COFFEE PRODUCTION AND ITS CONTRIBUTION TO PEOPLE’S INCOME: A CASE STUDY OF SEBEI ELGON CO-OPERATIVE UNION (SECU)

BY

CHELANGAT SAULO JAMES
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DECLARATION

I, CHELANGAT SAULO JAMES, hereby declare that this research project has to the best of my knowledge been the fruit of my efforts and has never been submitted to any University or institution of higher learning for any academic award. All the information included here is based on my own findings unless otherwise stated.

Sign: ____________________ Date: __________/________/________

CHELANGAT SAULO JAMES
APPROVAL

This research which was carried out under the title: “Coffee Production and Its Contribution to People's income” has been submitted under the approval of my supervisor to the School of Statistics and Planning, Makerere University.

Sign................................................ Date.........................
Supervisor:
Dr Ronald Wesonga

Senior Lecturer, School of Statistics and Planning (SSP), Makerere University
Dedication
I dedicate this great piece of work to my dear parents Mr. Barteka Alfred and Mrs. Khayinza Rebecca Barteka, all my sisters and my brothers for their tireless and never ending support they provided during my academic and financial struggles. I really owe them a lot and may God reward them abundantly.
Acknowledgement

I am deeply grateful to the Almighty God for his mercies, grace and love for me and all those who helped me in all ways towards the completion of my research. Very special thanks go to my supervisor Dr Ronald Wesonga to whom I owe so much for her continued support, guidance, critical examination and concern in all situations to make me finish this dissertation in time.

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Special thanks go to the School of Statistics and Planning, the teaching staff, for the knowledge and priceless guidance they gave me in all my academic disciplines that guided me throughout the research. May God reward them abundantly in all their works!
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List of Acronyms

AERC- African Economic Research Consortium

CMB- Coffee Marketing Board

COMESA- Common Market for Eastern and Southern Africa

ECAPAPA- Eastern and Central Africa Program for Agricultural Policy Analysis

FAO- Food and Agriculture Organization

GDP- Gross Domestic Product

ICO- International Coffee Organization

IFPRI- International Food Policy Research Institute

MAAIF- Ministry of Agriculture, Animal Industry and Fisheries

MFPED- Ministry of Finance, Planning and Economic Development
Abstract
A lot of research on coffee, as a traditional cash crop in Uganda has been undertaken with several objectives including the factors that affect coffee production, their time series analysis of exports, the extent of government involvement, etc. These all have specifically tried to bridge the gaps in the coffee industry and the agricultural sector as a whole identifying constraints. The need to shift to commercial production from subsistence, call for extension services and improved technology; This research particularly but not exclusively took a better look on coffee production, marketing and its effect on the people’s incomes mostly those associated with the Sebei Elgon Co-operative Union in Kapchorwa District, Eastern Uganda.

This study investigated and attempted to find out how coffee growing had contributed to the farmers’ incomes and wellbeing. And the following were the research questions:

a) Does coffee production improve the socio-economic wellbeing of the farmers?

b) Do coffee harvests directly or indirectly contribute to the farmer’s incomes?

c) Are there any relevant ideas to improve the performance of the coffee industry so as to potentially improve the farmers’ earnings?

The target sample units for the study were selected from among the staff of SECU. These were within the categories of administrators, farmers associated with SECU, and support
staff. A random sampling technique (method) was used to include adequate representation of various sub groups. A total number of eighty (80) subjects were involved in the study. The data collected were categorized; frequency counts got and percentages were obtained. And the following results were revealed in summary that:

- Coffee growing and selling has a positive contribution to the level of employment in the area.
- The leading contributor to the farmers’ incomes is mainly how much each could harvest and sell off for money.
- The main challenges to the development of the coffee growing and selling were; low prices, price instabilities, limited access by farmers to extension services, narrow markets and poor climatic conditions among others.

Thus this study helped to find out the contribution of the production and marketing of coffee to the people’s welfare in the area in one way or the other, pointing out the marketing strategies adopted, and income flow-ins from the activity. Some indicators were used to know the social-economic contribution of coffee production and marketing to the welfare of the farmers.

The report is composed of five (5) chapters; Chapter One consists of the background of coffee production, statement of the problem, the objectives, hypothesis and significance of the study. Chapter Two, covered all the necessary and vital literature review. Chapters Three and Four are the methodology which were employed in the study, detailed empirical results and analysis of findings, while chapter five gave the summary of findings, conclusions and recommendations respectively.
CHAPTER ONE: INTRODUCTION

1.1 Background to the study

With more than two thirds of the sub-Sahara population living in the rural areas and dependent (either directly or indirectly) on agricultural activities for employment and incomes, agricultural growth and development are essential for the reduction of poverty in the sub-Sahara Africa, yet agriculture’s potential has not been fully tapped. The need for the improved capacity to contribute to more effective policies and policy making is more pronounced than ever before. Concerned about the continued supply of needed capacity, the International Food Policy Research Institute (IFPRI) in collaboration with the Eastern and Central Africa Program for Agricultural policy analysis (ECAPAPA) and African Economic Research Consortium (AERC) with assistance from Rockfellers Foundation initiated a review of the status of Agricultural Economics in Eastern and Southern Africa Regions (Obwona and Norman, 2001).

Uganda’s economy largely but not completely depends on the agricultural sector. Agriculture contributes about 42% of the Gross Domestic Product (GDP). It has contributed at least 22.9% of the total GDP at current prices since 2011 as indicated in the Uganda statistical abstracts. Although the contribution of Agriculture to the GDP has been declining over the years, the sector has continued to dominate the Ugandan economy with approximately 80% of the monetary value from coffee. And thus Coffee is still the leading export crop and leading foreign exchange earner contributing about 55% of the total export earnings (UNHS, 2010).

Some of the main traditional cash crops of Uganda include: Coffee, tea, cotton and tobacco. Coffee forms a major source of revenue for the country since it dominates the exports in terms of value. Uganda produces two kinds of coffee that is; Robusta and Arabica coffee also known as Mountain coffee.

Over the years, Robusta coffee has been procured in much more quantities compared to Arabica coffee. In 2012, Uganda procured a total of 186,126,000 tons of coffee of which 72 percent was Robusta. It should however, be noted that coffee quantities procured are
used as a proxy to production. Unlike in 2011, when the quantity of coffee procured increased by 14.6 percent, in 2012 there was a reduction by 2.7 percent. This was due to a reduction in Robusta coffee (UBOS, 2013).

Coffee production provides both direct and indirect employment to over five million (5M) Ugandans but this has still not attracted more focus and critical attention from both the government and development partners and even the locals to the coffee industry as a step towards development in order to reap more from this crop (UCTF, 2013). This is why Coffee production in Uganda, is almost entirely done on small-scale production basis. Robusta coffee accounts for 94% of the output while Arabica coffee accounts for the remaining 6%. There are approximately 500,000 coffee farms in Uganda (UCDA, 2015).

Even when latest reports indicate that there has been an improvement in coffee exports shown by December 2014 and up to four hundred and three (403) million bags worth $30.13 million were exported as compared to the two hundred and forty (240) million as registered previously in 2013, the coffee industry is still experiencing a deteriorating performance in production.

And therefore this section presents some relevant statistics on traditional cash crop production specifically coffee which among other cash crops say tobacco, tea, cotton and others is the main area of study in this research.

The struggle to develop coffee into a commercial enterprise dates back from the colonial era, when the colonial Government first introduced Robusta coffee at Entebbe Botanical gardens for trial as a cash crop and still to date Coffee in Uganda is mainly produced on subsistence basis by a few sizeable “shamba” owners and some locals, who do the harvesting and drying of the coffee. They sell their harvests to coffee buyers, buying centres/stores that may be within their communities. These sell to the processors who may be individuals or under co-operative union, for example Bugisu co-operative union or sell directly to the Coffee Marketing Board (CMB) which before liberalisation, had the monopolistic powers over the export of coffee.
Uganda Coffee Development Authority (UCDA) was established by an Act of Parliament 1991 and amended in 1994, Cap.325 under the laws of the Republic of Uganda. UCDA was established as a public Authority and its mandate is to promote and oversee the coffee industry by supporting research, promoting production, controlling the quality and improving the marketing of coffee in order to optimize foreign exchange earnings for the country and payments to the farmers. Today the Coffee Marketing Board (CMB) does not exist.

Also according to the review report by NUCAFE, 2008, ‘A Statute to establish a public Authority to provide and oversee the coffee industry as a whole by developing research and controlling the quality and improving the marketing of coffee and to provide for other matters connected therewith’, was put in place. Since the establishment of UCDA, more public institutions have been set up focusing at poverty eradication under Poverty Eradication Action Programme (PEAP). These include PMA, NAADS and recently the “Prosperity for All” programme (PAP). In some cases there appears to be duplication of activities since there are no clear demarcations where each of the agencies starts and ends. This therefore signifies that most of the mandate of CMB was taken over by UCDA and sister bodies including NAADS.

Subsequently, the coffee sub sector was further liberalised with the licensing of five private exporters and two additional union exporters. The licensed private exporters include: Zigoti Coop. society Ltd in Mubende district, Kyagalanyi coffee factory Ltd. in Mukono district. Kaliro Coffee Factory Ltd in Kamuli District, Lwanyaga Coffee Factory Ltd in Masaka district, Okoro coffee growers co-operative union Ltd in Nebbi district and Sebei Elgon Co-operative union in Kapchorwa district. Originally there was the Coffee Marketing Board Ltd, Busoga Growers Co-operative Union, Bugishu co-operative union, Banyankole Kweterana and Masaka Co-operative unions.

1.2 Statement of the Problem

Despite the intriguing performance and benefits from coffee production and marketing evidently in Uganda, few people are engaged in this activity and among those involved,
their performance is still not quite satisfactory as planned; and this could have been as a result of high risks, price fluctuations in the world coffee market, poor infrastructure, coffee diseases or perhaps limited extension services. Even when Government through extension services has tried to provide farmers with improved seedlings and pesticides, little progress has been registered even to that effect. It is therefore important that reliable information on coffee production and marketing is collected to facilitate efficient planning and management of the activity and then the agricultural sector as a whole.

Unfortunately, information on coffee production in Uganda is rather scanty and over generalised thus among the other specific projects written so far, little has been done about analysing the contribution of coffee to the local people’s incomes, and education, specifically the small scale coffee producers, major factors constraining coffee production and the positive significance to the agricultural sector. This results into information gaps on the subject hence most recommendations made by policy makers are based on experimental data which may not reflect the real farmer’s situation.

1.3 General Objective

The main objective of the study is to assess the coffee production and its contribution to people’s income in Chema Sub County, Kapchorwa District in Eastern Uganda basing on the findings from the Sebei Elgon Cooperative Union (SECU)—the case study for this research and dissertation (report).

1.4 Specific Objectives

i. To obtain relevant ideas to improve the performance of the coffee industry so as to potentially improve the peoples’ earnings from it.

ii. To find out whether coffee production has an effect on growers in terms of social-economic development especially in terms of education and employment, by sex.

iii. To try to bridge the information gap in the coffee production industry and previous related research.
1.5 Hypotheses
   i. Quantity of coffee harvested and sold has no significant effect on the incomes of the coffee growers.
   ii. Coffee production has no significant effect on the farmers in terms of social-economic development through savings, gained entrepreneurial skills and education.
   iii. There is no significant difference in earnings amongst coffee growers by sex.

1.6 Significance of the study
   The research is expected to benefit some individuals and groups of people namely: Coffee growers are expected to learn from the research work and know whether coffee growing can uplift their standards of living or not. They can therefore decide whether to grow more coffee or not.
   Other scholars and researchers carrying out related studies in future may use this research work for further referencing during their studies.
   The study findings can enable local governments to assess the extent to which coffee growing has affected the standard of living of people in the study area so as to encourage the activities of the citizens to continue for mutual benefit or discourage them not to be over exploited.
   This report can be used by the Ministry of Agriculture to review and revise the structure operating environment and performance of the coffee growing activity in Kapchorwa District in order to enhance the efforts to reduce poverty levels.

1.7 Organization of the report
   Chapter one presents the background, problem statement, objectives, hypothesis and significance of the study. The literature review is discussed in chapter two while three presents the methodology employed in the study. The findings of the study are in chapter four and the summary of the findings, conclusions, recommendations and areas of further future research are in chapter five.
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction.
This chapter reviews the literature of the study. Most of the literature is about the history, coffee plant requirements, soil and climate conditions required and the structure of the coffee plant.

2.2 Description, post harvesting and domestication of Coffee.
This section briefly and explicitly tries to describe the coffee plant structure, growth and other relevant requirements in the proceeding literature herein below.

2.2.1 Description of coffee.
The coffee plant is a woody evergreen and dicotyledonous perennial that belongs to the Rubiaceae family. It has a main vertical trunk (orthotropic) and primary, secondary, and tertiary horizontal branches (plagiotropic). Leaves of coffee are simple and produced in pairs. Branching is also opposite. The root system consists of mass of superficial feeding roots and deep soils, the tap root and other deep roots may penetrate to several meters. Flowers are often seasonal; they are white and scented. Arabica are mostly self-pollinated and Robusta are largely out pollinated. In humid climates, flowering is more continuous but slight fluctuations occur through the year. Two main species of coffee are cultivated today: Coffee Arabica known as Arabica coffee accounts for 75-80% of the world's production- (FAO, 2010). Coffee canephora, known as Robusta coffee, is more robust than the Arabica plants, but produces an inferior tasting beverage with higher caffeine content. The coffee plant can grow to heights of 10 meters if not pruned, but producing countries will maintain the coffee at a height reasonable for easy harvesting (Williams, 2007).

The cherry (fruit of a coffee tree) is initially green but, the berries ripen over several months, becoming successively yellow, then red, Gamet red, and finally almost black. The ideal time for harvesting is when the berries are red. The red skin is called the exocarp. Beneath the pulp (the meso carp), each surrounded by a parchment-like covering (the endocarp), and in there lie two beans with flat sides together. When the fruit is ripe a
thin, slimy layer of mucilage surrounds the parchment. Underneath the parchment the beans are covered in another thinner membrane, the silver skin -the seed coat (Clarke and Macrae, 2013).

2.2.2 Post harvesting and domestication of coffee.

Arabica coffee initially goes through wet processing, which involves pulping (Removal of pulp and mucilage) and washing the coffee beans. Pulping is the removal of the outer skin of the harvested red coffee berries. After pulping the mucilage around the beans is removed by use of water and the coffee beans are washed in sisal made baskets known as washing baskets.

The farmer then has two options for drying his coffee beans. Either he dries them under the sun until they reach the required moisture content or pays to have them dried at a coffee factory. The remaining process involves removing the coffee husks, sorting of the different coffee bean sizes, Roasting, Grinding and packaging.

Domestication of coffee begun about five hundred (500) years ago and coffee became popular as a beverage only since 18th century. It is now a general breakfast drink world over. Presently, it is consumed hot or cold by about two thirds (⅔) of the world's population, in large quantities than any other drink. The refreshing and invigorating properties are because of alkaloid caffeine (Pursey, 2008).

2.3 History, origin and distribution of coffee globally.

There are several stories; some might say fairy tales about the origin of coffee, of which the most popular and best-known story is that of Kaldi (a Yemeni goat herder). One night Kaldi noticed his normally calm goats dancing excitedly near a bush, which bore a number of bright red berries. Before long, he was kicking up his heels, too. News of Kaldi and his goats quickly spread to the local monastery, where the local priest of Imam started using coffee to help him stay awake during the night prayers. Despite this quaint story, it has since been proven that the true origin of coffee is the shaded highlands of present day Ethiopia (Kochhar, 1981). Arab traders and their penchant for carrying things
around are thought to have been responsible for the movement of seeds from Ethiopia to Yemen (Rajaratnam, 1987).

The first records of coffee mention it as a medicine around the fifteenth (15\textsuperscript{th}) century when coffee was used in its raw or green state. Not until the sixteenth (16\textsuperscript{th}) century did Arabians begin to drink coffee in a form that actually resembles today's brew. As alcohols were forbidden in Muslim circles, it was given the name “qawa” or rather “Kaawa” preferably wine. From the Arabian Peninsula, the brew then undertook an arduous journey around the world leaving Yemen on camel or via the famous port of Mocha (Cambrony, 1992).

Since the Arabs knew the value of this little bean, they tried to limit cultivation to only the Arabic regions. Despite their best attempts, the plant was propagated in Java and Indonesia, and soon spread to other places on the globe. The Dutch finally managed to transfer a tree from Java to Holland and an offspring was moved on to Paris, where this single tree is purported to be the origin of the millions of trees in existence today. Seeds and saplings were taken to the Caribbean Island of Martinique and spread to other islands. The journey then continued to the island of Bourbon (currently Reunion) in the Indian Ocean and finally back around the world to Brazil, via French Guyana. Ironically, it was not until 1893 that coffee seeds from Brazil were introduced by Jesuit priests into Kenya and Tanganyika (Tanzania), just a few hundred miles south of Ethiopia, where coffee originated six centuries earlier (http://www.ncausa.org/i4a/pages/index.cfm?pageid=30, 2015).

2.4 Climatic and soil requirements of coffee

This literature content covers the basic soil, climatic and other relevant requirements for successful coffee production:
2.4.1 Climate

Coffee is a tropical plant which is also grown in the semi-tropical climate. The coffee tree requires heat, humidity and abundant rainfall. The following temperature and rainfall conditions are necessary for coffee cultivation:

Coffee requires an average temperature between 20°-27°C. Although coffee grows in day temperature of over 32°C, in the Arabian Peninsula; growth is most rapid during hot rainy season and during cool dry season, the berries ripen and are ready for picking. Bright sunshine and warm weather are necessary for the harvesting (Smriti, 2015).

Coffee needs abundant rainfall, that is to say, 100 to 200 cm annually. The hill slopes which receive orographic rainfall are thus best for coffee cultivation. Direct sunlight is harmful for coffee plants; therefore, these are planted under shade of taller trees such as bananas. In Brazil, leguminous plants are used which not only provide shade but also enrich soil with nitrogen (Smriti, 2015).

Generally, coffee is grown on slopes having height between 600 to 1,800 meters. The suitability of slopes for coffee is because these are well-drained and also cooler. Water stagnation is very harmful for coffee plants; therefore, hill slopes are best suitable for it (Smriti, 2015).

2.4.2 Soil

Soil is the guiding factor in coffee plantation. The ideal soil is one with a good subsurface drainage, and one that is easily workable. The presence of humus and other nitrogenous matter in the soil is an advantage. Well-drained volcanic soils like the terraroxa of Brazil which contain much potash as well as organic material are the best (Smriti, 2015).

Arabica Coffee is usually grown in mixed farms with food crops for home consumption like beans, peanuts and Bananas and is mainly grown under shade trees that ensure sustainable coffee production. The leaves that fall from the shade trees provide manure for the coffee plants. Today in Mbale for example, the planting season for Arabica coffee is
between March and April and harvesting is between August and November. The coffee trees are pruned from December to February before the planting season. The trees flower during the dry season (Wikipedia, 2015)

2.5 Coffee sub sector in Uganda

In this section, a full description and organizational structure of the coffee subsector is given from way back up to date.

2.5.1 Coffee Production

Uganda is one of the major producers of coffee on the global market and coffee contributes over 50% of Uganda’s export earnings, valued between 300-400 million US dollars annually. Over 2.5 million people depend on coffee cultivation, processing and trade for their livelihood (UCDA, 2010). Coffee is grown by small holders each cultivating 0.1 to 0.5 hectares. Both Arabica and Robusta coffee varieties are grown in Uganda. Robusta (Coffeacanephora) is cultivated at lower and warmer altitudes, mainly within L. Victoria Fertile Crescent 1000-1300m above sea level while Arabica (Cofeea Arabica) prefers a cool climate at altitudes of 1300-1800m above sea level, mainly on the slopes of Mt. Elgon and the Western Southern highlands (Babigumira, 2006). It is estimated that about 90% of Uganda’s coffee is the Robusta type which is grown in about 85% of coffee producing districts. Arabica coffee makes up 10%. The total annual production is about 4 million bags of clean coffee (UCDA, 2010).

2.5.2 Importance of Coffee to Uganda’s Economy

Uganda heavily relies on the agricultural sector for economic development and livelihood of her people. The sector contributed 42% of GDP and 85% of the export earnings during the 2009/2010 financial year (MFPED, 2010). The dominance of the agricultural sector in Uganda’s economy largely depends on coffee, which has been the leading export crop and therefore source of hard currency for the economy since 1960s when it replaced cotton. Coffee provides revenue to the government in form of export tax and income, and offers employment to a bigger section of the population.
According to The Monitor (Thursday, May 16 2013), Uganda was the leading coffee exporter in Africa, beating Ethiopia the continent’s leading producer in the region after she surpassed the annual production of Africa’s top producer, Ivory Coast which has been hit by civil war. Coffee has been the largest single earner in Uganda’s economy since the early 1970s, contributing over 70 percent of the national foreign exchange. In the 1980s, its contribution rose to over 95 percent. However, with the collapse of world prices in 1990, its contribution dwindled to 65 percent.

Coffee contribution has nonetheless remained important as more than half a million people are engaged in coffee production and millions depend on it for family income and employment (Babigumira, 2006).

Coffee has traditionally been a very important crop to Uganda. Robusta coffee has long been known to the Baganda, and was used in their ritual of “blood-brotherhood” and coffee chewing still retains some ritual significance. As a cash crop, its importance dates as far back as the beginning of the nineteenth century and it is noted that there was considerable trade in coffee and as a result it is not surprising that in the early reports on Uganda, coffee was considered to be a potentially important export crop.

2.6 Marketing boards

Many viable sources suggest a lot about marketing boards but in a general preview definition, “marketing boards” are trading agencies established by the government to control the marketing of primary and processed agricultural commodities. There are two main types; Export produce marketing boards and statutory boards, which deal with staple food stuff (Produce Marketing Boards), (Wikipedia, 2015). The marketing board system is characterized by its monopoly of crop marketing from domestic to export point. This means that their basic function is to buy and sale agricultural products with the following objectives;

- To encourage production and marketing efficiency.
- To provide macroeconomic stability whereas producer price under marketing board systems are intended to be stable and in favor of farmers and price and
income stabilization statutory boards are supposed to stabilize the producer prices while the export commodity boards are to stabilize the income.

And coffee too has a marketing board, Coffee Marketing Board solely for marketing coffee (https://en.wikipedia.org/wiki/Marketing_board, 2015).

2.6.1 Coffee marketing in Uganda

As was the case with most agricultural produce in the country, the marketing of coffee from the 1960s to the late 1970s was state controlled. Cooperative unions were the only buyers and hullers for the coffee marketing board, which enjoyed the monopoly as the sole buyer and exporter of Uganda coffee.

However, as in the case of other marketing boards; the operations of the Coffee Marketing Board (CMB) were characterized by unrealistically low prices paid to farmers, coupled with the fact that these payments were made late.

In light of this situation, government through the recovery program (1982) and the revised recovery program (1983) decontrolled prices and allowed them to be determined by market forces. Unfortunately, due to civil strife, many of these reforms were abandoned, as there was a general breakdown of law and order.

From 1989 to-date, government policy for pricing and marketing of coffee beans has been liberalized. The monopoly of the coffee marketing board has been abolished and in its place is Uganda Coffee Development Authority, which is a quality regulatory body and which also serves the purpose of disseminating market information to the different players. Market forces of demand and supply now determine prices.

As reforms continue (According to Msemakweli Leonard, General Secretary, UCA, in his presentation in 2012, co-operative marketing reforms in Uganda) “An Area Co-operative Enterprise (ACE) may be constituted by 5-20 primary societies/farmers associations that are not very far from each other. The idea is that the members of these primaries are able to collect sufficient bulk which gives them, more bargaining power
visa vis the buyers. ACEs must avoid the mistakes made in the past including covering too large an area which was one reason why the members lost control, making profits at the expense of the members, handling one commodity and avoiding being a high-cost business organization. ACEs do not only market the whole range of crops produced by their members, they also collect and disseminate market information, add value to members’ produce through processing or simply by sorting and grading. They also link producers and input dealers, support agricultural extension services (for example by inviting extension agents or input dealers to come and talk to the members, set up demonstrations, organize farmer exchange of ideas etc.), production planning and many others. Hence, Area Co-operative Enterprises have become a tool for business development for members and at the same time they ensure that the commission earned is enough to cover costs. The more the sources from which the ACEs can earn a commission, the better the chances of being in position to achieve this. Initially we started with a pilot of 25 ACEs but as of now we have reached about 100 ACEs. This number is increasing very fast because it has been proved that they work.”

2.6.2 Coffee marketing after liberalization

Private traders and primary cooperative societies purchase coffee from farmers at village level in competition. Those private traders, who are well established with sufficient capital, process the crop and export it on their own. Those traders with limited capital purchase the coffee from farmers and sell it to either private processors or to the district unions where the coffee is processed and exported.

Due to liberalization, the number of coffee exporters has increased. However, most of these use primary buyers (usually on bicycles) who actually move through the villages buying whatever farmers have to sell (in the past, farmers sold coffee in bags, now they sell in “debes” tins). These buyers are not trained at all and they indiscriminately purchase whatever the farmers offer. This has always encouraged farmers to sell sub-standard coffee, which consequently results in huge, losses at the processing stage. There is therefore a need to control or streamline the operations of the primary buyers (Babigumira, 2006)
2.7 Conclusion
In conclusion, this research looked at the contribution of coffee production to the SECU members, socio-economically through employment, entrepreneurial capacity building, education and the income households are able to gain through coffee production activities.

The coffee distribution channel adopted lately in comparison to the previously adopted cooperative union channel is elaborated to depict a clearer view for most of the coffee plant lovers and growers so that room for further contribution to the channel improvement is invited and greatly welcome in further researches as well.

Where possible the research has identified better ways to promote the coffee subsector by identifying the critical challenges faced and trying to find possible remedies in a systematic approach after analysis.
CHAPTER THREE: METHODOLOGY

3.1 Introduction

This section provides a description of the research design and methods that were employed in the execution of the study. It also describes various sources of data, the sampling design and procedures, the data types and their sources, the sampling frame, sample sizes and the methods that were used in data collection, processing and analysis.

3.2 Scope of the study

This study focused on the statistical analysis of coffee earnings to the coffee growers under the Sebei Elgon Co-operative Union (SECU) embracing the socio-economic aspects of coffee growing and includes the primary processing and marketing, and all the legal formalities involved until the coffee reaches final consumption and/or export point. Some very relevant literature outside the actual scope of the study has also been analysed.

3.3 Research Design

A descriptive design was used. The researcher used both qualitative and quantitative methods of data collection and analysis so as to capture the details and adequate information. The use of both methods ensured that the data was effectively interpreted using numbers, figures as well as narrative means.

3.4 Study Area

The survey was conducted in Chema Sub County in Kapchorwa district in Eastern Uganda; an area which is densely populated with coffee plantations/farmers. The data was obtained from the main coffee buyer in the district (Sebei Elgon Cooperative Union), local leaders, opinion leaders and the farmers as well.

3.5 Sample size determination

To obtain the sample size of the study, the following formula was used:

\[ n = \frac{N}{1 + Ne^2} \]
\[ n = \frac{100}{1+100(0.05)^2} \]

\[ n = 80 \text{ respondents} \]

Where,

- \( n \) represents the sample size,
- \( N \) is the target population size assumed to be normally distributed,
- \( e \) represents the error during computation

It is important to note that after getting the sample size, the higher the sample size, the more accurate the results. The researcher allowed an error term, \( e = \) level of significance to be 5%. In this case the usual population size of SECU was estimated to range between 96 to 100 farmers; hence the maximum (100 respondents) was considered because the sample being wider lowers the error, associated with this research.

In the sampling procedure, stratified sampling was employed in collecting the data; each market centre represented a stratum. The sample size was allocated among centres by proportional allocation. Systematic sampling was then employed to choose from each market centre the number of farmers that will be interviewed. This was done using the formula;

\[ K = \frac{N}{n}; \text{ out of the first } k \text{ farmers, one farmer was chosen by random selection and every other } K^{th} \text{farmer was interviewed.} \]

**3.6 Data Collection Instruments**

Self-administered questionnaires were used for the staff of Sebei Elgon Co-operative Union. This instrument assisted in collecting information regarding respondents’ perception of coffee production and its contribution to people’s income. Structured interviews were used. This technique was applied to individual farmers concerning the subject of investigation.
3.7 Data Sources and types
The data used in the study was gathered from both primary and secondary sources. The primary sources entailed going to the field and collecting first-hand information and it is this that constituted empirical data. This data was collected using questionnaires. Secondary data involved searching for information from published and unpublished sources like magazines, journals and internet. The data were both qualitative and quantitative in nature.

3.8 Data Quality Control
The process of data collection involved ensuring that all the information gathered was carefully protected and regarded as confidential. No unauthorised access was allowed. A letter of introduction from the University was presented to the respondents.

3.9 Methods and Techniques of Data Analysis
This section presents the techniques and methods employed in data analysis.

3.9.1 Data coding
In order to be able to enter the data into the computer for analysis, data was coded. The close ended questions were also coded before the field exercise while open ended questions were coded afterwards.

3.9.2 Data entry
Data was entered using the STATA package. Data entry screens and data check programs were designed and pre tested in advance to ensure that minimum errors are made during data entry and questionnaire response validity is in-line with the targets and objectives already stated in Chapter One of this dissertation.

3.9.3 Descriptive analysis
Data analysis was done using STATA. Frequency distributions and tables were developed for various research variables.
3.9.4 Inferential statistics

This section presents hypothesis testing. Statistical methods were used to reach the conclusions and interpretations of the study objectives and hypotheses. STATA was used to make cross-tabulations that were used to establish effects of a given independent variable; employment, education, savings and entrepreneurial skills gained. The Pearson’s chi-squared test at 95% level of significance was used for hypothesis testing where necessary. This test was chosen because of its convenience in testing proportions, correlations and regressions and other associations of interest are made much easier.

3.9.5 Regression analysis

This was used to establish the presence of any association between the quantity of coffee produced and the sample size earnings in the most recently concluded harvesting season. A simple model was adopted for this purpose as illustrated below:

\[ Y = \alpha + \beta X_i + \varepsilon \]

where the parameters;

- \( Y \) represents the gross incomes of the sample earned from the sale of their harvest.
- \( X_i \) is the Quantity of coffee harvested in the preceding season and sold at current prices.
- \( \alpha \) is a constant, or rather the value of \( Y \) at \( x=0 \).
- \( \beta \) is the slope of line.
- \( \varepsilon \) is the error term in estimating the model.

This analysis helped in determining the type of association existing between the people’s (coffee growers) incomes and the quantity of coffee harvested and sold with the assumptions that random sampling was employed in sample determination and that independence of the figures, normality and homogeneity of data exists.

3.9.6 Analysis of Variances (ANOVA)

This involved use of one way ANOVA techniques on data collected. To carry out ANOVA the total sum of squares (SST) was partitioned/ broken down into sums of squares due to the treatments which we denote as SSB and the error sum of squares (SSE)

\[ SST = SSB + SSE \]
$SST = -$ 

$SSB = \Sigma -$ 

$SSE = SST - SSB$

With the assumptions kept in mind that:
- The process was repeatable.
- The population distribution sampled was normal.
- The variances of all the levels of a factor were homogeneous.

3.9.7 Tests of hypotheses

Model 

\[ y = \beta_0 + \beta_1 x + \epsilon \]

Where 
- \( j^{th} \) coffee farmer earning under the \( i^{th} \) coffee quantity harvested 
- The general average coffee earnings. 
- \( i^{th} \) treatment effect (coffee quantities harvested). 
- Error term.

**Hypothesis One:**

\( H_0: \) Coffee production (quantities sales) has no effect on the incomes of the people.

\( H_a: \) Coffee production (quantities sales) has an effect on the incomes of the people.

\( H_0: \) == =0

\( H_a: \) some ≠0

**Rejection criterion:**

Reject \( H_0 \) if \( F_c \geq F_{0.05, 3, 76} \)

Accept \( H_0 \) if \( F_c < F_T = F_{0.05, 3, 76} \) (at level of significance, \( \alpha = 5\% \))

\( SST = SSB + SSE \)

**Computations:**

\( SST = -$ 

\( SSB = \Sigma -$ 

\( SSE = SST - SSB \)
### ANOVA TABLE.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Df</th>
<th>Ss</th>
<th>Ms</th>
<th>F-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between treatments</td>
<td>α-1</td>
<td>SSB</td>
<td>MSB=</td>
<td>$F_{c}$=</td>
</tr>
<tr>
<td>Error</td>
<td>N-α</td>
<td>SSE</td>
<td>MSE=</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>N-1</td>
<td>SST</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conclusion:**

If $H_0$ is rejected we conclude with 95% confidence that Coffee production (quantities harvested and sold) has an effect on the incomes of the farmers.

If $H_0$ is not rejected we conclude with 95% confidence that Coffee production (quantities harvested and sold) has no significant effect on the incomes of the farmers.

**Hypothesis Two:**

$H_0$: Coffee production has no effect on the growers in terms of education, by being able to pay fees for their children.

$H_a$: Coffee production has a significant effect on the growers in terms of education, by being able to pay school fees for their children.

**Hypothesis Three:**

$H_0$: There is no significant difference in earnings amongst coffee growers by sex.

$H_a$: There is a significant difference in earnings amongst coffee growers by sex.

Here we used the STATA package to specifically carry out multivariate regression analysis with the aid of dummy variables. It is also important to note that savings, education, skills gained, and employment were the social economic development factors considered.
CHAPTER FOUR: PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter discusses the findings of the study at different levels of analysis; showing the distribution of the respondents by some selected characteristics of mainly coffee farmers (growers), the associations between the dependent variables and independent variables as well as at multivariate level which established the effect of the different variables.

4.2 Univariate Analysis

Table 4.1: Socio-economic and demographic characteristics of the respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49</td>
<td>61.2</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>38.8</td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>15</td>
<td>18.8</td>
</tr>
<tr>
<td>26-32</td>
<td>18</td>
<td>22.4</td>
</tr>
<tr>
<td>33-40</td>
<td>27</td>
<td>33.8</td>
</tr>
<tr>
<td>Above 40</td>
<td>20</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catholic</td>
<td>16</td>
<td>20.0</td>
</tr>
<tr>
<td>Protestant</td>
<td>33</td>
<td>41.3</td>
</tr>
<tr>
<td>Muslim</td>
<td>14</td>
<td>17.4</td>
</tr>
<tr>
<td>seventh day Adventist</td>
<td>5</td>
<td>6.3</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
<td>15.0</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>11</td>
<td>13.8</td>
</tr>
<tr>
<td>Primary</td>
<td>23</td>
<td>28.8</td>
</tr>
<tr>
<td>Secondary</td>
<td>18</td>
<td>22.4</td>
</tr>
<tr>
<td>Tertiary</td>
<td>15</td>
<td>18.7</td>
</tr>
<tr>
<td>University</td>
<td>13</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>18</td>
<td>22.5</td>
</tr>
<tr>
<td>Married</td>
<td>45</td>
<td>56.2</td>
</tr>
<tr>
<td>Widowed</td>
<td>11</td>
<td>13.8</td>
</tr>
<tr>
<td>Divorced</td>
<td>6</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Most of the respondents (61.2%) were males and the rest (38.8%) were females.
Slightly over one third (33.8%) of the farmers were aged between 33 to 40 years, 18.8% were aged between 18 to 25 years, 22.4% were aged between 26 to 32 years, 25.0% who make up the rest of the sample were above 40 years of age and no coffee farmer was below 18 years of age.

Most of the respondents (28.8%) were educated up to primary level, secondary level (22.5%), tertiary level (18.8%), University level (16.2%) and 13.8% had never been to school.

The majority of the respondents (56.2%) were married, 22.5% were single, 13.8% were widowed and few (7.5%) were divorced.

Table 4.2: Coffee types, work hours, profiting and coffee quantity rating of harvest

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of coffee</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arabica</td>
<td>80</td>
<td>100.0</td>
</tr>
<tr>
<td>Robusta</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Both</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Work hours spent</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 4</td>
<td>5</td>
<td>6.2</td>
</tr>
<tr>
<td>5 to 9</td>
<td>49</td>
<td>61.3</td>
</tr>
<tr>
<td>10 to 14</td>
<td>26</td>
<td>32.5</td>
</tr>
<tr>
<td><strong>Coffee quantity rating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>18</td>
<td>22.5</td>
</tr>
<tr>
<td>Medium</td>
<td>54</td>
<td>67.5</td>
</tr>
<tr>
<td>High</td>
<td>8</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Profiting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>63</td>
<td>78.8</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>6.2</td>
</tr>
<tr>
<td>Doubtful</td>
<td>12</td>
<td>15.0</td>
</tr>
</tbody>
</table>

The main and sole type of coffee grown is Arabica coffee as indicated by 100% of the respondents.
The majority of the coffee growers (61.3%) spent in the coffee gardens between 5 to 9 hours, 32.5% work for more than 10 hours on a daily basis in their coffee gardens and 6.2% said they work for less than 5 hours.

There is majority support to monetary profiting (78.8%) from growing and selling coffee and its products, with 15.0% not sure (doubtful) of any profit though they are active participants in the coffee growing activities. It was also observed that only 6.2% thought they were not making profits from coffee growing and selling activities.

Table 4.3: Frequently accessed services offered by SECU

<table>
<thead>
<tr>
<th>Services offered by SECU</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitization on CBP</td>
<td>25</td>
<td>31.2</td>
</tr>
<tr>
<td>Coffee seedlings and fertilizers</td>
<td>13</td>
<td>16.2</td>
</tr>
<tr>
<td>Savings sensitization</td>
<td>23</td>
<td>28.8</td>
</tr>
<tr>
<td>Other services</td>
<td>19</td>
<td>23.8</td>
</tr>
</tbody>
</table>

Most of the respondents (31.2%) acknowledged receiving sensitization services on coffee bacteria prevention, 28.8% of the respondents successfully got savings sensitization, while 23.8% accessed other services other than these above and only 16.2% of the sample got access to coffee seedlings and fertilizers.

Table 4.4: Challenges faced

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension services</td>
<td>24</td>
<td>30.0</td>
</tr>
<tr>
<td>Coffee prices</td>
<td>37</td>
<td>46.2</td>
</tr>
<tr>
<td>Climate</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Market and roads</td>
<td>9</td>
<td>11.2</td>
</tr>
<tr>
<td>Others</td>
<td>7</td>
<td>8.8</td>
</tr>
</tbody>
</table>
The instability of coffee prices is the leading challenge noted (46.2%) and it is very influential in coffee production just like for other traditional cash crops and the agricultural sector as a whole. Limited access by the farmers to the vital extension services was the second leading challenge (30.0%) to the coffee subsector. Narrow market and poor road networks to markets are also a big obstacle (11.2%) to the coffee subsector and the farmers are facing this challenge with limited help. There are also other challenges that affect the coffee production activities negatively like poor climatic conditions.

Table 4.5 Contribution to employment

<table>
<thead>
<tr>
<th>Response (n=80)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>79</td>
<td>98.8</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100.0</td>
</tr>
</tbody>
</table>

It is observed that 98.8% agreed that SECU has greatly contributed to employment. Only 1.2% rejected SECU’s contribution towards employment through coffee growing and selling activities either directly or indirectly.

4.3 Bivariate Analysis.

At this level employment, education, entrepreneurial skills gained and saving are significant independent variables.
4.4 Contribution to household incomes.

Table 4.6: Contribution of coffee incomes earned to household savings

<table>
<thead>
<tr>
<th>Contribution of income to saving</th>
<th>Responses n=80</th>
<th>Level of income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Below 160000</td>
<td>160001-320000</td>
</tr>
<tr>
<td>Yes</td>
<td>60</td>
<td>26.7%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>50.0%</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>73.3%</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>50.0%</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100.0%</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Pearson chi² (3) = 17.8621 Pr. = 0.0000

The majority of the coffee growers (94.0%) who earned above shs.480000 were able of save while 6.0% in the same income bracket did not save. More than half (58.3%) of those who earned between shs.320001 and shs.480000 were capable of saving, the rest (41.7%) did not save at all. About 73.3% of those who earned below shs.160000 did not save at all. Since the p-value was less than the level of significance (α = 0.05; using 95% confidence level) then we conclude that there was a significant relationship between the income earned and level of saving. Thus there was a significant contribution that coffee production had to both the incomes and the levels of saving as well.

4.5 Contribution to entrepreneurial skills.

Table 4.7: Summary of contribution to entrepreneurial skills

<table>
<thead>
<tr>
<th>Contribution to entrepreneurial skills</th>
<th>Number of coffee growers</th>
<th>Type of entrepreneurial skills gained</th>
<th>Earn more from less(Value addition)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Small enterprise</td>
<td>Increased quality</td>
</tr>
<tr>
<td>Yes</td>
<td>60</td>
<td>55.0%</td>
<td>15.0%</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Pearson chi² (1) = 4.0684 Pr. = 0.0000

Please note that where the cell has “0.0%”, that implies they skipped (omitted) the question of the nature of entrepreneurial skill gained, since the respondent gained no entrepreneurial skill at all.
Of the coffee growers whose entrepreneurial performance improved by any of the four categories, majority (55.0%) started small enterprise, 20.0% supported increased quantity of coffee harvests and 15.0% improved the coffee quality while 10.0% earned more from less coffee quantity by value addition. Since the P-value = 0.0000 is less than the level of significance (α = 0.05; using 95% confidence level) then we conclude that there was a significant association between the coffee growing and gain in entrepreneurial skills.

Table 4.8: Cross tabulation of income and gain of new entrepreneurial skills

<table>
<thead>
<tr>
<th>Gained Entrepreneurship skills</th>
<th>Income level (shillings)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Below 160000</td>
<td>160001-320000</td>
<td>320001-480000</td>
<td>Above 480000</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4(26.7%)</td>
<td>2(100.0%)</td>
<td>8(66.7%)</td>
<td>46(90.2%)</td>
<td>60(75.0%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>11(73.3%)</td>
<td>0(0.0%)</td>
<td>4(33.3%)</td>
<td>5(9.8%)</td>
<td>20(25.0%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15(100.0%)</td>
<td>2(100.0%)</td>
<td>12(100.0%)</td>
<td>51(100.0%)</td>
<td>80(100.0%)</td>
<td></td>
</tr>
</tbody>
</table>

Pearson chi² (1) = 7.2544   Pr. = 0.025

From the table above, the majority of the farmers (90.2%) who earned above shs.480000 at least gained a new entrepreneurial skill though (9.8%) in the same income range did not.

Most of the coffee farmers (66.7%) who earned between shs.320001 and shs.480000 registered a gain of an entrepreneurial skill and 33.3% did not, even though they earned between shs.320001 and shs.480000.

It was also observed that all of the coffee farmers (100.0%) who earned between shs.160001 and shs.320000 gained an entrepreneurial skill.

The minority of the coffee growers (26.7%) who earned below shs.160000 were able to register a new entrepreneurial skill gained while most (73.3%) did not gain any entrepreneurial skill.
The table therefore strongly suggests that 75.0% of all the respondents at least gained an entrepreneurial skill from coffee production regardless of the income they got from coffee production while only 25.0% did not gain any entrepreneurial skill.

### 4.6 Analysis of Variance

Table 4.9: ANOVA of quantity of coffee harvested then sold and coffee incomes

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>64.8553571</td>
<td>3</td>
<td>21.6184524</td>
<td>37.66</td>
<td>0.0000</td>
</tr>
<tr>
<td>Residual</td>
<td>43.6321429</td>
<td>76</td>
<td>.574107143</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>108.4875</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pearson chi²(2) = 31.4369, p-value=0.0000

Predictor: Quantity of coffee harvested and sold.

Dependent Variable: level of income.

**Hypothesis**

H₀: Coffee production (quantities harvested and sold) has no effect on the incomes of the people.

H₁: Coffee production (quantities harvested and sold) has an effect on the incomes of the people.

H₀: ===0

H₁: some ≠0

**Conclusion:**

Reject H₀ since the p-value (0.0000)< 0.05 and we conclude that with 95% confidence, coffee production (quantities harvested and sold) has a significant effect on the incomes of the people.

It also implies there is a strong significant positive association between incomes earned from coffee sales and the quantity produced and sold. The more the quantity of coffee produced and sold to the market the higher the income earned from the coffee sales.
Table 4.10: ANOVA of quantity of coffee harvested then sold and contribution to education.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean square</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>0.419607843</td>
<td>3</td>
<td>0.139869281</td>
<td>3.14</td>
<td>0.030</td>
</tr>
<tr>
<td>Residual</td>
<td>3.38039216</td>
<td>76</td>
<td>0.044478844</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3.8</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pearson $\chi^2$ (1) = 32.2496, p-value=0.0000

Predictor: level of income.

Dependent Variable: contribution to education by paying school fees

Hypothesis

$H_0$: Coffee production has no effect on the growers being able to pay school fees.

$H_a$: Coffee production has a significant effect on the growers being able to pay school fees.

$H_0$: $$=0$$

$H_a$: some $$\neq 0$

Conclusion:

We reject $H_0$ since the p-value (0.0000)< 0.05 and conclude that with 95% confidence, coffee production has a significant effect on the growers being able to pay school fees.

Table 4.11: ANOVA of quantity of coffee harvested then sold and earnings amongst coffee growers by sex

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>0.021403884</td>
<td>1</td>
<td>0.021403884</td>
<td>0.02</td>
<td>0.9016</td>
</tr>
<tr>
<td>Residual</td>
<td>108.466096</td>
<td>78</td>
<td>1.39059098</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Total | 108.4875 | 79 |   |   |

Pearson \( \chi^2 (1) = 0.8883 \), P-value = 0.9016

Predictor: sex of respondent

Dependent Variable: level of income

**Hypothesis**

\( H_0: \) There is no significant difference in earnings amongst coffee growers by sex.

\( H_a: \) There is no significant difference in earnings amongst coffee growers by sex.

\( H_0: \) ====0

\( H_a: \) some \( \neq \)0

**Conclusion:**

Accept \( H_0 \) since the p-value (0.9016) > 0.05 and we conclude that with 95% confidence, there’s no significant difference between coffee harvested then sold and earnings amongst coffee growers by sex.

4.7 Regression Analysis

**Table 4.12:** Regression analysis of incomes from coffee sales on contribution to school fees payment.

<table>
<thead>
<tr>
<th>Paying fees</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>-0.054845</td>
<td>0.0202608</td>
<td>0.008</td>
</tr>
<tr>
<td>Constant</td>
<td>1.227561</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R-squared = 0.0859

R-squared = 0.0859 implies that 8.6% of the ability to pay school fees is explained by the level of income from coffee growing.

Paying fees = 1.227561 -0.054845(income) 

\( (0.0) \) \( (0.008) \)

The values 0.008 and 0.000 in the brackets indicate the p-values associated with the independent variable, income and the constant respectively.
4.8 Coefficients

Table 4.13: Coefficients of the model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard error</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.881053</td>
<td>0.7856823</td>
<td>0.0000</td>
</tr>
<tr>
<td>Coffee quantity</td>
<td>0.4309281</td>
<td>0.0764187</td>
<td>0.0000</td>
</tr>
<tr>
<td>Employment</td>
<td>-0.2992583</td>
<td>0.7176465</td>
<td>0.678</td>
</tr>
<tr>
<td>Saving</td>
<td>0.9472038</td>
<td>0.2000043</td>
<td>0.0000</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>0.9095282</td>
<td>0.1894426</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

A: Dependent variable-Level of income from coffee production and related activities
B: Independent variable-employment, entrepreneurship skills, savings, coffee quantity

4.9 Regression Results

Income = 4.881053 + 0.431(coffee quantity) - 0.299(employment) + 0.947(savings) + 0.909(entrepreneurship)

(0.0000) (0.0000) (0.678) (0.0000) (0.0000)

(Please note that the figures in the brackets are the corresponding p-values).

4.10 Model interpretation

From the regression results, it is evident that coffee quantity produced (p-value=0.0000), savings (p-value=0.0000), and entrepreneurship (p-value=0.0000) contribute greatly to the farmers’ wellbeing.
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction
This section presents a summary of the findings from the study; conclusions and recommendations and the possible remedies to improve and regulate coffee growing performance.

5.2 Summary of the findings
The study examined the demographic and socio-economic factors associated with coffee production and in depth analysis was taken to determine which level variables tend to put coffee growers at higher risk of low performance.

The study findings showed significant positive relationships in the contribution of coffee production to the economic and socio-economic welfare of the coffee growers associated with SECU, not only identifying the main challenges but also suggesting solutions to these challenges as well.

Almost all the variables analyzed by the researcher like the level of income gained, the level of gain in entrepreneurial skills, household employment, education improvement and savings showed a significant relationship with coffee production at bivariate level of analysis.

The study also justified that there is no significant difference in earnings amongst coffee growers by sex that is, both the male and female coffee growers were earning quite the same incomes.

5.3 Conclusions.
If more funding and extension services were extended to the farmers to support coffee farming there could be a likely improvement socio-economically in terms of being able to pay school fees and saving.

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Additionally the more the quantity of coffee produced the higher the incomes attributed to the coffee produced.

The contribution of SECU towards employment was significant but not towards the incomes of the coffee growers. Quantity of coffee grown, gained entrepreneurial skills and savings are the leading contributors to the people’s incomes through coffee production and related activities.

5.4 Recommendations

The farmers should be encouraged to join or open up a Savings and Credit Cooperative (SACCO) to maximize the value of their savings and increase on their incomes as well through use of the various entrepreneurial skills attained.

SECU should continue with its activities and more funding should be solicited for SACCO development to finance the coffee farming and selling activities whose worth has been noted through their significant contribution to employment, better coffee distribution and channeling.

The coffee prices should be regulated to encourage the farmers to grow more coffee, being one of Uganda’s leading export earners. This can be done by the government through price control policies to stabilize the coffee prices within the country.

The government should also allocate more funds for commercialization of the agricultural sector and coffee sub-sector and increase access to extension services and potential markets.
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## APPENDICES

### A: STUDY BUDGET.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationery</td>
<td>40,000</td>
</tr>
<tr>
<td>Typing and printing</td>
<td>20,000</td>
</tr>
<tr>
<td>Photocopying and binding</td>
<td>30,000</td>
</tr>
<tr>
<td>Transport</td>
<td>60,000</td>
</tr>
<tr>
<td>Foods and drinks</td>
<td>25,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>50,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225,000</strong></td>
</tr>
</tbody>
</table>
### B: TIME FRAME

<table>
<thead>
<tr>
<th>Activity</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data scrutiny</td>
<td></td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dissertation writing</td>
<td></td>
<td></td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Review</td>
<td></td>
<td></td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Submission</td>
<td></td>
<td></td>
<td></td>
<td>✔️</td>
</tr>
</tbody>
</table>
C: QUESTIONNAIRE ACCEPTANCE REQUISTION
Questionnaire for coffee growers and those associated with the Sebei-Elgon Cooperative Union.

Dear respondent, I am Chelangat Saulo James a student at Makerere University and in the process of conducting research on the topic “Coffee Production, and its Contribution to People’s Income.” I believe you have a wide knowledge on the topic being investigated. You have therefore been selected as one of the respondents for this study and the information you provide will only be used for academic purposes. The researcher promises to ensure maximum confidentiality of the data provided. I request you to give your opinion as accurately as possible.

Yours sincerely,

Chelangat Saulo James
D: QUESTIONNAIRE

SECTION A: BIOGRAPHIC DATA (tick or circle the option that corresponds to your response)

1. What is your sex?
   a) Male
   b) Female

2. What is your Age group.
   a). below 18 years
   b). 18 to 25 years
   c). 26 to 32 years
   d). 33 to 40 years
   e). Above 40 years

3. What is your religion?
   a). Catholic
   b). Protestant
   c). Muslim
   d). Seventh Day Adventist
   e). other (specify)

4. What is your highest level of education attained?
   a). No level
   b). Primary level
   c). Secondary
   d). Tertiary
   e). University

5. What is your marital status?
   a). Single
   b). Married
   c). Widowed
   d). Divorced

SECTION B: ACTIVITIES

6. What type of Coffee do you mostly process?
   a) Robusta
   b) Arabica
   c) Both

7. On average, how many hours do you work in a day?
   a) Below 4 hours
   b) 5 to 9 hours
   c) 10 to 14 hours
   d) Above 14 hours

8. How do you rate the amount of coffee produced and put to market?
   a) Low
   b) Medium
c) High

9. On a scale of 1-5 where 1 means very bad and 5 means very good; how do you rate the conditions of your working environment in SECU?
   a) Very bad
   b) Bad
   c) Fair
   d) Good
   e) Very good

10. What quality of coffee do you think is produced?
   a) Poor
   b) Bad
   c) Fair
   d) Good
   e) Very good

11. How many kilograms on average of coffee do you harvest per harvest season?
   a) Below 80kg
   b) 81 to 160kg
   c) 161 to 240kg
   d) Above 240kg

12. Do you think you realize any monetary profit in selling or growing coffee?
   a) Yes
   b) No
   c) Doubtful

SECTION C: CONTRIBUTION OF COFFEE PRODUCTION TO HOUSEHOLD INCOME

13. How much income do you get from the sale of coffee and other related activities?
   a) Below 160,000/= 
   b) 160,001 to 320,000/= 
   c) 320,001 to 480,000/= 
   d) Above 480,000/= 

14. How is your earning from coffee sales helping you?
   a) Paying school fees
   b) Started a small scale business
   c) Improving Animal Husbandry
   d) Crop farming
e) Others (specify)  

15. Do you realise an increase in your level of saving and/or income?
   a) Yes  
   b) No  

16. If yes precisely how much (Ug.shs.) do you save?
   a) Below 100000  
   b) 100001-200000  
   c) 200001-300000  
   d) 300001-400000  
   e) 400001 and above  

SECTION D: CONTRIBUTION OF COFFEE PRODUCTION TO HOUSEHOLD EMPLOYMENT

17. Do you think SECU has improved the level of employment in this area?
   a) Yes  
   b) No  

18. Are many people now participating in coffee production to earn a living?
   a) Yes  
   b) No  

19. Which category of people concentrates on coffee growing most?
   a) Teenagers (below 21yrs)  
   b) Youth (22-35yrs)  
   c) Adults (above 35yrs)  

20. Has coffee production been very helpful in building your entrepreneurial skills?
   a) Yes  
   b) No  

21. If yes how?
   a) I have started a small enterprise  
   b) Increased the quantity of coffee produced  
   c) Improved the quality of coffee  
   d) Earned more from lesser coffee quantity than before  

SECTION E: CONTRIBUTION OF COFFEE PRODUCTION TO EDUCATION

22. In your own view, do you think those people who grow coffee are able to pay school fees for their children?
   a) Yes  
   b) No
23. How many primary and secondary schools in this sub county do you know?
   a) Below 3
   b) 4-6
   c) 7-9
   d) 10 and more

24. Are primary pupils also participating in this activity?
   a) Yes
   b) No

25. If yes, can you rate their academic performance at school?
   a) poor
   b) average
   c) excellent

26. Would you encourage the students and pupils to grow coffee in shambas on full time basis?
   a) Yes
   b) No

**SECTION F: CHALLENGES**

27. What challenges do you mostly face as a coffee grower or seller?
   a) Limited access to extension services
   b) Low and fluctuating coffee prices
   c) Unfavourable climatic conditions
   d) Limited market and poor roads
   e) Others

28. According to you, what do you think should be done in order to address the above problems?

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

*Thank you for your response.*