Institutions like Planters Union of Kenya were set up in 1919 to support the sector and lobby the British government and the Nairobi Curing Company which had built the first mill. During the great depression of 1929, there was a sharp decline in production and Coffee Board of Kenya was formed in 1931 so as to help stabilize the local coffee industry. After independence in 1966, the new government expanded smallholder's production by providing the farmers with land, financial support to grow coffee, encouraged the growth of cooperatives and funding of the cooperatives so as to build processing factories, technical support to farmers as well as the cooperatives. By 1978, production by smallholders had exceeded estate production which by then was in the hand of some White farmers, indigenous Kenyans who had acquired large tracts of land as well as some multinational farms. By 1980's production of coffee in the country reached the peak of 129000metric tons which was 40% of Kenyans export. Coffee for many years was the number one foreign exchange earner in Kenya and in 1980's constituted 40% of all the country's exports, but over the years it has been overtaken by tea, tourism, and horticulture and it now lies in number four. Germany accounts for about 35% of total exports out of Kenya, followed by Sweden, UK, USA, Netherlands, Belgium and others (Kate, Wangari, Claire and Love, 2008).

Before liberalization, CBK was the sole regulating body and sole marketing agent and KPCU was the sole milling institution. Coffee was sold through the central auction system by CBK and the proceeds passed to KPCU who after deducting the necessary charges paid the farmers through their primary cooperative societies (Gitau, 2009). Between 1990s and 2001, the government under pressure from the World Bank took measures to loosen its control in the sector. These included pulling out of the cooperative management (1992), ending financial support to cooperatives, KPCU, CRF, relaxing regulation through CBK, in processing, allowing growers to chose their millers and marketing agents (1999) , limiting the role of CBK as a

regulator (2001), privatizing the central auction system, reviewing of the Coffee Act in 2001 and allowing the coffee to bypass the coffee auction and be sold directly to exporters as well as increasing the number of licenses from three to twenty one in 2006.

In 2005, through the Finance Act registered marketing agents were allowed to sell coffee directly to buyers as alternative to marketing coffee through the central auction system (Gitau, 2009). The measures were aimed at giving the coffee farmer more control than before of the industry, less government regulation and less mismanagement leading to reduced processing costs and increased prices being paid to the farmers. Before these changes KPCU had the monopoly of coffee milling. Other millers like Thika coffee mills were licensed. CBK had the monopoly of marketing coffee through the central auction system but after liberalization millers as well as cooperative societies were allowed to market coffee though the central auction system.

While the processing and sale of coffee is on, the smallholder starts farming for the next harvest. For this, the farmer in Kenya uses an input intensive system. As the farmer is yet to be paid for the coffee, the cooperative purchases inputs for all the farmers within the cooperative, and uses the factories to distribute the same to the farmers and each farmer is given the amount requested. Also, each farmer gets a picking advance of Kshs 3-10 per kilo of cherry produced that year as an advance to meet financial needs such as picking coffee and paying school fees among other financial needs. This expenditure is then calculated per farmer to be deducted from the income from coffee. At the end of the season, the factory calculates amount due per farmer after deducting the advances for picking, school fees, cost of inputs, and outstanding loans, and transfers the remaining amount into the SACCO (Savings and Credit Cooperative) account of each farmer. The SACCO also deducts interest and a part of the principal of any outstanding loan the farmer may have, and the remaining money can then be accessed by the farmer for personal use (Kate, Wangari, Claire and Love, 2008).

Small-scale coffee holders are required by law to sell their coffee through local growing cooperative societies and due to this there is no competition between the small cooperative societies. The cooperative societies are also expected to provide extension services, farm inputs, run processing factories, provide credit, and manage the transportation as well as marketing of coffee. Marketing intelligence of the societies is limited as well as lack of resources to carry out all the indicated activities. Though direct sales have been introduced there is no evidence that the

societies have been able to penetrate this market. With the weakening of CBK collapse of KPCU and District Unions, advocacy for the coffee farmer is lacking. Other problems cited in the coffee sector in Kenya are that though CBK has licensed marketing agents but the whole process is tainted. Coffee is also sold in lots and there is possibility of mixing low quality coffee with high quality coffee and thus farmers have no incentive to produce quality coffee as the same will be sold in lot and they will receive revenue based on lots, (FAO, 2008).

2.2 Theoretical Review

Theoretical profit function and stochastic frontier model

A profit function, under mild 'regularity conditions' is a logical extension of the production function (Sadoulet and Alain de Janvry, 1995). Regularity conditions require that the function must be non-negative, monotonically increasing in output, convex and homogeneous of degree zero in all prices. To estimate the profit function, in the neoclassical theory, it is assumed that the farmer is operating on the frontier and the price of inputs and outputs are known. But in reality some of the farmers operate below and some above the frontier. Furthermore, Junanker (1989) observed that farmers do not always operate in competitive input and output markets in developing countries and this violates the neoclassical assumptions.

Since Junanker's observation, there have been a number of developments to respond to this criticism. First, the assumption of output and input competitive markets is not needed in defining the firm's profit function, especially in developing countries. What is needed is the output and input prices to be exogenous to the farm but be competitively determined (Sevilla-Siero, 1991). Secondly price variation can be handled by including district dummies (Lau and Yotopolous, 1971; Akinwumi and Djato, 1996). Third, it is currently possible to incorporate institutional and environmental factors referred to earlier such as quality of soils and rainfall as shown by (Ali and Flinn, 1989; Coelli, 1995). Fourth, profit function does not suffer from simultaneous equation bias problems as in production function. Fifth, the function has been used before in African context (Akinwumi and Djato, 1996 and 1997). Thus, a stochastic profit function approach is deemed appropriate for this study.

Adoption and diffusion of agricultural innovations theory

Diffusion of innovations has been studied by many disciplines (e.g. anthropology, sociology of various brands, education, medicine, communication studies, marketing, business administration, etc.). From an initial domination of sociology, economics has gradually taken over, possibly because of a stronger emphasis on the theoretical basis for adoption, and its policy relevance. The sociologist Everett Rogers' seminal work on diffusion of innovations (1995) is a good starting point into this area of study. An innovation according to Rogers is "an idea, practice or object that is perceived as new by an individual or other unit of adoption". Diffusion is seen as "the process by which an innovation is communicated through certain channels over time among members of a social system". A technological innovation usually has two components: a hardware aspect (the tool, product) and a software aspect (how to use the hardware). For good reasons studies of diffusion of innovations have often addressed individual innovations, in practice innovations often come in packages – clusters – and are interrelated and interdependent.

The characteristics of innovations explain their rate of adoption. Five such characteristics of importance are discerned: 1) The relative advantage reflects how the innovation is subjectively perceived superior to the previous idea; 2) Compatibility reflects how the innovation is perceived "consistent with the existing values, past experiences, and needs of potential adopters"; 3) Complexity reflects the perceived difficulty to understand and use the innovation; 4) Trial ability is "the degree to which an innovation may be experimented with on a limited basis"; and 5) Observability reflects how the results of an innovation are visible to others. An innovation can further be changed or modified (re-invented) by a user. Communication, through channels, provides information to a social system with the purpose to influence the knowledge and assessment of the innovation. Mass media is often more effective in creating awareness of an innovation, whereas personal contacts are more effective in forming an opinion about a new idea. Such interpersonal communication is facilitated if conveyors of information are optimally similar to the receiver in certain attributes.

Time is a main factor in the decision-making process, innovativeness and an innovation's rate of adoption. In the innovation-decision process, an individual passes through the stages: knowledge, persuasion, decision, implementation (adoption) and confirmation (post-adoption assessment). Information is sought at the various stages to reduce uncertainty about the usefulness of the

innovation. The decision stages result in adoption or rejection of the idea. Innovativeness is an expression for how early an individual or other unit of adoption is adopting a new idea compared to other members of the social system. Adopters are divided into five categories, each with its own characteristics: 1) innovators, 2) early adopters, 3) early majority, 4) late majority, and 5) laggards. Finally, rate of adoption is the relative speed with which an innovation is adopted by members of a social system.

The social system with its interrelated units shares an interest in finding solutions to a common goal, i.e. to improve their agricultural system to enhance livelihoods. Such a system has a social and communication structure that facilitates or impedes the diffusion of innovations in the system. Norms, being part of the social system, are the established behavior patterns for system members. Often opinion leaders play a crucial role in influencing system members. Change agents may have the explicit role to influence members in a certain direction. Both opinion leaders and change agents are central actors in diffusion of innovations. Three main types of innovation-decisions can be distinguished: independent individual decisions (adopt a HYV), collective decisions (soil conservation on hillsides), and authority imposed decisions. This study seeks to establish the factors affecting small holder coffee farmers' earning with the aim of providing viable interventions. In this line, the diffusion of innovation is adopted as a guide to transformation of the farmers, their perceptions and practices for the betterment of income generation in the coffee value chain.

2.2.1 Coffee Earnings

Lasse (2006) asserts that earnings to coffee farmers can be identified by higher retained earnings from seasonal production. When earnings are good, the farmer is able to settle current and pending debts related to farming and also personal ones, and still have some money to undertake planned undertakings as well as leisure. Further, the undertaking of development projects shows that the farmers are making profit. For example, when a farmer builds a permanent house, better than the one lived in, using income from coffee payments, it shows that there is some extra money after settling liabilities. Entry rates in the industry portray signs of profitability in any venture. When many farmers start planting coffee, it is a sign that the venture is availing

reasonable returns to the farmers, (Lasse, 2006). Also, where the farmers increase the coffee trees in the farms, it is a positive sign of the returns upon sales.

Profitability according to Lucey (2010) is the excess on sales of the cost of production. It occurs when a firm is able to break-even and has extra earnings at a particular level of production. The production costs in coffee farming are variable. When the harvest is good, labor costs increase relatively. Other costs such as fertilizers, pesticides do not increase marginally, but relate to the market forces of supply and demand. However these costs have constantly increased over the years, inconsistently with the price changes at the coffee markets. Actually, there is very low correlation of the factors influencing variations on costs and the establishment of coffee prices. Actually the two are so detached that neither can base their prices on the others.

2.2.2 Coffee Production and Earnings

There seems to be better quality control in Kenya, as farmers only produce cherry, and the factories are at least able to control the processing to parchment. But, the payment for coffee is not immediate, and farmers have to wait for the completion of transactions across the chain before they get income from coffee. Also, the costs of running the factories, cooperatives, milling and marketing of coffee are borne by the farmer, and are deducted from the coffee price. The auction system though provides a mechanism for payment for quality, as different buyers bid for specific qualities and bring the price up. Conversely, the auction can also give a low price for coffee if there are not too many buyers on the day (Godfrey, 2008).

According to Kegode (2005) the importance of coffee in the world cannot be overstated .Coffee is one of the most valuable product in world trade and for many years it has been second in value to oil as a source of foreign exchange earner. Coffee requires specific temperatures, rainfall and attitudes conditions that limit growing to the tropical areas. There are two types of coffee grown in the world. These are Arabica and Robusta types. Arabica type of coffee accounts for over70% of the world production. Kenya grows this type of coffee but it produces only 1% of the world production. The Kenyan coffee is mainly used to breed other types of coffee since it is of high quality and more aromatic. The top producers of Arabica coffee in the world are Brazil which produces 30% of the world production, Vietnam with 15%, and Columbia with 12%. World coffee consumption has been increasing at a steady compound annual rate of 1.6% over the

1993-2003 periods with total consumption at 6.8 million metric tons (World Reserve Institute). The main consumers of coffee in the world are European countries such as Germany, Netherlands, Sweden, Belgium and Switzerland. Coffee is also consumed in high quantities in the U.S. (which consume 18% of the world coffee consumption), Saudi Arabia and Russia.

Available data shows that production for the year 2005/06 was 45245 metric tons, 2006/07- 48303 metric tons, 2007/08- 53368 metric tons, 2008/09- 42000 metric tons, 2009/10- 45000 metric tons,2010/11-36000metric tons despite a projected production of 52000 metric ton the same year. Prices on the other hand ranged between US dollar 121.45 in the year 2004/05 to US dollar 188 in the years 2008/09. In the year 2008/09 the price averaged 154US$, 2009/10 236US$ and in the year 2010/11 the same averaged 329US$ which was one the highest price reached in the last several years, Coffee production has never attained the levels of 1980's. Coffee is no longer the number one exchange earner but is now ranked number four, after Tea, Tourism, and Horticulture (Ministry of Agriculture Report 2009, 2010, 2011 and 2012).

Chege (2012) postulates that despite projected higher earnings in the year 2012, the coffee prices have been falling. Between January and August 2012 the market value had fallen by 47% which translate to lower earnings to small-scale coffee holders. Currently, Kenya auction system and coffee production in general is suffering myriad problems as is all of East Africa. For now, the coffees are still of relatively high quality but if the auction system does not continue to serve and benefit the small farmer cooperatives, they will plant other crops instead, or replace the better cultivars (the excellent SL-28 and SL-34 selections) with the disease resistant but poor quality Ruiru 11 strain.

Kenya quality coffee has fallen since 1993 when approximately 20% of Kenyan coffee was premium grade to about 10% in 2008. Farmers no longer invest in farm input leading to low production. But while yields in Kenya has fallen from 899kgs/ha in 1980 to 284kgs/ha in 2006 yields in our neighboring counties like Ethiopia and Rwanda who also grows Arabica coffee are quite the opposite as they are producing 995kgs/ha and 1160kgs/ha respectively. (FAO, 2008 report).

Kenya has always been known for its high quality coffees and for many decades has been a world leader in quality with ideal combinations of variety, altitude, soils, and climate. The

country produces mild or washed (wet processed) Arabica, although a variable amounts of sun dried (dry process) or natural coffee (Mbuni) is produced as well. The Mbuni sells at a price discount to washed coffee. Most of the top roasters and buyers of Kenya Coffee have expressed concerns about the deteriorating quality and reliability of supply of the Kenyan coffee. Consequently, Kenya coffee has been replaced by other blends of comparable attributes. Efforts to market Kenyan coffees as single origins has been challenging for this very reason. (FAO, 2008)

According to Oxfam (2002) coffee prices are determined on the future markets based in London (for Robusta) and New York (Arabica) with prices being influenced by the large number of contracts for coffee that are trade which far exceed the physical coffee in hands. Traders are in a position to use hedging in future markets but the small producers are unable to do so thus they are exposed to full volatility of the market. The report further estimated that as coffee producers received less than 1% for a cup of coffee sold in the cafes in the U.S. there was increased consumption of the coffee and largest coffee roasters in the world such as Kraft, Nestle, Procter and Gambles and Sara Lee with their widely recognized brands such as Maxwell House, Nescafe, Folgers and Douw Egbert's enjoyed high profits over the years from coffee sales than other food and drinks markets.

In the year 2010/11, the price for Kenyan coffee hit an all-time high of $1,022 (Sh94, 535) per 90 kg bag for benchmark grade AA, which meant better incomes for farmers and pushed earnings from Sh16 billion in 2009/10 to Sh26billion in 2010/11. The current favorable international prices have boosted local efforts to reform the sector and increase production. (Chege, 2012)

2.2.3 Cooperatives Societies Management and Earnings to coffee farmers

Cooperatives are the main links in the chain, and they substitute the role of Bulkers and processors. They have factories, which act as collection points for the cherry produced in the area, and also process cherry to parchment**s.** The legal framework for operating the coffee industry is spelled out and in the coffee Act Chapter 333, which provides for the regulation of the industry and control over production, marketing and export of coffee. These functions are supervised by the coffee board of Kenya (CBK). The current Coffee Act was revised in 1979 and

again in 1999 through the special legislative supplement which ushered in liberalization in the coffee marketing rules. (Godfrey, 2008)

The coffee act was again reviewed in the year 2000. The implementation pace of the recent review of the coffee act has not yet taken place and is the major cause of wrangles in the sector. The current coffee act set up has allowed millers more control in the operations and marketing of coffee, a function that was previously reserved to cooperative societies. Agencies such as KPCU continue to agitate for exclusive monopoly of marketing coffee a situation which has been exacerbated by the Ministry of Cooperatives and Marketing coming in to support them on this very controversial position. A wide section of the industry has viewed this as conflict of interest which should not be allowed to take place. (Ruerd and Guillermo, 2011)

Some of the finest Specialty Coffees in the world are found around Mt Kenya region, there are currently close to about 994 coffee factories operating with a combined turnover of about US $ 5.8 Billion. 50% of the coffee production is through smallholders and cooperative societies, while the other 50% is produced by large scale estate producers and private estates. There are currently over 760 cooperatives, with capacity to mobilize savings at the rate of Kshs.14.8 Billions. The coffee cooperatives have experienced mismanagement problems that have seen most of them split into many competing groups, the larger cooperatives, have equally suffered from efficient and transparent delivery of services and value to its members, factor that has led to declined coffee production in the region. Currently coffee farmers are indebted to a tune of about Kshs. 11 billion. (Mbataru, 2009)

2.2.4 Government Policies and Regulations and Earnings of Coffee Farmers.

Ministry of Cooperatives: is mandated with supporting and regulating the cooperatives, by ensuring that elections are held on time, and are fair, assisting in negotiations between cooperatives and its farmers and ensuring that the cooperative act is upheld. Ministry of Agriculture is mandated with data collation on coffee, trainings for farmers and research on coffee. A little over 5 years ago, the Government liberalized the coffee milling process ending KPCU's (Kenya Planters' Co-operative Union) monopoly. This encouraged private millers to buy coffee beans from local farmers but it has also seen a rise in theft of the same since most milling companies operate at below optimal or optimal capacity.

Chege (2012) notes that as a measure to promote coffee production, the government waived a debt of Kshs5.8billion in 2004 owed by cooperative societies and in financial year 2011/12 it waived over Kshs1billion owed by coffee farmers and there is a promise to continue the waiver till all the debts are cleared. The government has also set up coffee development fund to assist coffee farmers but these measures are yet to realize any benefits. Again the lure of the improved prices has meant increased demand for the beans. Calls have been made to brand our coffee and authenticate it as being from this part of the world and Brand Kenya has made a weak case for the same. But this requires more focused branding and marketing of the product if Kenya's to expect to earn more from its traditional cash crop product. Lessons can be learnt from our northern neighbor, Ethiopia.

In Ethiopia so as to provide protection for small scale coffee farmers the government has successfully introduced cooperative farmers unions in the local coffee industry. At presently four cooperative unions have been formed with a membership of over 150000 members. These unions have been successful in terms of increasing coffee revenues and providing benefits to farmers. The unions assist in sampling coffee prices, capital, transportation and negotiation in the coffee supply chain. Cooperatives are also required to invest back 30% of their profits back to the community in services such as schools, roads and water treatment facilities. As coffee consumption is shifting to specialty coffee, the unions are assisting farmers to take advantage of this shift thus increasing their incomes. The government is also assisting in labeling of coffee depending on geographical location and due to this coffee is able to sell three times in the world market than it does without specification. Other areas the government has come in to assist is in entering into ethical coffee through fair trade coffee and environmentally friendly coffee (Furman, 2010).

Due to these measures taken by the government, in the last two years- 2010/11 and 2011/12, total coffee revenues have accounted for 25-30% of total export revenues. On local consumption, Ethiopians consume about half of all coffee produced in the country. They take coffee two to three times in a day (Tefera, 2012).

2.2.5 Social- economic Factors and Earnings to Coffee Farmers.

Chege (2012) eludes that access to credit has been a major constraint to smallholder producers and this has affected their ability to expand production. There is urgency for the government to quickly establish mechanisms for redemption of these debts through available restructuring and amortization options available. The issues of good governance in the sector are paramount for efficient delivery of key services to producers in this region. Farmers in Kenya do not actually get paid for their coffee crop until after the crop has been sold at auction, which may be six months after they have first delivered their beans to a primary cooperative. So, farmers are heavily reliant on credit, charged at high rates of interest, and on the provision of education, health and input credits from their cooperative or local credit unions. These farmers are part of Fair Trade certified supply chains.

Nyoro (2009) opines that in a number of coffee auctions, observations on coffee prices against overall class have shown poor responses between the two i.e. price and class standard. This has particularly been more obvious in the moderate classes of 4, 5 and 6. The coffee classifiers are quite objective in judgment but the auction very often turns out to be subjective. These occasional anomalies should not be left to the farmer to be the ultimate victim. To counter this anomaly, the farmer should be guaranteed a price in all classes that at least exceeds the reserve, which also must satisfy the average production costs. This will double up as an incentive to farmers to produce better grades. The new draft rules on coffee marketing have incorporated a minimum guarantee payment system to producers.

To ensure that payouts for all coffee outturns delivered to auction agents are released to the grower, a summarized report should be made and submitted to the farmer at the end of the marketing season. With this practice not in the current marketing policy, cases of un-cleared payouts cannot be reasonably ruled out in the past coffee auctions. It is now, not a secret that coffee produced in Kenya does not arrive at the global markets as Kenya coffee. This happens because Kenyan dealers proceed to blend the low quality coffees sourced from neighboring countries with the premium Kenya coffee tags. This undermines the image of Kenya coffee in the global markets as neat Kenya coffee and not adulterated Kenya coffee. This is the only way

to protect and sustain the premium bonus offered to Kenya coffee at the global market. The Kenya government should act this way, viewing blending as an economic offence against Kenya coffee growers and Kenya as a country, however, the market is likely to argue that blending is a necessary evil in the coffee trade, because essentially the roasters over time establish a blend that suits their clientele and are careful not to use very expensive coffees, in designing their blends. Kenya coffee, has suffered in consistency of supply and therefore has been substituted by other cheaper but equally fine coffees. This calls for the need to establish long lasting relationships between producers and roasters, on a commercially sustainable and mutually rewarding base (IUP, 2008).

2.3 Empirical Review

Gitau (2009) notes that the levels of technical information and skills among many small holders coffee farmers is low. This impedes on their efforts in improving coffee quality and production efficiency that would enhance their earnings. Further, the farmers' knowledge about the standards and quality required in fetching best products prices is poor. The farmer therefore cannot formulate strategies that would enhance quality and quantity of coffee produced. Production cost of coffee has tremendously increased over the past ten years. High costs of farm inputs such as fertilizers, pesticides and fungicides have contributed to increased production cost and thus heavily reduce return on coffee sales. Labor, a major cost element of coffee production mostly during harvesting, has contributed to high production costs. With most young rural folks migrating to urban areas, available casual labor is becoming lower forcing the labor costs rates to increase. Further, the high costs of living have contributed to high labor costs which must be covered by the farmers in order to break even and make profit on coffee sold.

Early in 1980s, the World Bank funded the coffee sector through SCIP 1(Small holders' coffee improvement project). These funding were through Cooperative Bank of Kenya and guaranteed by the government. The purpose of this financing was for implementation of improved coffee payment, cherry advance, farm inputs loans and coffee factory development loans. Later in the 1990s the European Union came in to finance the coffee sector through the Stabex funds. A total of 85million Euros were given to the coffee sector as compensation for loss of exports arising out of global prices decline. These funds were allocated to the coffee sector as SCIP2 through Cooperative Bank of Kenya and once again they were guaranteed by the government. With all

these measures put in place for the last 30 yrs production has been declining and in year 2011 the production was 33000 metric tons (ICO report, 2008).

Chege (2012) notes that, due to fall in coffee prices since early 1990s, repayment of SCIP loans become a challenge for both the cooperatives and coffee farmers. In some cases farmers got no payments once the coffee proceeds were deducted to service the coffee debts. As a measure to promote coffee production the government waived a debt of Kshs5.8billion in 2004 and in the financial year 2011/12 it waived over Kshs1billion owed by coffee farmers. Though these measures have been put in place these small scale coffee farmers are yet to realize the benefits of the same.

Kamau (2008) relates that, to enjoy the economies of scale, coffee farmers must ensure increase volumes of coffee berries produced as well as quality (that provides good weights). However, the depression of the industry in the 80s and 90s had demoralized the farmers. Little investment was put in the production of coffee as farmers financed other sources of income to support their livelihoods. This has led to low production and sales volumes that cannot cover the inherent costs of production effectively. The current rise in world market price for coffee have thus not enabled the farmers to enjoy profits since their coffee volumes still remain low.

Mwangome (2009) notes that the coffee is sold through auction at the Nairobi Coffee Auction and the price of the coffee is determined by the quality produced. Though coffee from Central highlands of Kenya especially Nyeri has been known to be of high quality, the current low investments in production have affected the coffee berries produced. To rejuvenate the quality of coffee he advocates for concerted efforts by all stakeholders in enhancing the value chain in coffee production.

Lasse (2006) eludes that Cooperative societies are farmer associations formed to manage the post harvest needs of coffee as well as manage the farmers' production needs. Most of small holder coffee produced is processed and marketed through cooperative societies. The societies receive coffee income on behalf of the farmers and charge for administrative costs. Under new industry rules established by the Coffee Board of Kenya, co-operatives can retain only 20 percent of net sales and must pass the remainder on to farmers. This has not been the case and the societies are known to deduct over 60% of farmers coffee earnings, leaving them with little to cover their costs and hence reduce the profits from coffee.

The societies have been marred by corruption, nepotism, political influence embezzlement, leadership wrangles and looting of coffee revenues. Actually, most of them have been operating under huge debts which are recovered from farmer's earnings. This has affected the incomes of farmers greatly and has been known to be a major cause for abandonment of coffee farming by most small holder's farmers. Growers have however become increasingly aggressive in getting rid of corrupt co-operative officials. The societies in the late 1990s splinted to small fragments which led to increased costs due to reduced economies of scale (Mbataru ,2009)..

Godfrey (2008) opines that being the managers of coffee farmer's berries, the societies are tasked with the role of ensuring that farmers receive the highest possible returns from their coffee. They thus have to establish supply networks that avail farm inputs at the cheapest prices, organize credit supply to farmers for these supplies as well as repayment schedules upon receipt of coffee sales. However, the capacity level and skills of managers, management committees and staff especially of primary societies is generally low. Since most are chosen from among the local members where academic qualifications are not highly considered, the societies, which handle millions of shillings for farmers are poorly managed. Actually there are no strategic plans that would enhance performance, responsibility and profitability. Poor financial management skills have resulted into poor cash flow planning, in- adequate allocation of funds, in ability to settle creditors in due time and erratic payments to farmers. Rarely are financial audits conducted in these societies, creating loopholes for embezzlement of funds. These funds are part of the farmer's earnings but which does not serve their interest. Relevant information on market trends, standards technology and prices are hardly imparted to farmers by the societies. Thus the capacity of value addition is never improved and farmers cannot thus increase their earnings from coffee sales.

Leopold (2008) explains that the production and marketing of coffee has for long been under the government control. The ministry of agriculture controlled coffee production systems, the coffee board of Kenya as sole marketing agent and the KPCU as the sole milling institution. Thus the government stake has been high in the industry. Extension services conducted by the ministry of Agriculture are aimed at improving production method that ensure optimal production knowledge, skills and best practices are imparted to farmers by the government agricultural extension officers. Success of the extension programs would result in higher quality and quantity

of coffee produced which would translate to increase profitability to individual farmers and industry prayers as well.

Kegode (2005) relates that upon liberalization, CBK was stripped the role of marketing and other marketing agents like KPCU, Thika Coffee Mills and Socifinaf were licensed. But all these measures have not led to increase in coffee production but have led to more chaos in the sector. Kenyan coffee prices have been experiencing some recovery. In the year 2011, prices went as high as U.S. $300 (CBK 2011 report) but the issues of concern is over low rates of production and shortages of high quality coffee associated with lack of credit facilities and farm inputs as well as inadequate extension services following liberalization. This has been made worse by the weakening of KPCU and the eventual collapse in the year 2010, collapse of the District Cooperative Unions or Secondary Cooperatives. Initially when this industry was very vibrant, primary cooperative societies were organized into Unions. From these Unions primary cooperative societies could get subsidized inputs, low credit to smallholders at low interest rates and the same could be deducted at income source.

Coffee payments were also made to farmers in installments which averaged four in a year and they catered for school fees as well as other financial requirement for farmers. With collapse of these institutions the coffee farmers were left with huge debts as well as receiving one payment in a year which could not meet their needs. Some of the farmers resulted to getting loans from commercial banks as well as micro-finance institutions (Sacco's) at very high interest rates. Policy pronouncements by the government have also been sighted as being contradictory. The sector falls under two Ministries- Agriculture and Cooperatives. This poor coordination between the Ministries as one is expected to bring in policy issues like implementation of the Coffee Act (2001) (Ministry of Agriculture) while the other Ministry of Cooperatives is in charge of Cooperatives (expected to make sure societies implement the Cooperative societies Act as well as the other Acts) where the bulk of the coffee farmers are. Coffee cartels and brokers have also been sighted as factor affecting coffee production. Most coffee roaster and buyers of Kenya coffee have expressed concern about the deteriorating quality and reliability of supply of Kenyan coffee and the brand is being replaced by other brands from other parts of the world (Kegode, 2005).

Funding introduced by the government like Coffee Development Fund are yet to bring any positive changes in coffee production as well as writing off loans owed by coffee farmers and societies in cooperative bank as well as the Sacco's and District Unions. Large estates continue to come up in areas where initially we had coffee bushes.

2.4 Summary and Research Gaps

The studies reviewed gave an insight into the history of the coffee sector and the various factors affecting the sector. It showed that the sector have been doing very well in the early years after independence but from the 1980s the production of coffee has been going down even as prices and the world demand of coffee has been going up. Various factors have been highlighted as leading to this such as production in terms of quality, methods, and costs, erratic coffee prices globally, split of giant cooperatives societies as well as weather conditions. The government due to pressures from the international community liberalized the sector in the 1990s but no improvement has been witnessed even after liberalization. Poor marketing as well as lack of marketing intelligence by the societies have also been noted.

The review on effects of lack of credit facilities and farm inputs were not conclusive as we have seen instances when the government as well as donors is coming in to finance the sector. Lack of such facilities as well as coffee prices were not properly enumerated for Nyeri County so as to give a clear picture of what ails the sector in the region. The government policies advocated didn't not only affect Kenya but all over the world but we have seen instances where production in some countries have gone up .The social economic factors need to be indentified and established due to diversity of resources and social culture..So as to give reliable intervention measure, the real reasons that ail the sector need to be established.

2.5 Conceptual Framework

This is the conceptual framework that presents the relationship between the study variables.

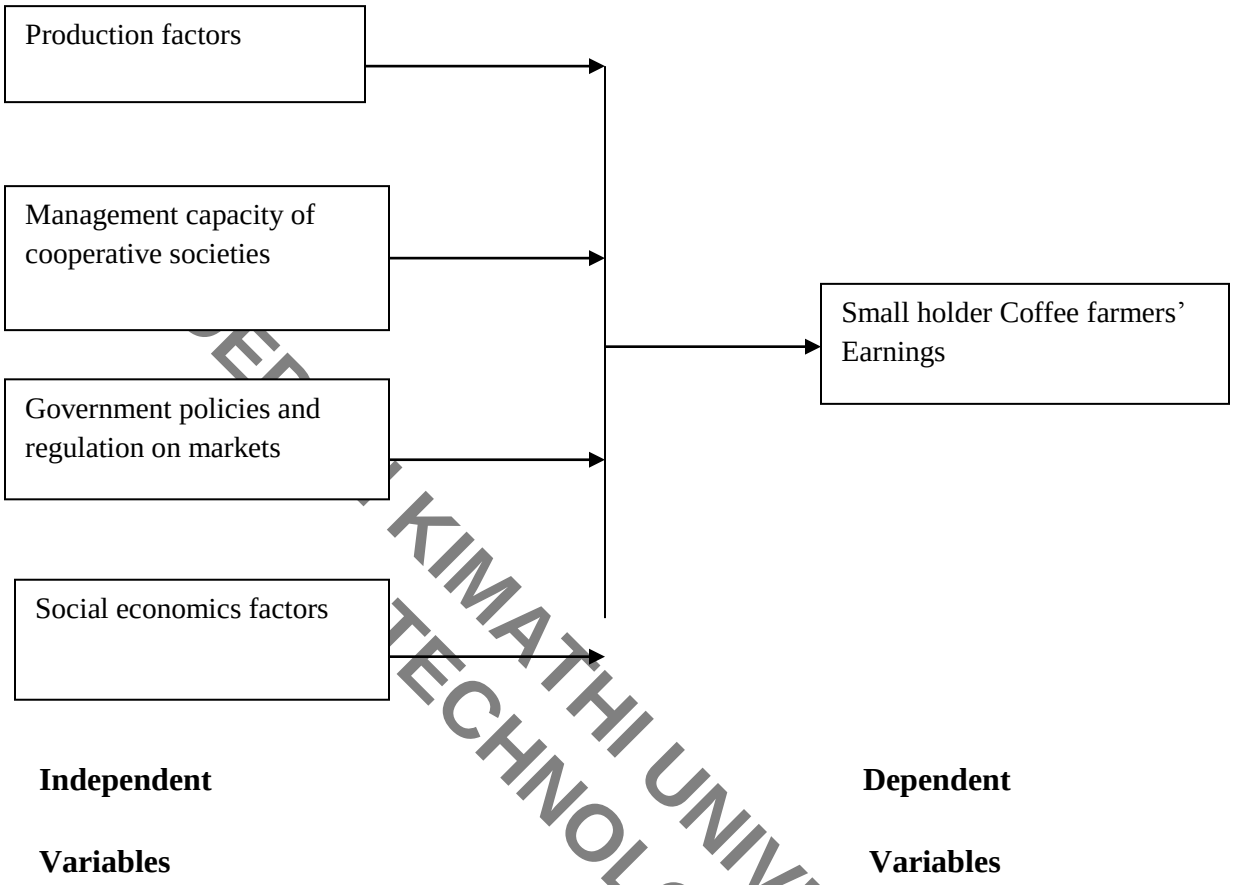

Figure 2.5 Conceptual Framework

The earnings of coffee farmers are influenced by the volume of coffee produced every season. The higher the volume, the higher is the revenue at any given price, (Bruce, 2010). Production cost further determine the level of earnings, when related to farm gate prices, it ascertain the earnings level of coffee sales. The quality of coffee also determines the price paid for coffee produced, which can be enhanced through value addition at farm level during production by use of agriculture best practices.

The cooperative societies are the link between the farmer and other coffee stakeholders. They link the farmers with coffee dealers and marketers. They also enable farmer's access to farm inputs requisite for good coffee production. Their management capacity determines farmers' capacity in accessing economies in production and economies of scale through bulk sales of

coffee to the market. They manage the coffee factories at local levels. The capacity of managers, management committee, and staff on management is crucial for efficient and effective performance. Knowledge levels on production financial and marketing management with determine their performance and ability to ensure profitability in the industry.

Government policies and regulations on coffee industry influence the sustainability and profitability growth. The programs on improving farmers knowledge and skills through extension services influence quality and quantity of coffee produced, (Gitau, Kimenju and Kibaara, 2009). Further, mitigation measures for the variations in productions and market that cushion the farmers from heavy losses, part of the government's social responsibility to the farmers. Subsidies and established minimum returns would greatly enhance sustainable earnings to farmers. Profits are a surplus on cost of production deduced from sales, (Bruce, 2010). Demand and supply on cost of production factors the market (sales) price of coffee which further determines profitability level at farm level. The periodic payment of coffee earnings must be supplemented by the farmers from other sources to cater for the regular needs of productions. The cost of the credit in Kenya is high and this reduces the returns from coffee sales. Further, the land acre age for coffee production has continually reduced as families expand; reducing the sales volumes which further reduces profitability.

Price of the farmers' coffee is far much below the world market price. The farmer hardly knows how the coffee price dwindles to current farm gate prices. The farmers as a result of ignorance have come to perceive the societies as swindlers. This actually reduces the farmers' confidence in the market players and has always agitated for government intervention on the issue.

2.6 Operation Framework

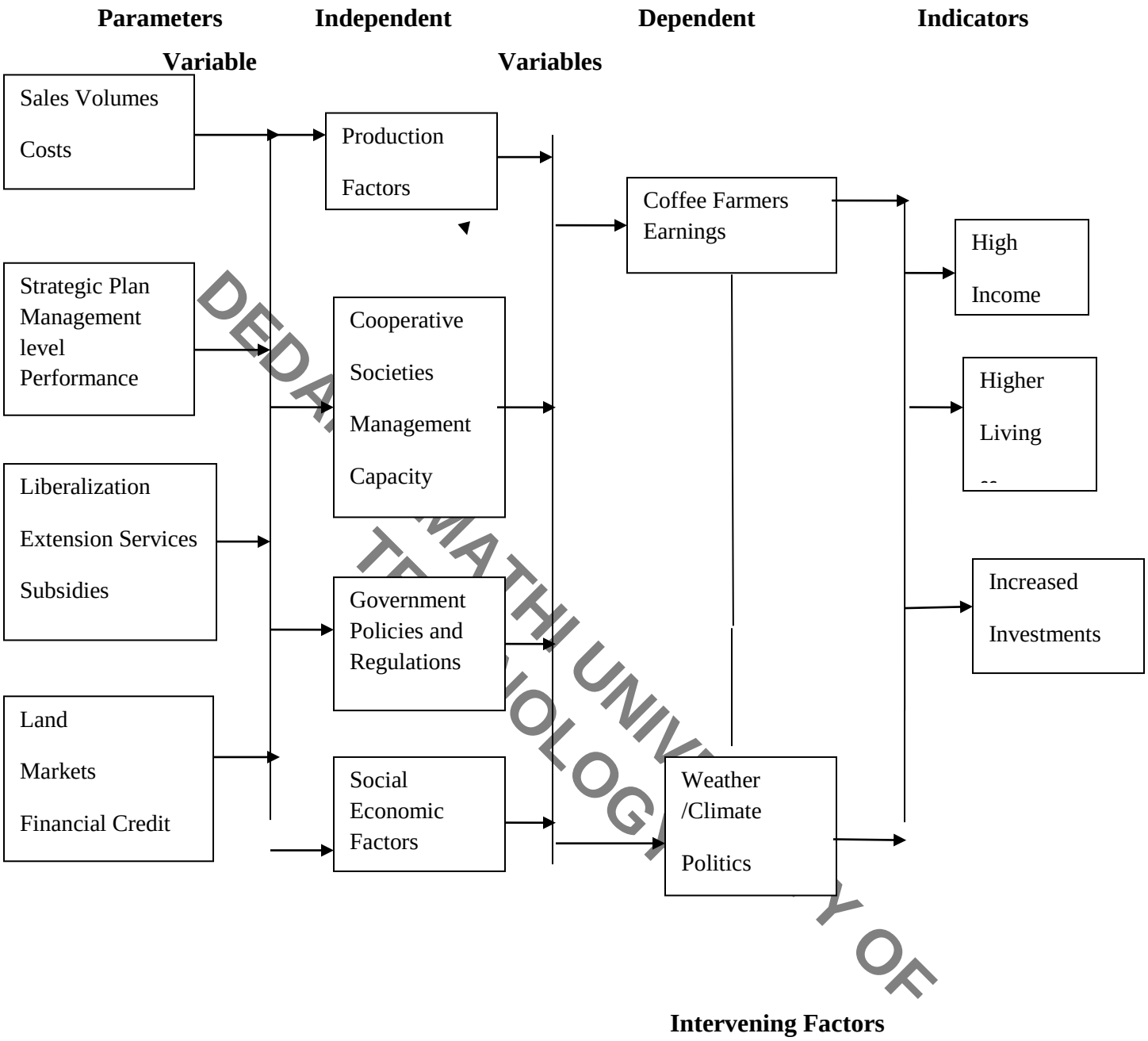

Figure 2.6 Operational Framework

Where the small holder coffee farmers earnings is sufficient, there is seen an increase in family income and higher standards of living. The farmers would be able to finance their social and economic family needs, community initiatives and contribute to the national income of the nation. Further, the farmers would be able to invest in their children's education and income

generating activities. Improving the profitability of the coffee sector has a major relevance for all stakeholders involved. It will contribute substantially to poverty reduction among farmers (Plaeger, 2010) and generate a considerable spillover effect into the overall economic performance of the country. The study sought to establish the indicators of the incomes to small holder farmers in the current situation and ascertain whether the factors affecting income levels have contributed to the situation.

On the other hand, in low earnings case for the small holder farmers, the case for poverty is high. Low earnings could be as a result of production methods and costs, effectiveness and efficiency of the cooperative societies, unfavorable government policies and regulations as well as social economic factors afflicting the small holder farmers. The study measured the significance of these factors in influencing the small holder coffee farmers' current situation, by correlating the factors and also by regression.

There are however other factors limiting the earnings of small scale coffee farmers, though beyond reasonable control. The change in weather patterns influence production of coffee. Where rainfall is inadequate, the volumes of coffee are low and vice versa. Excessive rain or dry spells may also affect coffee production and earnings to the small holder farmers. Political influence on coffee farming may affect coffee earnings. Where politicians influence the management of cooperative societies, management and leadership problems develop. This contributes to embezzlement of resources, siphoning of farmers' income to finance politicians' interests and also nepotism. Wrangles ensue de-motivating the farmers, leading to low production and earnings.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology used in this study. The research design, location of the study target population, sampling procedure, and sample procedure were identified. Data collection instruments, methods and procedures were also identified, as well as instruments validity, analysis and presentation of data.

3.2 Research Design

Silverman (2011) defines the research design as the master plan that will be used in the study in order to answer the research questions. The research was qualitative in nature and employed descriptive survey in data collection. Kombrbail (2005) defines descriptive research as characteristic process which focus on answering questions such as who, what, why, when, where, and how of the project under investigation and usually describe the present situation or users of a group. The study design involves discussing the characteristics of a particular individual or group of variables (Kothari, 2001). Ndirangu (2000) argues that surveys are very good vehicles for collecting original data for the purpose of studying attitudes and orientation of a very large population. Majundar (2005) argues that descriptive survey design lays a greater emphasis on sample selection because the major concern is to obtain a broad picture of the social problem prevailing in the defined universe and make recommendations to bring about a desired change.

3.3 Location of the Study

The location of the study was the 4 coffee growing regions of Nyeri County which are Mukurue-ini, Tetu, Mathira and Othaya where we have 21 societies and around 86000 coffee farmers compromising of both active and non active farmers. Nyeri County is a high coffee producing zone in Kenya with many small holder farmers organized through cooperative societies. Thus research survey was done in the 21 societies.

3.4 Target Population

The target population was individual farmers in the 21 societies. According to Mugenda (2003) target population for survey comprises of individuals and objects that the researcher can reasonably his findings to. Coffee farmers deliver their coffee to factories which in most cases are affiliated to societies. A society is made up of a number of factories but in some cases like Tetu we have societies made up of one factory. Individual farmer's record is maintained at societies/ factories. A random selection of farmer's par society was done.

Table 3.4 Target Population

The table below shows the analysis of the number of coffee farmers in the 4 regions in Nyeri County where coffee is grown.

Constituency	Population
Mukurwe-ini	25,000
Othaya	15,000
Tetu	18,000
Mathira	28,000
TOTAL	**86,000**

Source: Provincial Cooperative Officer- Central Province

3.5 Sampling Procedure

The target population was 86,000 coffee farmers and since it was large and to ensure that the sample is representative of the population the study used stratified sampling which ensured the sample selected is a true representation of the coffee farmers. Arriving at the sample size, the researcher used the multi- stage sampling procedure whereby the total population of the small holder coffee farmers was divided into sub groups. The sub groups were based on the geographical areas of four regions namely Mukurue-ini, Tetu, Othaya and Mathira. The sample frame composed of member's register of cooperative societies in the four regions. From each, a

sample was drawn randomly using computer packages to select the sampled respondents. They were further contacted through house visits and consent sought for participation in the data collection exercise. Multistage sampling is a practical system widely used to reduce the traveling time for interviewers and subsequent costs. Groups and sub groups are selected on a geographical location basis, rather than some social characteristics (Terry, 2010). The sample size of 103 respondents was ascertained using the Fisher (2003) formula;

$$n = \frac{Z^2 p q}{d^2}$$

Where: n = the desired sample size (if the target population is greater than 10,000)

z = the standard normal deviation at the required confidence level which was 95%

p = the population estimated to have characteristics being measured.

q = 1- p

d = the level of statistic significance set which was 0.05%

Table 3.5 Sample Size

Constituency	**Population**	**Sample size**
Mukurwe-ini	25,000	29
Othaya	15,000	18
Tetu	18,000	20
Mathira	28,000	36
Total	**86,000**	**103**

3.6 Data collection, instruments and procedures

The study used both primary and secondary data collection tools. A letter of introduction was obtained from the School of Business Dedan Kimathi University of Technology and taken to the National Council of Science and Technology for research permit. The letter was addressed to the society's managers detailing the objective of the study and the target population. A questionnaire was attached. One week was given for the respondents to fill the questionnaires and thereafter the same collected for analysis. The researcher engaged research assistants to collect primary data from the farmers. The questionnaires were developed in a manner to capture all the key components of the research and be clearly aligned with the objective of the study. The pilot study in Muranga was able to verify their reliability in gathering requisite information for the study. The researcher gave out 10 questionnaires with 15 questions thematically based on the research questions to the respondents. Secondary data comprised comprehensive records of various sources including books, journals, Newspapers and Magazines, Internet, reports written by Ministry of Cooperatives and Agriculture as well as donors and any other relevant literature on coffee.

3.7 Pilot Study

A pilot study was also carried out in Muranga County in order to test the reliability and validity of the research instruments. According to Sekaran and Bougie (2010), reliability is a measure of the degree to which are search instrument yields consistent results or data after repeated trials. An instrument is reliable when it can measure a variable accurately and consistently, and obtain the same results under the same conditions over time. Validity on the other hand refers to the degree to which results obtained from the analysis of the data actually represent the phenomenon under study, (Franklin, 2012). It is the degree to which a research tool measures what it purports to be measuring. This is to help the researcher in identifying items in the research instrument that may not elicit the relevant information. Modification of such items will be made to ensure the research tools elicit the anticipated data.

The researcher gave out 10 questionnaires with 15 questions thematically based on the research questions to the respondents Results showed that the questions were able to capture the issues on factors affecting the earnings of small holder coffee farmers. The researcher hoped that the study

would reveal the supply chain in the smallholder coffee farms, the production methods applied and the market trends of coffee.

3.8 Data Analysis

This involved an analysis of the primary and the secondary information. Questionnaires received were checked for accuracy. This involved checking whether all questions have been answered and responses were complete and clear. Coding system was used to find a quick and easy way to organize the data so that it can be analyzed. According to Robson (1999) code are used to identify particular responses. Once the data was coded it was entered into the computer for analysis. Excel was used to analysis the data. Descriptive statistics such as percentages and means were used to convey the essential characteristics of the data so that it can be interpreted. Regression analysis was employed to determine the significance of the study variables in influencing smallholder coffee farmers and correlation used to establish the relationship between the variables. Data was presented using tables and charts. Once the findings were established, conclusions and recommendations were made. The regression model adopted is as under:

$$Y=\propto+\beta_1 x_1+\beta x_2+\beta x_3+\beta_4 x_{4+}\ e$$

Where:

Y= Coffee farmers' earnings

$\propto$= Autonomous factors

X_1= Production factors

X_2= Management capacity of farmers

X_3= Government policies

X_4= Socio-economic factors

e= Error term

The analysis was carried out in SPSS at 95% confidence level.

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter entails the analysis of data collected during the study on factors affecting the earnings of smallholders coffee farmers in Nyeri County.

4.2 Analysis of Data Collected

The data is analyzed in form of tables, graphs, charts and in regression analysis.

4.2.1 Response Rate

The response rate was highly commendable with 100 out of the 103 questionnaires being returned fully answered, representing 97% response rate. This showed a commendable response rate that could provide reliable information for the study.

Table 4.1 Response Rate

Response	Frequency	Percentage (%)
Returned Questionnaires	100	97
Unreturned Questionnaires	3	3
TOTAL	**103**	**100**

Section A: Respondents' Profile

4.2.2 Gender of Respondents

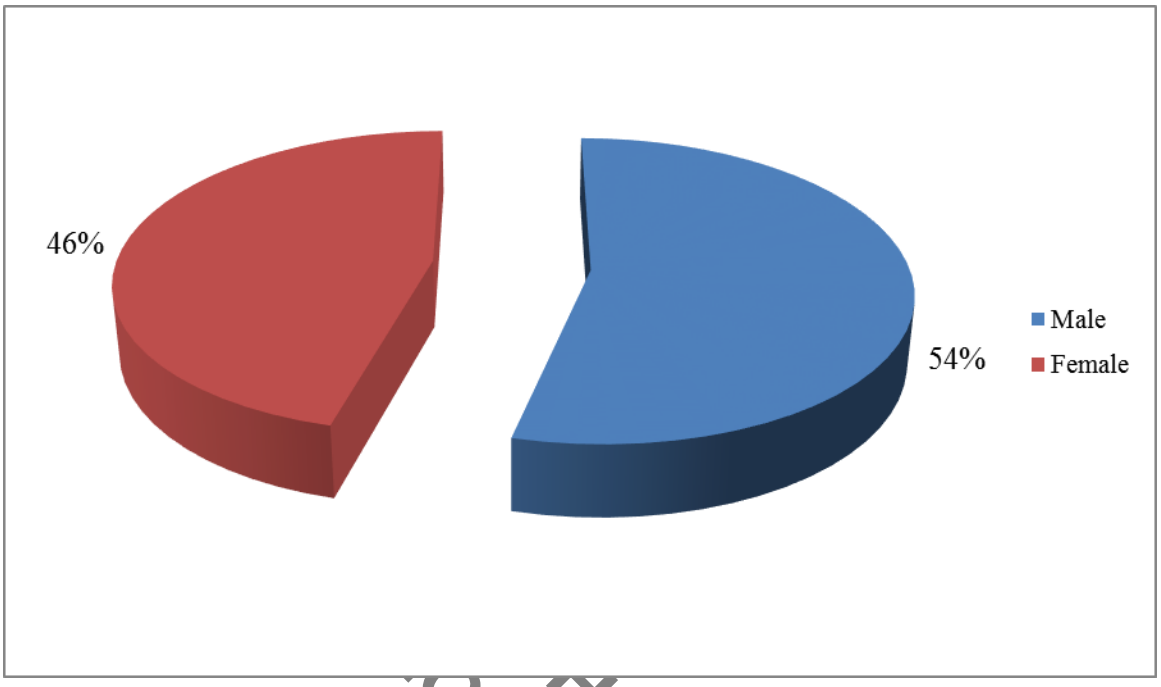

Figure 4.2: Genders of Respondents

Of the respondents, 54% were male while 46% were female. This showed gender balance in the sampling of respondents, an ethnical requirement in research process.

4.2.3 Respondents Age

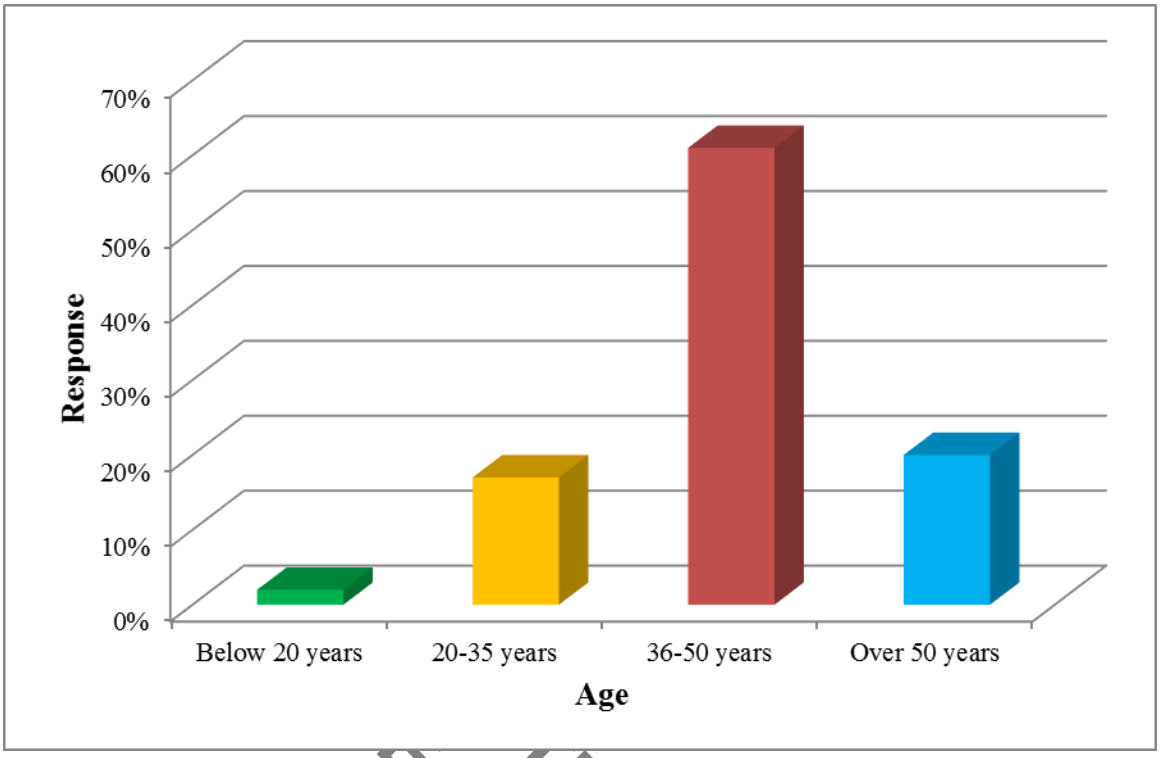

Figure 4.3 Respondents Age

Of the respondents, 61% were aged between 36 and 50 years, 20% over 50 years, 17% 20 to 35years and 2% below 20years. Actually most of the small holder coffee farmers own land were above 35 years of age. The researcher was able to identify the small holder coffee farmers who could positively contribute to the study. They are of mature age and can objectively contribute to the study and provide credible and reliable information.

4.2.4 Respondents Level of Education

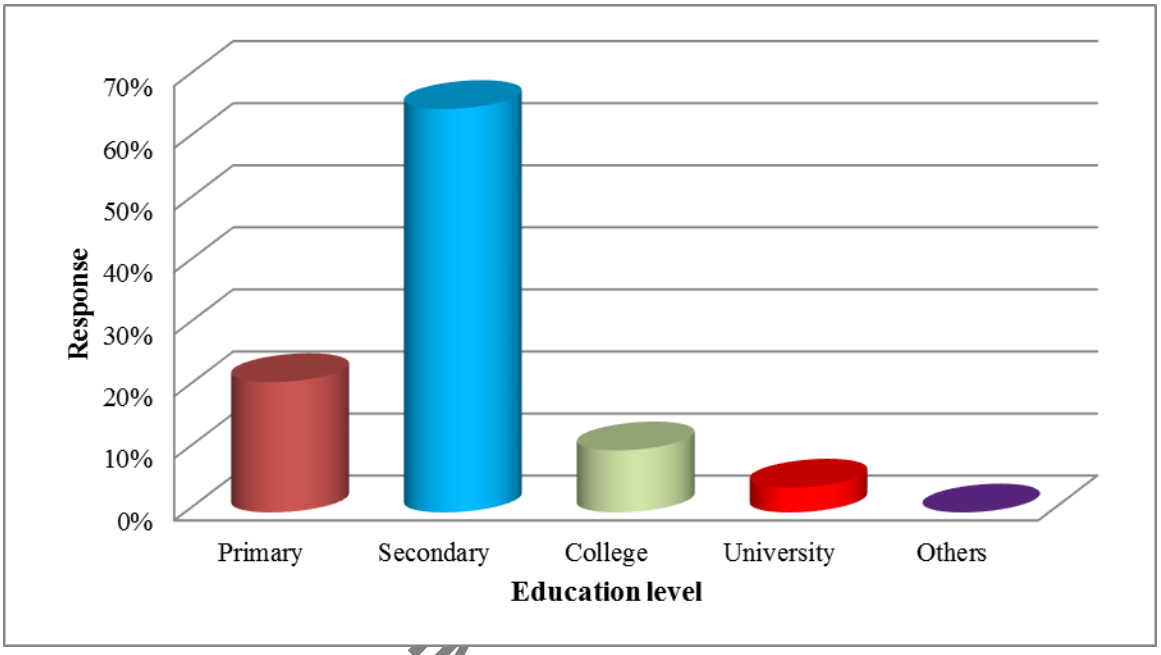

Figure 4.4: Respondents Level of Education

On the level of education, 65% of the respondents had reached secondary level of education, 21% primary, 10% college and 4% university. Thus all respondents had some education and could possible comprehend and contribute to the study.

4.2.5 Experience in growing coffee

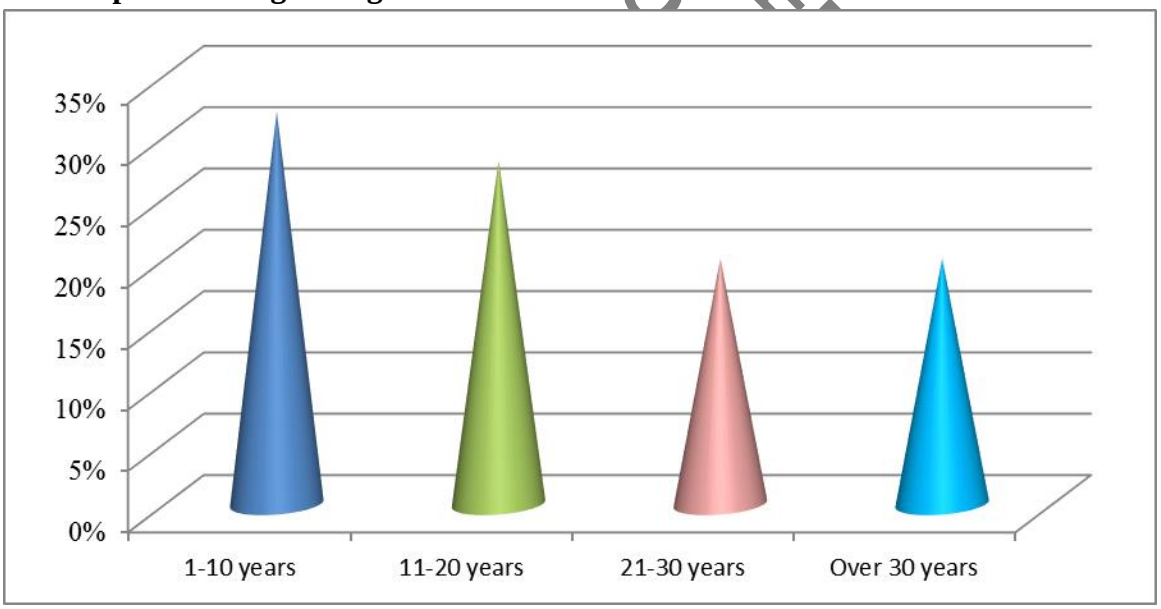

Figure 4.5 Experience in growing coffee

In experience of growing coffee, 32% of the respondents have grown coffee between 1-10 years, 28% 11-20 years, 20% 21-30 years and over 30 years respectively. Thus the respondents had experience in coffee growing and knew very well the issues affecting their production. They thus could provide credible information to the study.

4.2.6 Type of coffee grown by respondents

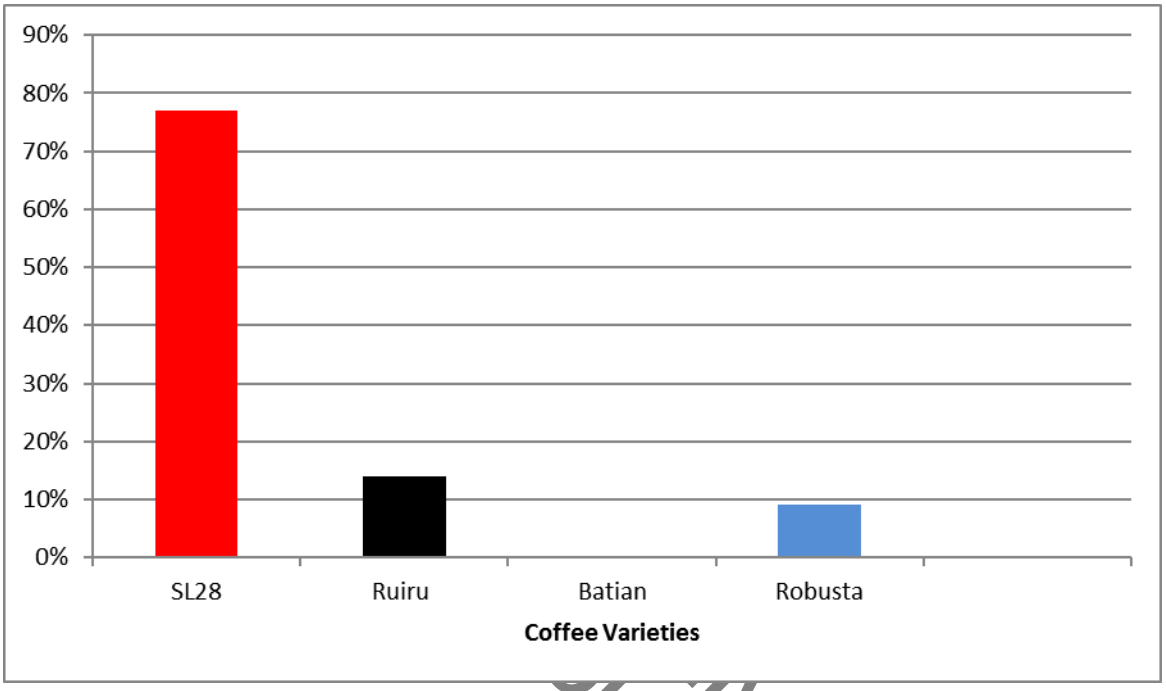

Figure 4.6 Type of coffee grown by respondents

According to 77% of the respondents, they grew the SL28 type of coffee while 14% grew Ruiru 11 and 9% Robusta. The SL28 was introduced in the region by the colonial masters and it does well in the region. Kegode (2005) alludes to the fact that over 70% of the coffee grown in Kenya is Arabica.

4.2.7 Respondents Land size

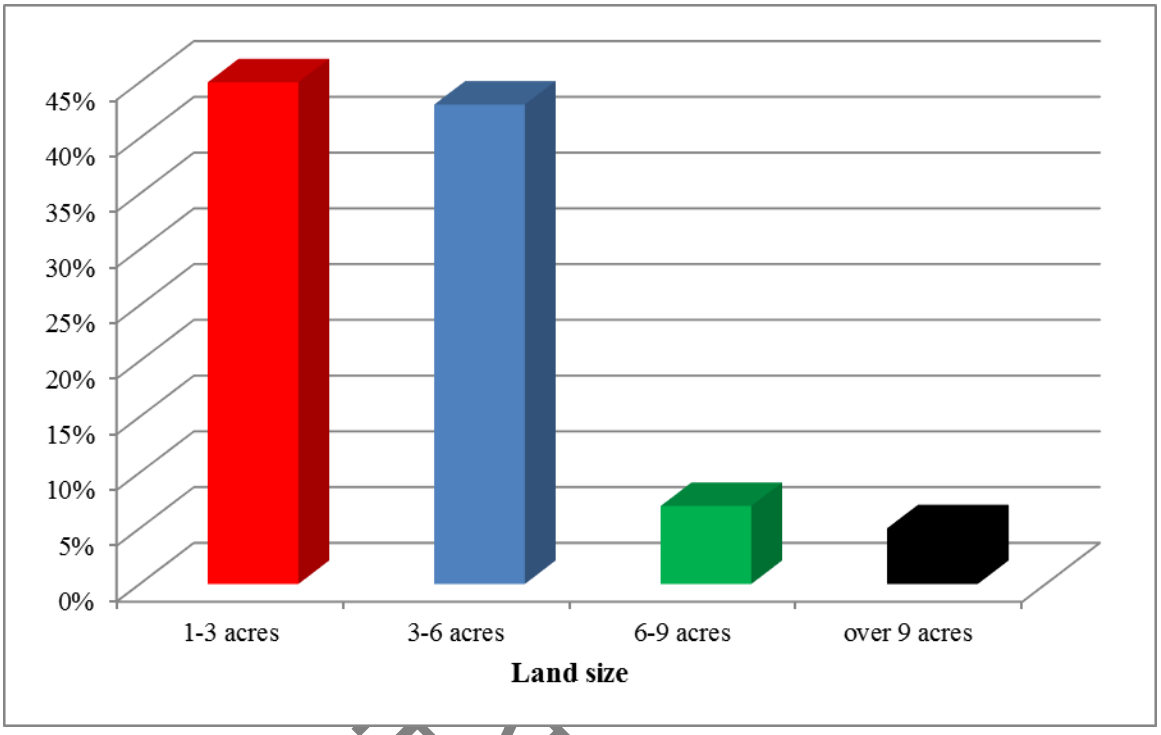

Figure 4.7 Respondents Land size

According to 45% of the respondents, they owned 1-3 acres of land, while 43% 3-6 acres and 12% over 6 acres. Productive land in the region that is fit for coffee is limited and the reason for most farmers owning small parcels

4.2.8 Number of coffee trees planted.

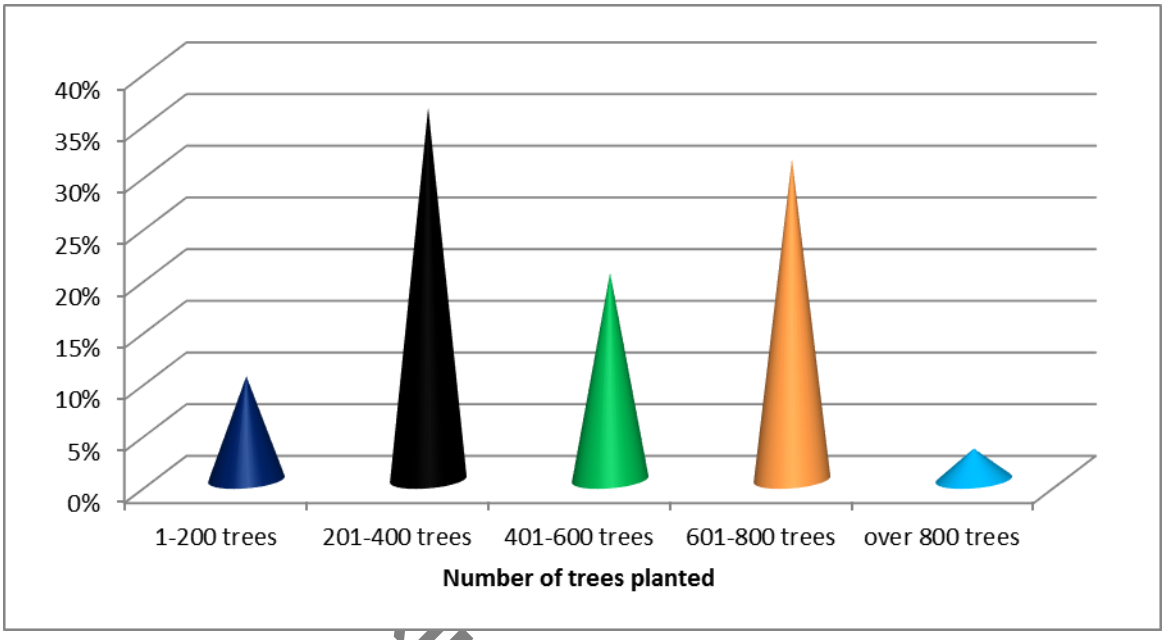

Figure 4.8 Number of coffee trees planted.

According to 36% of the respondents had grown 201-400 coffee trees, while 31% 601-800 trees, 20% 401-600 trees, 10% 1-200 trees and 3% over 800 trees. Due to limited land size, the small holder farmers cannot plant many coffee trees that would enable higher production and income.

4.2.9 Number of kilograms of coffee produced every year.

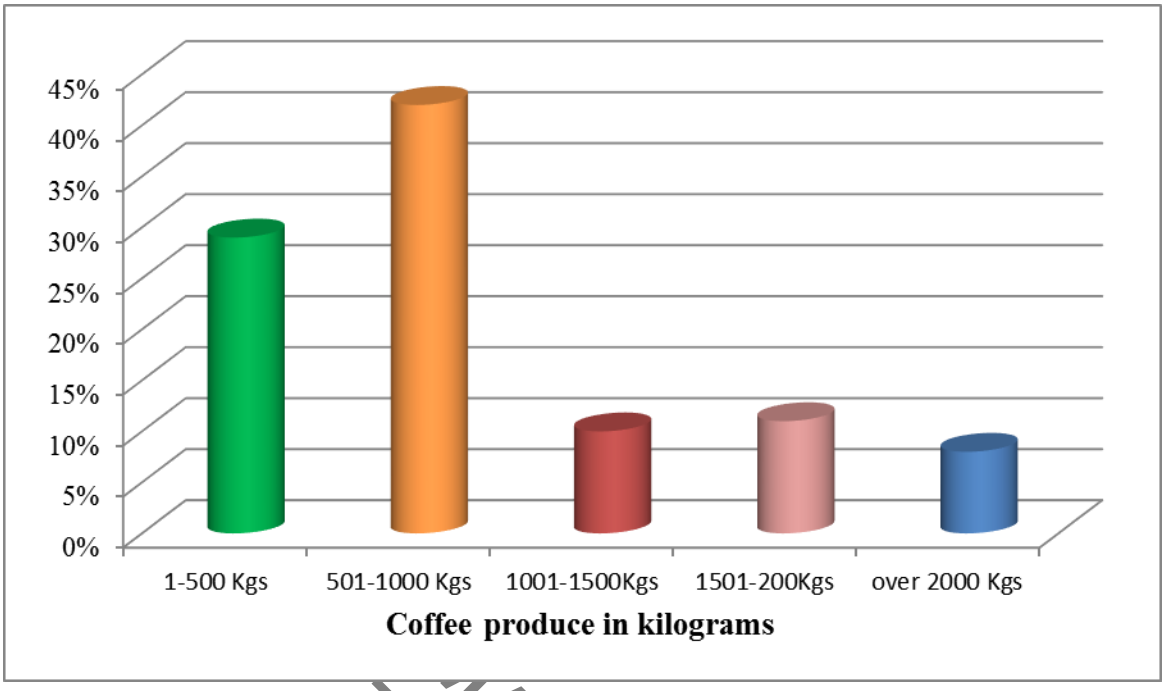

Figure 4.9: Number of kilos of coffee produced every year

Of the respondents, 42% produced 501-1000 Kgs of coffee annually, while 29% produced 1-500 Kgs, 10% 1501-2000 Kgs, and 9% over 2000 Kgs. Due to limited land size, number of trees planted, and the amount of Kilos of coffee produced by the small holder farmers is mostly below 1,500 Kgs.

4.2.10 Best Production since respondent started coffee farming.

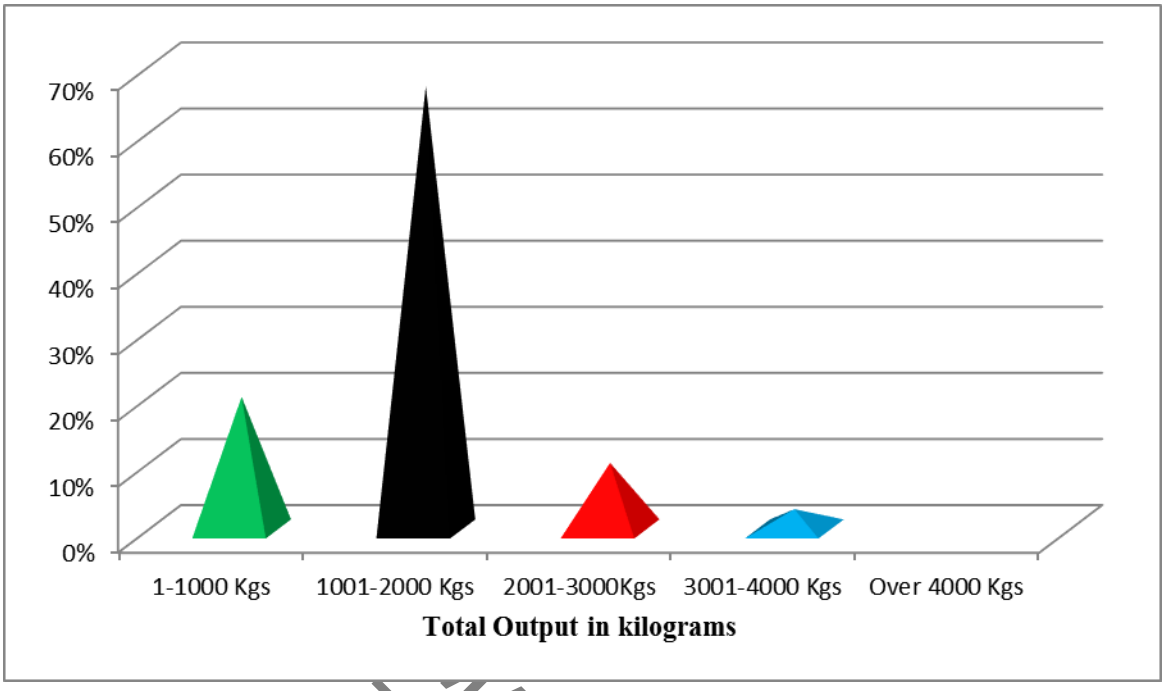

Figure 4.10 Best Production since respondent started coffee farming

Approximately 67% of the respondents in this study, they revealed that in their best year of production, they produced 1001-2000 Kgs of coffee. 20% cited 1-1000Kgs, 10% 2001-3000 and 3% 3001-4000 Kgs. None had ever produced over 4000Kgs of coffee. . Coffee production has not attained the levels of 1980's. Coffee is no longer the number one exchange earner but is now ranked number four, after Tea, Tourism, and Horticulture (Ministry of Agriculture Report 2009, 2010, 2011 and 2012).The low production levels according to the findings concur with this fact. Actually, due to a property boom in areas that grew coffee and price instability, production fell from about 130,000 thousand metric tons in 1987/8 to 40,000 tons in 2011/12.

4.2.11 Rating of coffee earnings for the last five years.

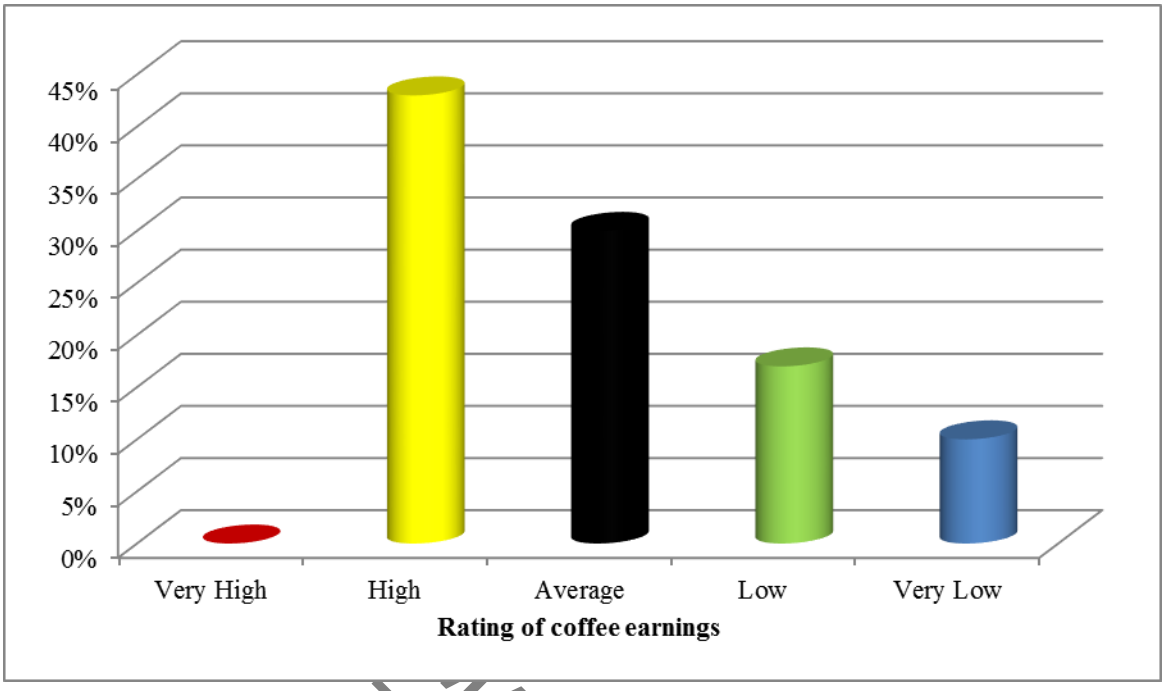

Figure 4.11 Rating of coffee earnings for the last five years

Approximately 43% of the respondents rated coffee earnings for the last five years as high, 30% as average, 17% low and 10% very low. Coffee prices have risen for the last few years due to unfavorable weather in Brazil as well as the second window marketing of coffee. (Chege, 2012) asserted that in the year 2010/11, the price for Kenyan coffee hit an all-time high of $1,022 (Sh94, 535) per 90 kg bag for benchmark grade AA, which meant better incomes for farmers and pushed earnings from Sh16 billion in 2009/10 to Sh26billion in 2010/11. The current favorable international prices have boosted local efforts to reform the sector and increase production.

4.2.12 What respondents think should be done to improve the coffee industry

Full liberalization of the coffee sector was viewed as the most effective way of improving the industry. Reduction in marketing agents would free the deductions that have been made, and thus reduced farmer's income. The restructuring of government extension service programs were believed to enhance the production quantity and quality. The extension officers are able to impart expert knowledge on best production practices which when adopted by the coffee farmers would translate to increased production of quality coffee and higher incomes.

Section B. Production Process and Earnings.

4.2.13 Rating of Coffee Prices

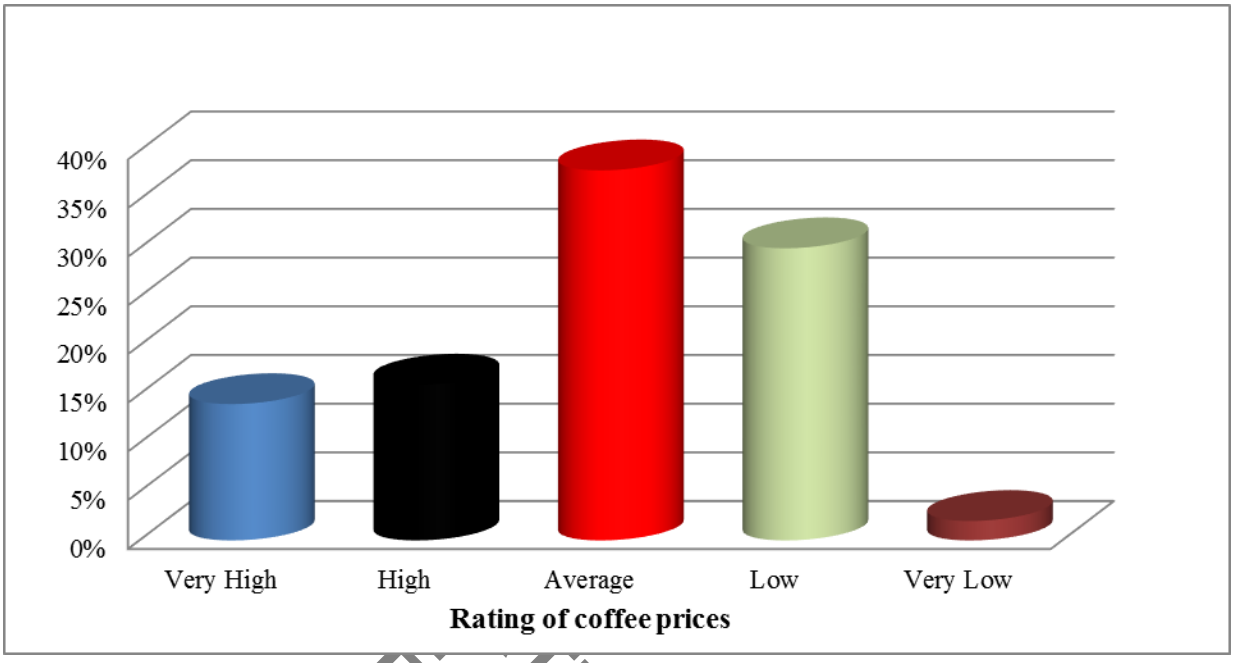

Figure 4.13 Rating of Coffee Prices

According to 38% of the respondents, the rating of the prices of coffee was average, 30% citing it as low, and 2% very low. However, 16% rated it high and 14% very high. Thus the prices of coffee were not very favorable to a majority of the respondents. As was related by Chege (2012) due to fall in coffee prices since early 1990s, repayment of SCIP loans become a challenge for both the cooperatives and coffee farmers. In some cases farmers got no payments once the coffee proceeds were deducted to service the coffee debts. When prices are low, it means low income to farmers regardless of the volume produced. It further lowers earnings of coffee farming when matched with the production costs inherent.

The known market prices are usually very high, but the pay price to the farmers remain comparatively low and a likely reason for that response. Where the farmers are aware of disparity between the world market prices and pay price, they become agitated and some have forced cooperative societies to be split as they seek for better pay prices.

4.2.14 Rating of cost of running factories milling and marketing charges.

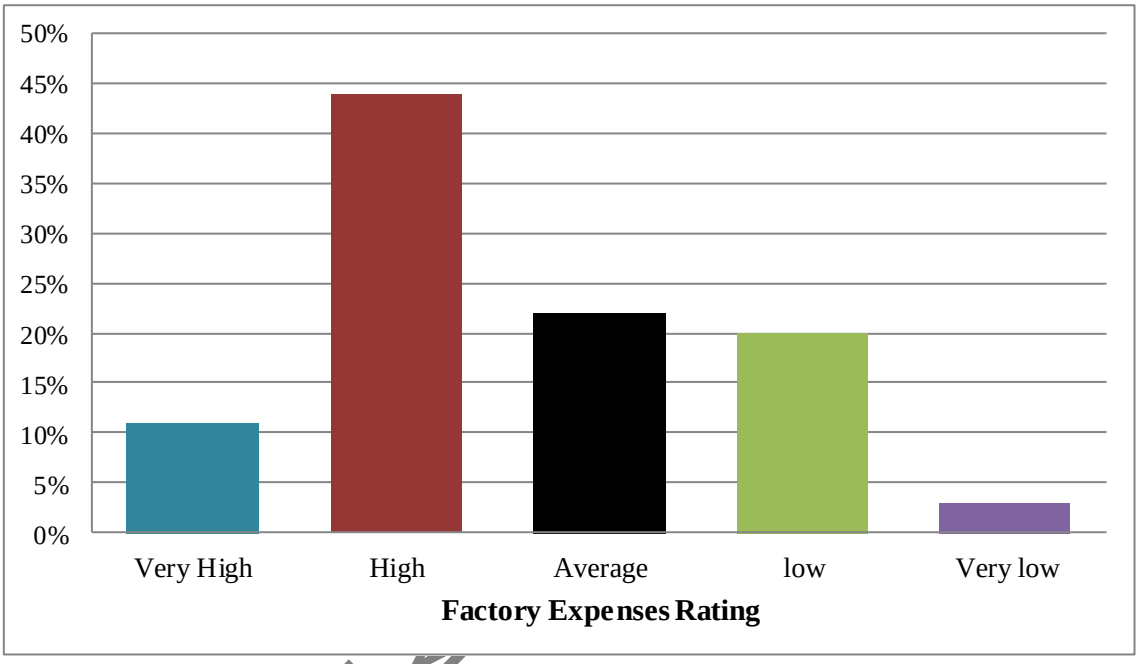

Figure 4.14 Rating of cost of running factories milling and marketing

Regarding factory running, milling and marketing costs, 44% of the respondents rated it as high, 22% average, 20% low, 11% very high and 8% very low. Thus, over 50% of the respondents rated the costs above average. This is notably due to the deductions made from their income by their local coffee cooperatives societies. Godfrey (2008) noted that the above costs are borne by the farmers and when such costs are high, they reduce the net income of the small holder coffee farmers and hence earning. The milling cost is averaged at US $ 0.125, while regional competitors such as Ethiopia and Tanzania incur US$ O.033 and 0.025 respectively.

4.2.15 Whether farmers sprayed their coffee.

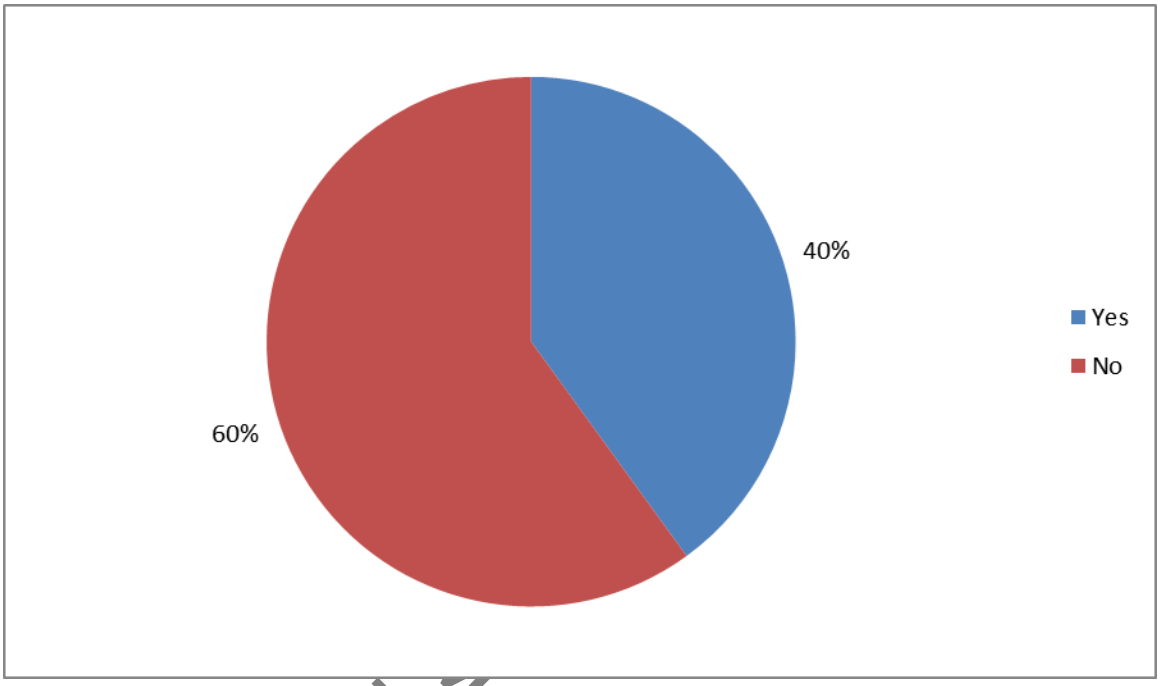

Figure 4.15 whether farmers sprayed their coffee.

Approximately 60% of the respondents do not spray coffee while 40% said they did. Spraying coffee reduces cases of diseases such as coffee berry diseases which affect production. In Brazil, spraying is regularly done due to adverse weather conditions. Thus disease control is more effective, and this enhances quality, quantity and revenues to farmers (Lasse, 2006).Thus the fact that a significant proportion of the respondents did not spray their coffee was the reason for low production and earnings. As regards the frequency of spraying, 20% stated seven to nine times while 80% stated below 7 times. FAO (2008) report noted that the cost of production has been rising against a sharp decline in prices and due to this farmers no longer invest in farm inputs. Thus spraying of the coffee trees was done infrequently, exposing them to diseases that inhibit quality and quantity of production. However, the cost of the pesticides and fungicides has an effect on the earnings of coffee farmers.

4.2.16 Rating of the prices of coffee farm inputs

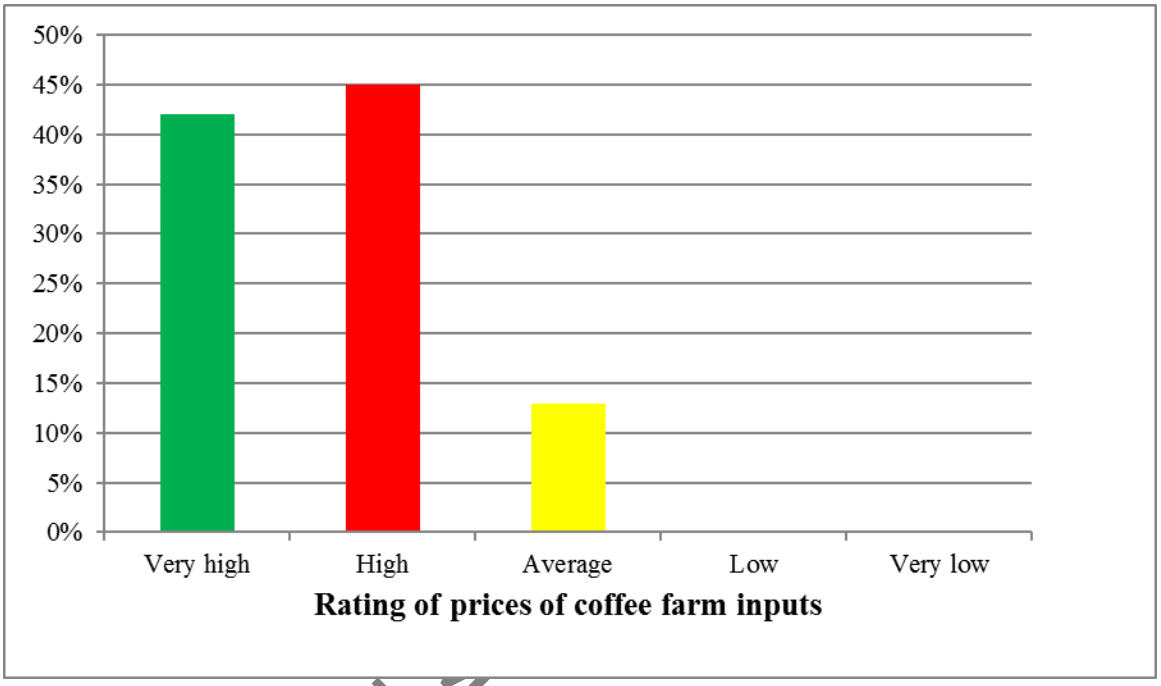

Figure 4.16 Rating of the price of coffee farm inputs

The cost of coffee farm inputs was rated very high by 42% of the respondents, high by 45% and average by 13%. No respondents stated the cost as being low. Farm inputs were high for most East African coffee growing countries. The cost of imported fertilizers has significantly influenced production costs. Currently the global food market trend is advocating for organic production. The cost of organic fertilizers in the market is high, and the farmers hardly rely on manure in optimizing production, (FAO, 2008). Thus, the cost of farm input had a significant effect on the earnings of coffee farming since it reduced net income to the small holder farmers.

4.2.17 Whether respondents were able to pay school fees, construct a house and invest using coffee earnings.

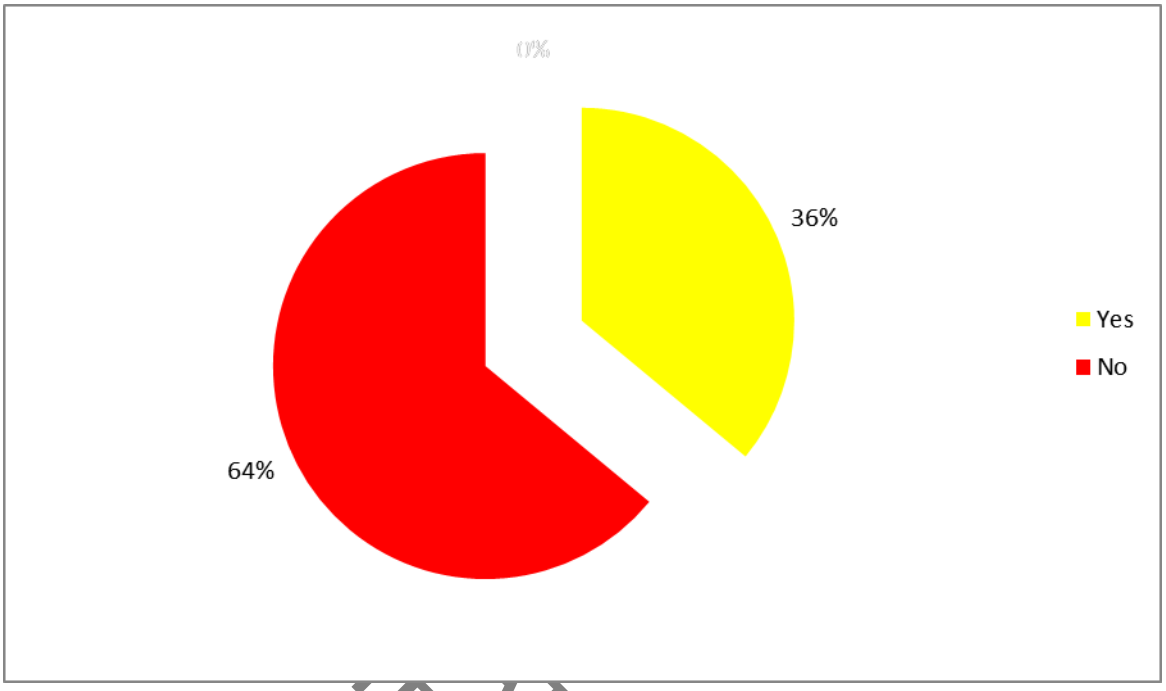

Figure 4.17 Whether respondents were able to pay school fees, construct a house and invest using coffee earnings.

According to the respondents, 64% of them were not able to pay school fees, construct a house and invest using earnings from coffee farming. This meant that the income was not suitable enough to satisfy such needs. However, 36% concurred with the notion, possible because they have other sources of finance to facilitate other needs, and use coffee earnings for the stated purposes. For the respondents who negated the notion, 70% cited that the earnings were not high enough to support those initiatives and 30% felt that the periodic payment on coffee could not allow for such, since they have already accumulated debts before payment. As was noted in the study by Kamau (2008), coffee farmers must ensure increase volumes of coffee berries produced as well as quality (that provides good weights) to enjoy the economies of scale. However, the depression of the industry in the 80s and 90s had demoralized the farmers. Little investment was put in the production of coffee as farmers financed other sources of income to support their livelihoods. This has led to low production and sales volumes that cannot cover the inherent costs of production effectively.

Section C: Cooperative Societies Management

4.2.18 Whether respondents believed their cooperative society was well managed.

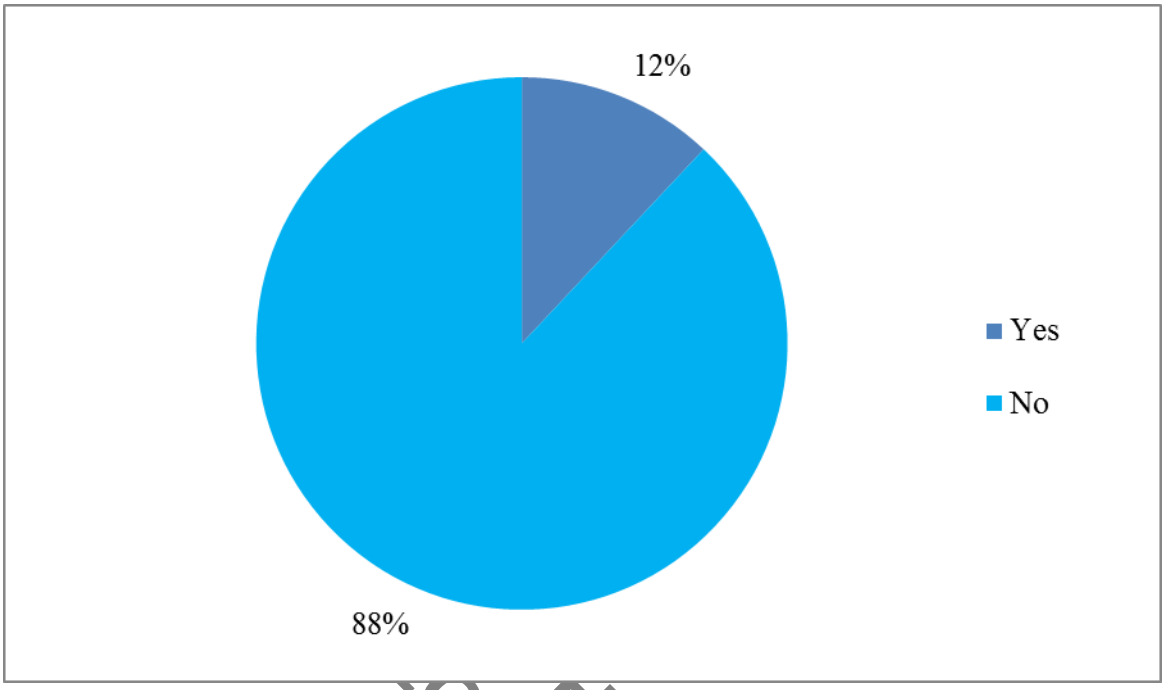

Figure 4.18: Whether respondents believed their cooperative society was well managed

According to 88% of the respondents their cooperative societies were not well managed. Only 12% believed they were well managed. As noted by Mbataru (2009), society's management has overtime been accused of fraud, embezzlement, corruption, nepotism, leadership wrangles and gross mismanagement. The management committees are composed of mostly local elders with little or no management skills and highly corrupt, as related by most respondents. This in effect has an impact on the small holder farmers as they bear the huge cost of inefficiency and ineffectiveness. The management of most societies has also been accused of inflating costs that are deducted on the farmers' earnings.

Cooperative societies are the main marketing channels for the small holder coffee farmers. They also avail farm inputs to farmers on credit and may at times advance monetary credit to needy farmers with some coffee production. The cooperatives were established to assist the farmers in milling and selling their coffee. However, due to inefficiencies and ineffectiveness of the management committees, the societies have not been able to serve the small holder farmers satisfactorily. Most have been riddled by high losses, un-serviced loans and at times unable to

pay farmers for coffee supplies. Further, corruption by the officials has seen the farmers have unnecessary deductions from their pay in the guise of society's development costs. As such, the farmers do not get their rightful income, become discouraged and either confront the officials and abandon the practice altogether. This has had a major impact in the coffee sector.

4.2.19 Whether society offers members education.

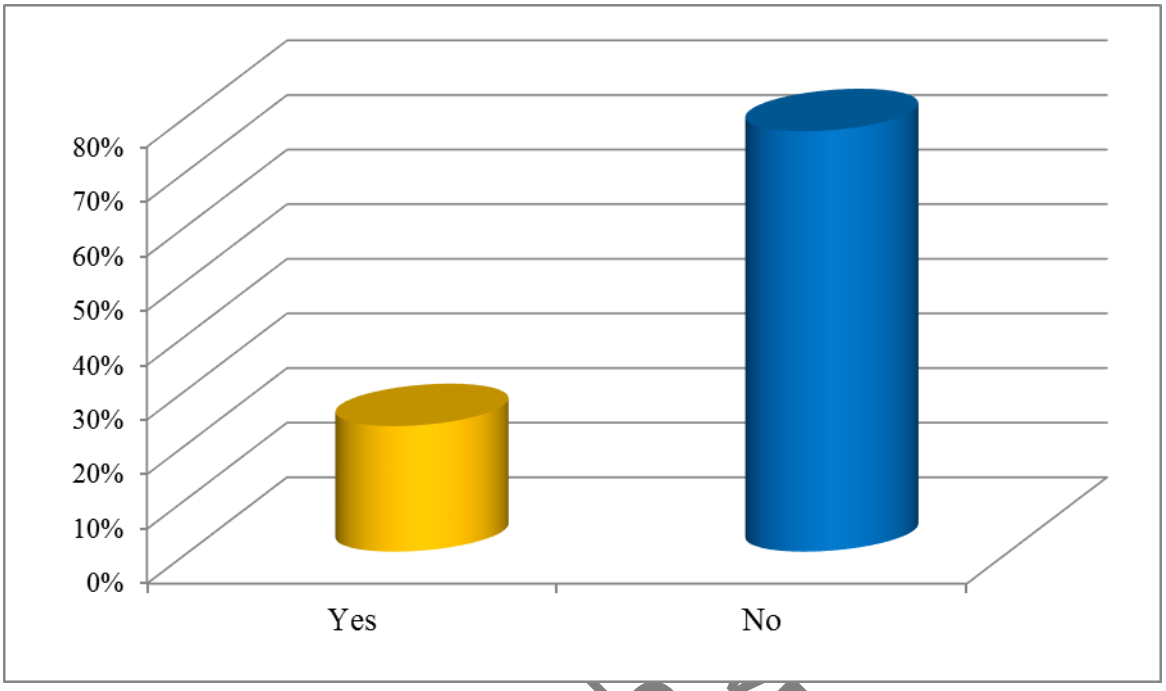

Figure 4.19: Whether society offers members education.

The cooperative societies were noted to hardly offer any education to the farmers by 77% of the respondents. One of the key responsibilities of the society was members' empowerment. However this is rarely done with the management fearing an enlightened membership that would question their actions. Thus, important knowledge on modern development in the sector is not imparted to farmers. The farmers thus continue applying outdated methods and have to rely on stakeholder company information which is geared towards the company making profit from their products, rather than instilling best practices to the farmers. However 23% of the respondents stated that the societies offered member education. Of these, 20% related that it was offered sometimes, 60% rarely and 20% very rarely. Thus, the effectiveness of such education programs remain low and as such the farmers output value, quality and volume is not enhanced an issue that would increase earnings. Godfrey (2008) actually opined that relevant information on

market trends, standards technology and prices are hardly imparted to farmers by the Cooperative societies. Thus the capacity of value addition is never improved and farmers cannot thus increase their earnings from coffee sales.

Section D: Government policies and Regulations

4.2.20 Rating of government assistance to coffee farmers

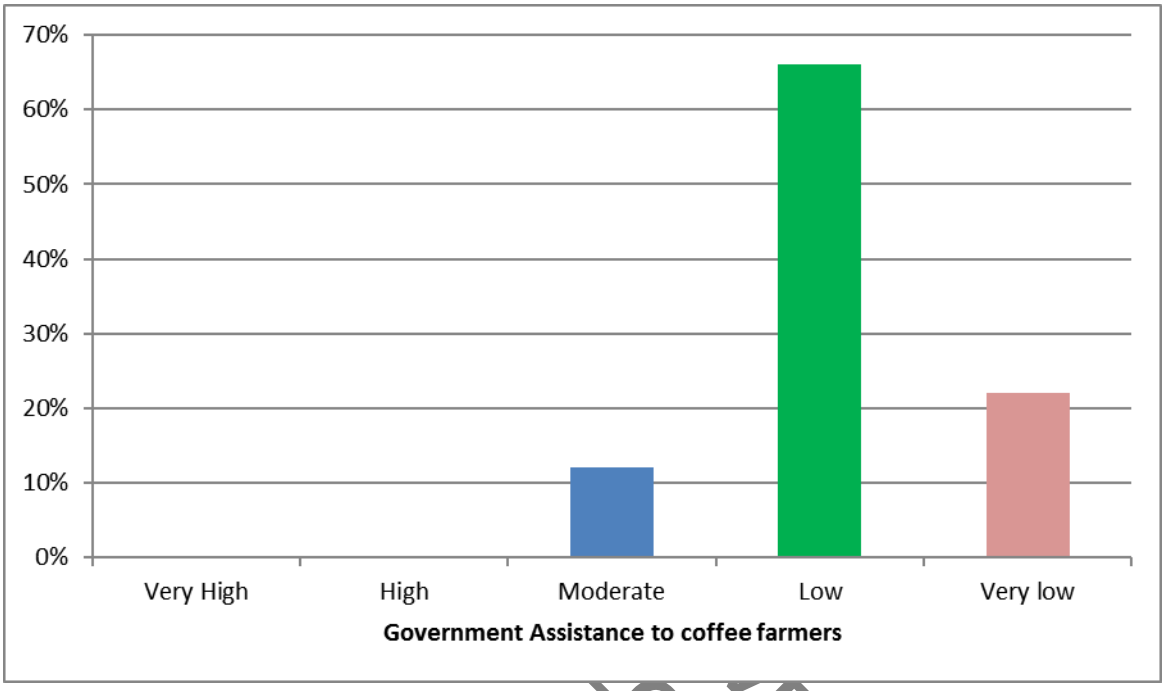

Figure 4.20: Rating of government assistance to coffee farmers

The government assistance to coffee farmers was rated low by 66% of the respondents, very low by 22% and moderate by 12%. Coffee has been a major export earner to Kenya. This showed that the government effort to assist the farmers has been low. Leopold (2008) explained that the production and marketing of coffee has for long been under the government control. The ministry of agriculture controlled coffee production systems, the coffee board of Kenya as sole marketing agent and the KPCU as the sole milling institution. Thus the government stake has been high in the industry

Extension services programs have become almost extinct as well as regulatory framework being rigid and do not allow the farmers to directly market their produce and earn higher profits. The cooperative department has also not been able to regulate the cooperative societies and ensure

their accountability and transparency to members. Thus the government efforts in supporting the coffee sector were low and this influenced the incomes of the small holder farmers.

4.2.21 Whether coffee farmers have benefited from the government through CODF or loan write off.

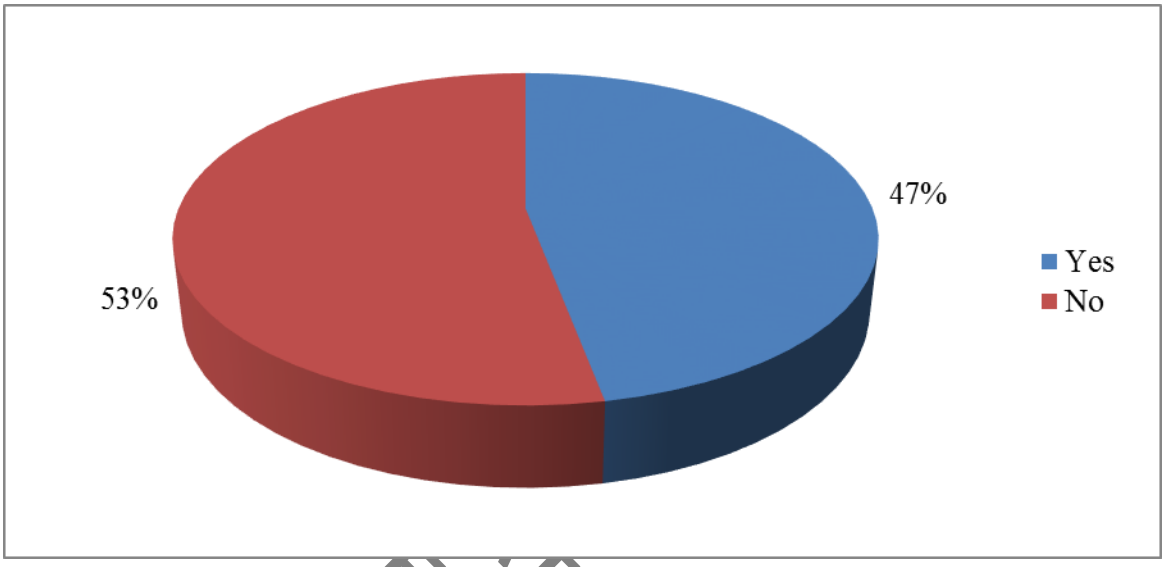

Figure 4.21 Whether coffee farmers have benefited from the government through CODF or loan write off.

Approximately 53% of the respondents have not benefited from loan write off by the government. These are the young farmers who had no loans from their societies. They have also not benefited from CODF loans due to stringent condition set out by the government for one to qualify for the loan while 47% of the respondents must be old farmers who have had loans and credit from their coffee societies for long periods and were unable to repay them. Loan writes off was an important move to encourage coffee farmers to continue production as most of them had abandoned the practice.

As a measure to promote coffee production the government waived a debt of Kshs5.8billion in 2004 and in the financial year 2011/12 it waived over Kshs1billion owed by coffee farmers, (Ministry of Agriculture Report 2009, 2010, 2011 and 2012).

Though these measures have been put in place these small scale coffee farmers are yet to realize the benefits of the same.

. 4.2.22 How liberalization of the coffee sector has affected the respondents

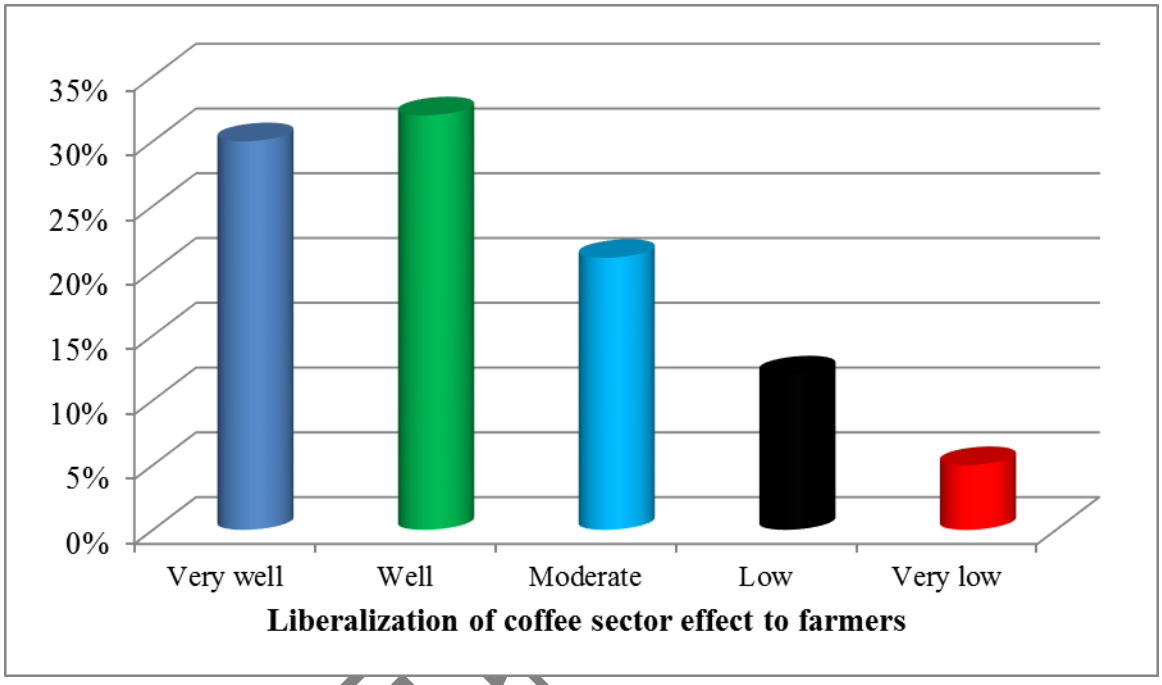

Figure 4.22 How liberalization of the coffee sector has affected the respondents.

According to 30% of the respondents, they felt that liberalization of the coffee sector has affected them very well while 32% well, 21% moderate, 12% low and 5% very low. Liberalization has had a positive effect to many. The effect has been felt in the last two years when the coffee prices have gone up increasing farmers' income. The total 17% who stated the effect to be low could be those farmers who have not been keen in improving production and have not been able to earn more than they used to before.

Section E: Social Economic Factors

4.2.23 Whether respondents have been able to access credit

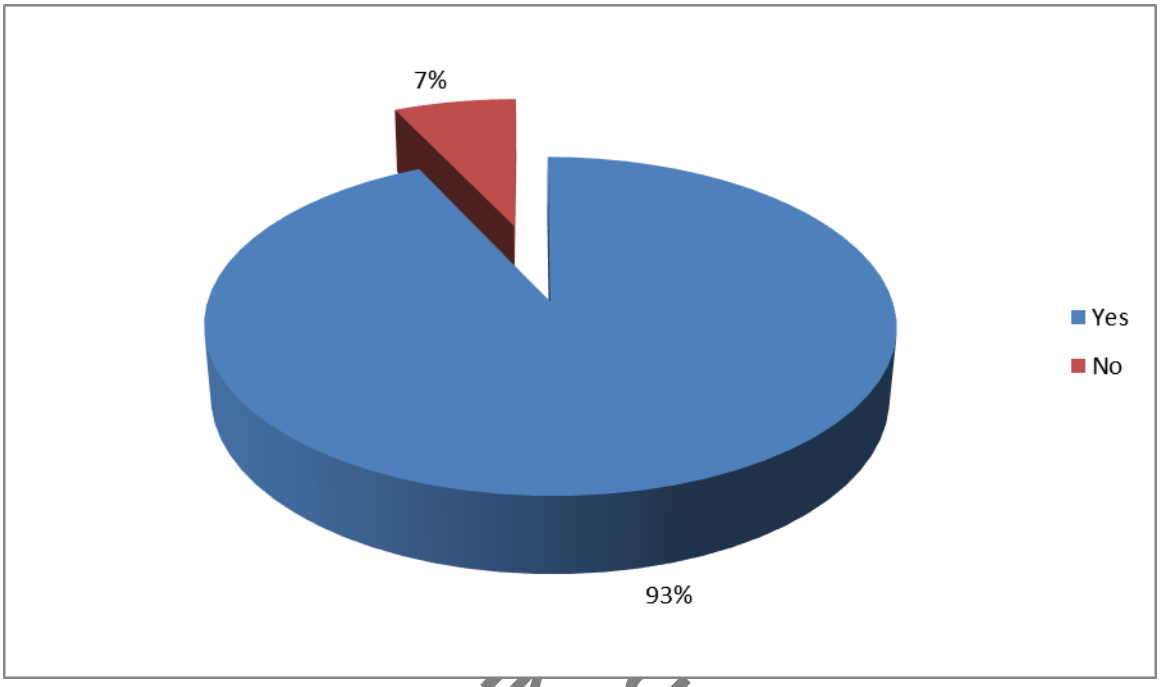

Figure 4.23 Whether respondents have been able to access credit

Of the respondents, 93% had accessed credit facilities.. As regards repayment of credit, 60% revealed that they have not been able to repay while 40% had managed. 85% of the respondents had accessed credit from the Sacco's in the coffee sector, and 15% from their cooperative societies. Thus, credit facilities were available for the small holder farmers though the latter's capacity to facilitate them are not high. This finding concurs with Chege (2012) position that access to credit has been a major constraint to smallholder producers and this has affected their ability to expand production. There is urgency for the government to quickly establish mechanisms for redemption of these debts through available restructuring and amortization options available.

The 7% of the respondents who had not accessed credit facilities cited uncertainty and risk of taking the loans and preferred living by their means.

4.2.24 Rating of cost of credit facilities to the small holder farmers.

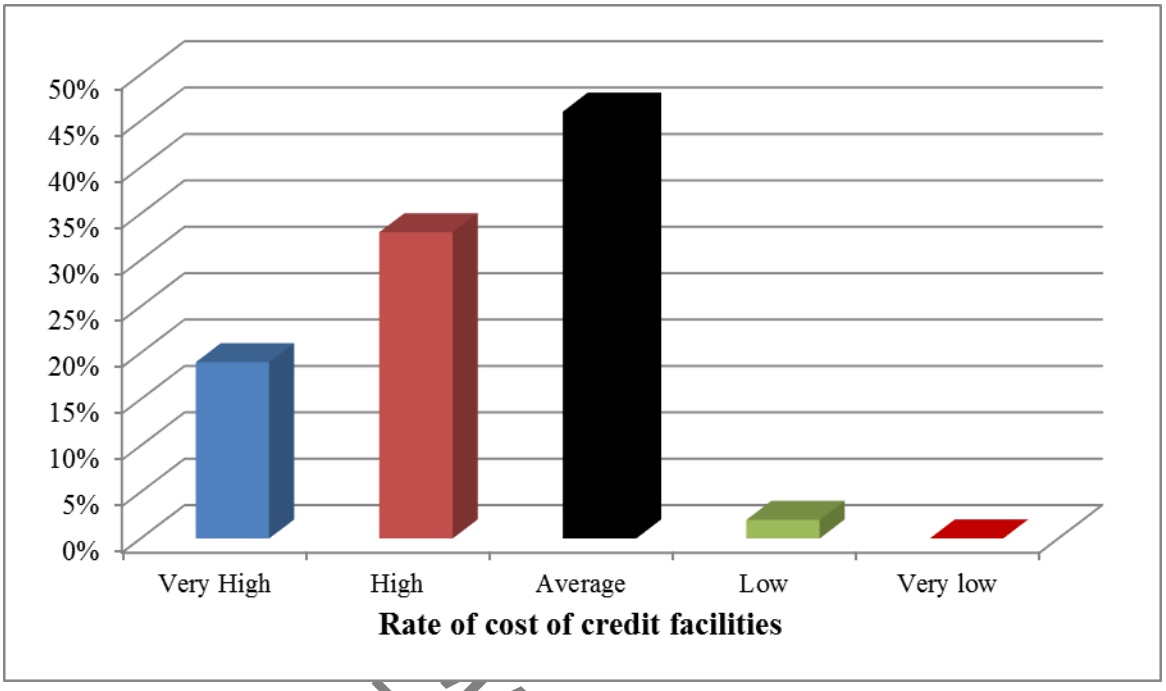

Figure 4.24 Rating of cost of credit facilities to the small holder farmers.

According to 46% of the respondents cited that the cost of credit facilities was average, 33% high, 19% very high and 2% low. Thus the cost of credit had a significant influence on the investment capacity of the small holder farmers, which has affected earnings especially where farmers are unable to improve production. This concurs with the assertion of Chege (2012) that access to credit has been a major constraint to smallholder producers and this has affected their ability to expand production. Microfinance providers such as commercial banks, micro-deposit taking institutions, NGOs and 'NGO-like microfinance institutions', generally serve urban areas and are biased towards financing commercial activities. Their means and institutional capacities to finance the coffee sector are at present very limited in most East African countries. There is urgency for the government to quickly establish mechanisms for redemption of these debts through available restructuring and amortization options available.

4.2.25 Whether respondents has subdivided their land

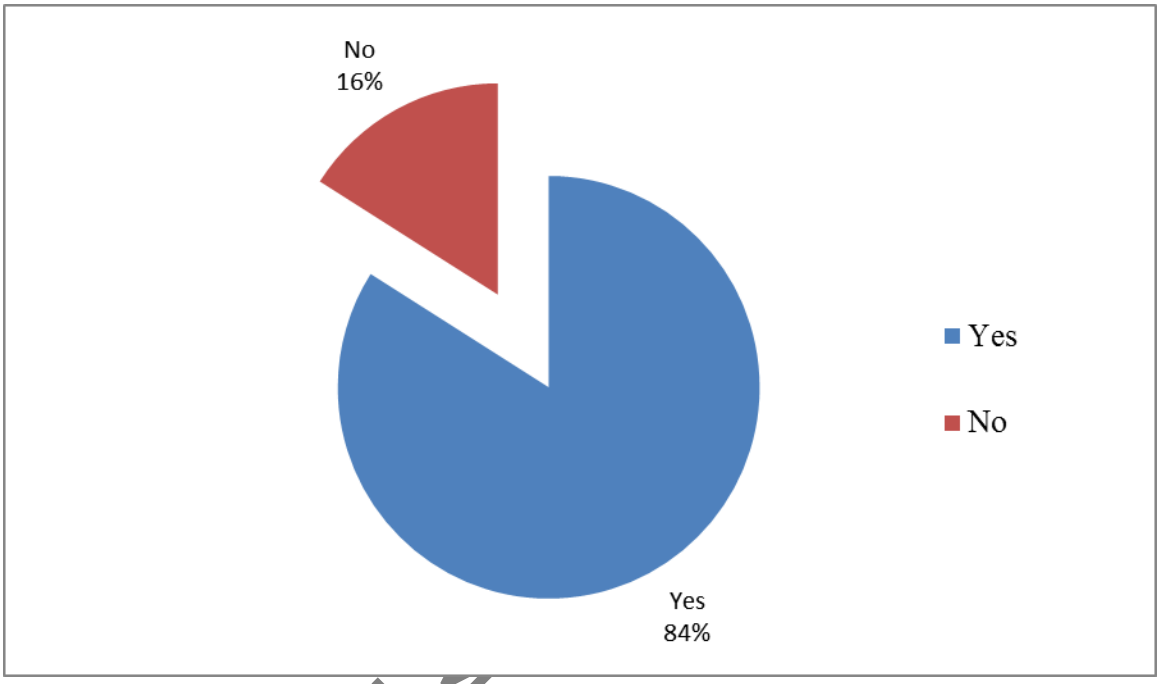

Figure 4.25 Whether respondents has subdivided their land

According to 84% of the respondents they had subdivided their land. Only 16% had not. As to the reason for subdivision, respondents cited mixed farming as the reason. Mixed farming is practiced in coffee growing areas by small holder farmers who have to grow food crops as well as fodder for their animals. Subdivision was also done to accommodate increasing families in their land. New families are often given a portion of land for their farming needs.

4.2.26 Factors greatly affecting coffee farming.

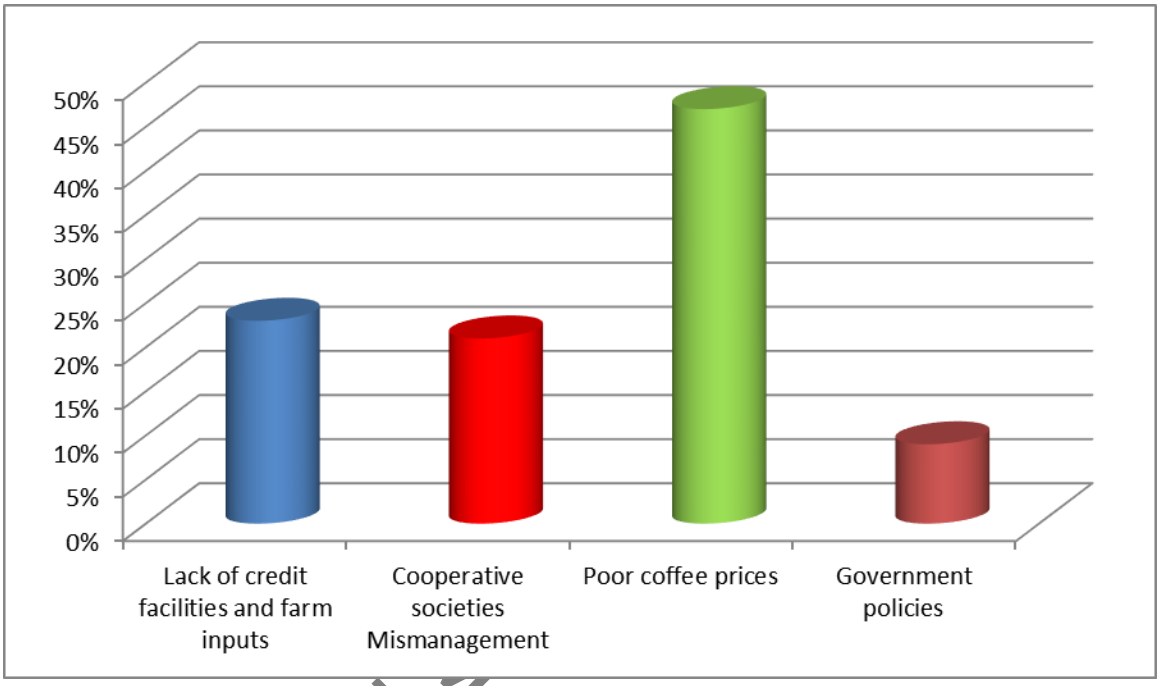

Figure 4.26 Factors greatly affecting coffee farming

Poor coffee prices were cited as the most significant factor affecting coffee farming as per 47% of the respondents.23% cited lack of credit facilities and farm inputs, 21% cooperative societies management and 9% government policies. The global coffee market is currently plagued by 2 paradoxes, a coffee boom in consuming countries, and a coffee crisis in producing countries (over supply of low quality coffee and shortage of high quality coffee) which is actually driving the coffee market (Daviron and Ponte, 2005). They further argued that there seems to be better quality control in Kenya, as farmers only produce cherry, and the factories are at least able to control the processing to parchment. But, the payment for coffee is not immediate, and farmers have to wait for the completion of transactions across the chain before they get income from coffee. Also, the costs of running the factories, cooperatives, milling and marketing of coffee are borne by the farmer, and are deducted from the coffee price. The auction system though provides a mechanism for payment for quality, as different buyers bid for specific qualities and bring the price up. Conversely, the auction can also give a low price for coffee if there are not too many buyers on the day.

4.3 Regression Analysis

A regression model was adopted to establish how production process, management of cooperative societies, government policies and social economic factors affected coffee farmers' earnings.

The analysis was carried out in SPSS at 95% confidence level.

Table 4.3 Regression Output

Coefficients

Model	**Un-standardized Coefficients**		**Standardized Coefficients**		
	B	Std. Error	Beta	**t**	**Sig.**
(Constant)	2.349	.459		0.933	.535
Production	.407	.264	.215	2.0	.037
Management	.192	.166	.146	1.447	.071
Government policies	.052	.066	.196	2.565	.132
Socio-economic factors	.352	.239	.235	2.827	.028
R-Squared = 0.684 , Adjusted R-Squared = 0.423, F = 25.68 , Sig. = 0.026					

a. Dependent Variable: Financial Performance

Table 4.1 shows the contribution of each variable in explaining the coffee famers' earnings as shown by un-standardized beta values which assess the contribution of each variable towards the prediction of the dependent variable. Production factors (P=0.037) and Socio-economic factors (P=0.028) were found to be statistically significant at a 95% confidence level. This shows that production and socio-economic factors significantly influences the farmers' earnings. The findings are in agreement with Nyoro (2009) who opined that in a number of coffee auctions, observations on coffee prices against overall class have shown poor responses between the two i.e. price and class standard.

The r-squire is 0.684 meaning that production factors, management, government policies and social economic factors can explain 68.4% of famers' earnings. The findings also indicates that the model is significant (sig. = 0.026) in explaining factors affecting the earnings of small holder coffee farmers. The findings are in agreement with Kate, Wangari, Claire and Love (2008) who

alluded to the fact that major factors affecting coffee farming earnings include comparatively poor coffee prices, poor coffee husbandry, erratic weather pattern, marketing as well as global warming.

The overall equation as suggested in the conceptual framework can be represented by use of un-standardized coefficients as follows:

Coffee farmers earnings = 2.35 + 0.407 Production factors + 0.192 Management capacity + 0.052 Government policy + 0.352 Socio economic factors +0.026

According to the regression equation established, taking all factors into account with constant at zero, coffee farmers earnings would be 2.35.The model shows that production factors affect farmers' earnings the most followed by socio economic factors; a unit increase in production factors would result in a 40.7% increase in coffee farmers earnings whereas a unit change in socio-economic factors would result in 35.2% increase in revenue management. The findings indicate that production costs define a significant amount of farmers' earnings. These findings are in agreement with Gitau (2009) who found that high costs of farm inputs such as fertilizers, pesticides and fungicides have contributed to increased production cost and thus heavily reduce on return on coffee sales. According to the author, labor, a major cost element of coffee production mostly during harvesting, has contributed to high production costs.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMMEDATIONS

5.1 Introduction

This chapter entails the summary of data collected during the study. It further gives the researcher conclusions and recommendations.

5.2 Summary of findings.

5.2.1 Respondents Profile

In the study, 78% of the respondents were aged between 20 and 50 years and could thus give credible information regarding the subject of the study. Also, 79% of the respondents had above primary level education and could understand the research instruments and provide viable information. All the respondents had experience in growing coffee and 68% had grown for over 10 years. Thus, they could objectively contribute to the study. The study ascertained that 77% of the respondents grew the SL 28 type of coffee which was introduced in the region during the colonial era and does quite well. Ruiru 11 is now been planted and is an improved genre of the SL28 which is also doing well.

5.2.2 Effects of Coffee Production Process on Earnings of the Small Holder Farmers

In response to land ownership, 88% of the respondents owned less than 7 acres of land due to land fragmentation and the limited availability of arable land in the region. Those who had less than 800 coffee trees were 97% of the total respondents. This could be due to the limited land sizes as well as need to mixed farming. Annually, all the respondents produced less than 4000 Kgs, and 67% producing between 1000-2000 Kg. This low production could be a reason that affects earnings when matched with high production costs inherent. For the last five years, 43% of the respondents rated coffee earnings as high, 30% as average and 27% below average. Thus, there was a significant improvement in coffee earning and as such expected profitability from the sector.

The respondents rating of coffee prices were not high; with 30% rating them are average and 32% below average. There has been a recent increase in coffee prices in Kenya due to favorable

market conditions. However, smallholder coffee farmers might not know of the market prices since they have no direct sources of information on coffee market. Significant is the fact that the price of coffee influences earnings and such important to the small holder farmers. Their view of not very high prices means lower income since production costs keep increasing and as such reducing net income to the smallholder coffee farmer .

The cost of running factories, milling and marketing was rated above average by a total of 55% of the respondents. The cost of fuel and transport as well as factory administration was the main expenditure values after harvesting. These costs are normally deducted from the farmers pay and thus influence their earnings and net income. Not all farmers sprayed their coffee bushes and as such coffee bushes are affected by diseases that lead to low quality and quantities of coffee. The cost of farm input was rated high by a total 87% of the respondents. Actually the cost of fertilizers and pesticides keep increasing with time and increase production costs. Thus, the cost of farm inputs has a significant effect on the earnings of coffee farmers.

The earnings from coffee were not able to pay school fees, build a house or enable small holder farmers to invest, according to 64% of the respondents. The coffee earnings were low and irregular and one could not plan on them for investment.

5.2.3 Cooperatives Societies Management and Earnings to coffee farmer

In the study, 85% of the respondents cited that the cooperative societies were not well managed, a common problem in Kenya. Lack of accountability and transparency has crippled the societies leading to stalled operations, members fighting and mistrust by the small holder coffee farmers. The societies did not even provide education to members, according to 77% of the respondents. The societies are normally formed to assist the farmers in capacity, production, transport and marketing of their coffee. They thus have responsibility of educating their members on emerging issues and empower them to increase production and improve their living standards; lack of education thus leaves members being poor and unable to cope with the competitive world.

5.2.4 Government policies and Regulations

Coffee has been a major income earner in Kenya. In agricultural sector, it is among the top export agric-products. Thus, it is the government duty to ensure that the sector is vibrant.

However, a total of 88% of the responds rated government support to coffee farmers as low and 12% rating it average.

Government extension programs were very active in the 1970's and 80's when coffee production was booming, but disintegrated in the 90's and almost extinct in the early 2000. Thus, training and education of farmers was low and as such reduced their production capacity. Coupled with low returns from coffee in the 90's and 2000, small holder farmers neglected their coffee and sought other means of income such as banana plantation and dairy farming. Lack of Government subsidies, especially on farm inputs such as fertilizers find the small holder farmers spending high on production and getting little returns. However loan write-off has benefited 47% of the respondents in that the waiver encourage them into comfortably continue production and supplies to the societies. Actually it has rejuvenated coffee production in most parts of Kenya where the practice have been abandoned due to low returns.

However 53% of the respondents did not benefit. This could be due them abandoning coffee farming and did not feel the effect of CODF and loan write-off impact. Others could be the young coffee farm owners who have not had huge debts in the section. Liberalization of the coffee sector was commended by 62% of the respondents. Only 17% rated liberalization effect as below average and 21% as average. Thus, liberalization has had a positive impact and this is evident on the increased earnings by coffee farmers in recent years. The study found out that 93% of the respondents had accessed credit and out of this 60% had not been able to repay the loans, citing low returns from the coffee sector and huge daily demands of family. All coffee farmers acquired the loans from cooperative societies, (SACCOs) in the coffee sector. The 7% who had not accessed credit cited fear of risk and uncertainty on their capacity to repay.

5.2.5 Social- economic Factors and Earnings to Coffee Farmers.

The cost of credit was believed to be high by 33% of the respondents, very high by 19% and average by 46%. Only 2% rated the cost as low. This meant that access to credit was costly to the small holder farmers and had an impact on their net income and capacity to invest. The study found that 84% of the respondents had divided their land to cater for mixed farming and also to give land to young family members for production. Further, 16% had not subdivided their land and possibly had other pieces of land where they could grow food crops and fodder. Poor coffee prices were believed to highly affect the coffee sector by 47% of the respondents, 23% cited lack

of credit facilities and farm inputs, 21% cited mismanagement of coffee cooperative societies while 9% cited government policies. The respondents suggested that full liberalization of the industry was the sure way of enhancing profitability. Extension services should be revived to offer advice, training and capacity building to small holder farmers.

5.3 Conclusions.

The price of coffee affected the earnings to the small holder coffee farmers. The price of coffee when multiplied with volumes produced will determine the turnover. Good prices thus mean higher turnovers and possibly higher profit to farmers. However, the world market price and farmers pay prices poorly correlate, a factor that affects the morale of small holder coffee farmers. Liberalization of the coffee sector has however brought a reprieve to the small holder coffee farmers with the coffee pay prices increasing in the recent years as middle men and agents are reduced, hence, reducing their deductions that are extended to the farmers.

The cost of farm inputs has increased overtime as well as the cost of oil and transport. As such, the expected revenue of the farmers is reduced by deductions from cooperatives for farm inputs such as fertilizers, folia, pesticides and fungicides needed to be used. Due to rural-urban migration, labor has become scarce in the coffee areas and persons available charge high rates per day.

The cooperatives societies have failed in supporting the small holder farmers increase earnings of the coffee production. This management, inefficiencies and ineffectiveness have riddled them into debts and these are left to the farmers to pay. However, loan write off by the government has given the societies a reprieve to the coffee farmers, though the management committees are still unskilled and not focused to development of the sector.

The Government has a pivotal role in rejuvenating the coffee industry in Kenya. The small holder subsectors has abandoned the practice for quite sometime and concerted efforts need to be made to ensure high profitability of the sector. Creating a conducive environment for coffee production and marketing is important.

Access to credit is important for the development of coffee production. Small holder farmers might not afford to buy cash fertilizers and other farm inputs, as well as increase their coffee

trees. They might need to establish other income generating activities in order to supplement coffee income. However, the cost of credit is still not very suitable for the smallholder farmers and international measures need to be taken in consultation with all stakeholders.

Small holder farmers have small parcels of land, and as per study, mostly below 7 acres. As such they cannot plant more than 800 coffee trees and their production is normally below 2000Kgs. The small holder farmers have to utilize to the best of efforts the small parcels of land that are subdivided to cater for mixed farming- subdivision is also done for inheritance where the young men/ women want to do their own farming. Among the factors affecting coffee industry, are poor coffee prices, leading to poor pay to farmers. However, lack of credit facilities and farm inputs was also an important factor affecting the success of the coffee sector.

The theoretical profit function and stochastic frontier model emphasized that a profit function, under mild 'regularity conditions' is a logical extension of the production function. The satisfaction of the farmer is making profit in his/her venture. The study found that there was a relationship between the independent variables on the earnings of smallholder coffee farmers. The study establishes the significance of the relationships. In solving the various challenges faced by the smallholder coffee farmers, the adoption and use of new ways, ideas and technologies in the coffee production value chain is crucial. Thus, the theory of adoption and diffusion of agriculture innovations can be well adopted in establishing viable interventions for enhancing the incomes the small holder coffee farmers, their families, communities and the state at large.

5.4 Recommendations for Policy

The following were the researcher's recommendations.

1. Cooperative societies should formulate a program that regulates coffee production. The societies should do a field survey of the status of coffee from the members in order to work out development plans that will enhance production and earnings. Value addition along the supply chain would enhance the quality and quantity of coffee produced; a factor that is crucial for increasing earnings of coffee farmers.

2. The government should formulate policies that enable smallholder farmers' access farm inputs at subsidized prices in order to increase earnings and reliance on coffee

production. Stakeholders should encourage research on better farm inputs that are less costly as well as seeds that produce trees with high production.

3. The government should undertake comprehensive audit, through the ministry of cooperative development and marketing, of all records of the societies to safeguard the assets and earning of smallholders members.

4. The members should lobby for the employment of qualified management teams in the cooperative societies that can be accountable and reliable in ensuring reduced costs and higher revenue which will translate to higher revenue which will translate to higher earnings for the smallholder farmers.

5. The societies should arrange education of farmers on best practices and knowledge of merging trends in the coffee sector. The farmer will thus be knowledgeable in market trends and new farming methods and products suitable for best production.

6. Farmers should become more enterprise oriented and establish supplementary sources of income that support the coffee production income and enable sufficiency in daily family needs. This would leave the coffee income intact and good for investment either in education, infrastructure or business.

7. Direct market access (Market Liberalization) should be ensured to weed out the agents and middlemen who have stifled the farmers' incomes for many years.

8. Enhance value addition through promotion of a coffee drinking culture in the local market, and as such reduce the impact of global market shocks on the smallholder farmers earnings

5.5 Recommendations for Further Studies

The researcher recommends further studies in the rate of abandonment of coffee production in Kenya. This is important in order to formulate strategic plans for sector development by stakeholders. Studies should be conducted in the effect of coffee market liberalization on Small holder farmers' income. Further, studies should also be undertaken to assess the implication of County governments on coffee production and marketing in Kenya.

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APPENDICIES

APPENDIX I: SPECIMEN LETTER TO RESPONDENTS

JANUARY 2013

Dear Respondent

RE: MBA RESEARCH PROJECT

I am a student at Dedan Kimathi University of Technology pursuing an MBA (Finance option) program. In partial fulfillment of the requirements of the program, am writing a Thesis on the "**Factors affecting the earnings of small holder coffee farmers- A case of Nyeri County"**

Please note that you have been selected to participate in this research study. I therefore request you to assist to complete the attached questionnaire. Please note that this is strictly an academic exercise towards the attainment of the above purpose. You are hereby assured that the information you will give will be treated with the strictest confidentiality required. Your cooperation will be highly appreciated.

Thank you for your anticipated kindest response.

Yours Sincerely

Simon Muguku Gichigi

Researcher

APPENDIX II: QUESTIONNAIRES

This research questionnaire focuses on the Factors Affecting profitability for small holder coffee farmers in Nyeri County. I would like to confirm that the results of the questionnaires are subject to the privacy and will be treated in the strictest confidence. The data obtained will be used for academic purpose only.

Instructions

Please answer all the questions as indicated by either in the blank space or by ticking ( ) the option that applies.

Section A; Production and Earnings

1. How would you rate the prices of coffee?

Very high ☐ High ☐ Average ☐ Low ☐ Very low ☐

2. How would you rate the cost of running factories, milling and marketing charges

Very high ☐ High ☐ Average ☐ Low ☐ Very low ☐

3. Do you spray your coffee?

Yes ☐ No ☐

If No, why? (Please give reason.....

If Yes how many times in a year? (Please specify) …….

4. How would you rate the prices of coffee farm inputs (pesticides and fertilizers)?

Very high ☐ High ☐ Average ☐ Low ☐ Very low ☐

5. From your coffee earnings are you able to meet your needs such as paying school fees, construction of a house, and investments?

Yes ☐ No ☐

If no why (give reasons)…….

Section B: Cooperative Societies Management Capacity

6. Do you believe that your society is properly managed?

Yes ☐ No ☐

If No, why? Give reasons……

7. Does your society offer Members education?

Yes ☐ No ☐

If yes how often?

Very often ☐ Often ☐ Sometimes ☐ Rarely ☐ Very rarely ☐

Section C: Government Policies and Regulations

8 .How do you rate the government assistance to coffee farmers?

Very high ☐ High ☐ Moderate ☐ Low ☐ Very low ☐

9. Have you benefited in any way from the government through CODF or Loan Write Off?

Yes ☐ No ☐

10. How do think liberalization of the coffee sector affected you as a farmer?

Very well ☐ Well ☐ Moderate ☐ Low ☐ Very low ☐

Section D; Social-economic Factors

11. Have you been able to access credit facilities?

Yes ☐ No ☐

a) If yes have you been able to repay.....

b) If yes specify from where……..

b) If no why? (Give reasons)…….

12. How would you rate the cost of credit facilities available to coffee farmers?

Very high ☐ High ☐ Moderate ☐ Low ☐ Very low ☐

13. Have you subdivided your land?

Yes ☐ No ☐

a) If yes why? Give reason……

14 .Which of these factors do you believe have greatly affected coffee farming?

Lack of credit facilities and farm inputs ☐ Poor coffee prices ☐

Mismanagement of cooperatives societies ☐ Government policies ☐

Others (please specify)……

Section E Respondents Profile

15. What is your Gender?

Male ☐ Female ☐

16. What is your age group?

Below 20 years ☐ 21-35 years ☐ 36-50 years ☐ Over 50years ☐

17. What is your level of education?

Primary level ☐ Secondary level ☐ College level ☐ University level ☐

Others (please specify)…….

18. For how long have you been growing coffee?

1-10 years ☐ 11-20 years ☐ 21-30 years ☐ Over 30years ☐

19. What type of coffee do you grow?

S L 28 ☐ Ruiru 11 ☐ Batian ☐ Robusta ☐

Others specify……

20. .What is the size of your land?

1-3 acres ☐ 3-6 acres ☐ 6-9 acres ☐ Over 9 acres ☐

21. How many coffee trees do you have?

1-200 coffee trees ☐ 201-400 coffee trees ☐ 401-600 coffee trees ☐

601-800 coffee trees ☐ Over 800 coffee trees ☐

22. How many kilos of coffee do you produce in a year?

1-500kgs ☐ 501-1000kgs ☐ 1001-1500kgs ☐ 1501-2000kgs ☐

Over 2000kgs ☐

23. In one of your best years since you started coffee farming how many kilos did you produce?

1-1000kg ☐ 1001-2000kgs ☐ 2001-3000kgs 3001-4000kgs ☐

Over 4000kgs ☐

24. For the last five years how would you rate your earnings from coffee?

Very much ☐ Much ☐ Average ☐ Little ☐ Very Little ☐

25. Please in your own words what do you think should be done to improve the coffee industry? Explain briefly……

……

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