

FACTORS INFLUENCING COFFEE PRODUCTION BY SMALL
SCALE FARMERS IN BUSULANI SUBCOUNTY AND BUDADIRI TOWN COUNCIL IN
SIRONKO DISTRICT

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DECLARATION

This Research Report is my own work and has not been presented for award of Degree in any other university.

Signature.....MB..... Date.....17/09/2018.....

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DEDICATION

This Research Report is dedicated to my family members, daddy Wasukira Lawrence and mammy, Wasukira Helen for their endless effort in my studies from primary to University. It is also dedicated to my spiritual family of Miracle of Faith Ministries International and Holy ghost Christian Centre for their endless support.

ABBREVIATIONS AND ACRONYMS

SATAAS	Agricultural Technology and Agribusiness Advisory Services
BoU	Bank of Uganda
CBD	Coffee Berry Disease
FDI	Foreign Direct Investment
GoU	Government of Uganda
ICO	International Coffee Organization
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MPED	Ministry of Finance, Planning and Economic Development
NAADS	National Agricultural Advisory Services
NaCORI	National Coffee Research Institute
NPA	National Planning Authority
NUCAFE	National Union of Coffee Agribusinesses and Farm Enterprises
UBOS	Uganda Bureau of Statistics
UCDA	Uganda Coffee Development Authority
UCF	Uganda Coffee Federation
UCFA	Uganda Coffee Farmers Alliance
UGX	Uganda Shillings
UNBS	Uganda National Bureau of Standards
USAID	United States Agency for International Development
GDP	Growth Domestic Product
SLG	Sironko Local Government

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ABSTRACT

Coffee is an important crop globally due its contribution of National GDP, tax generation food security and inequality reduction role. The purpose of study was to assess factors influencing small scale coffee production in Budadiri Town Council and Busulani Sub county in Sironko District. The objectives of the study were to assess the influence of: social factors, adoption of coffee production techniques, coffee Cooperative Societies management, and coffee value addition on small scale coffee production . Primary data was collected using both open and closed ended questionnaires from small scale farmers and interview schedules for Coffee Cooperative Society's Management and key stakeholders. The data was analyzed using Statistical Package for Social sciences version IBM 20. The target population was 600 small scale farmers in Budadiri Town Council and Busulani Sub county in Sironko District from which a sample size of 108 small scale farmers, 2 members of coffee Cooperative Society Management which comprised of and 4 key stakeholders.

Male dominated enterprise with 82.4% male ownership against 17.6% women. Age of majority of farmers (50%) ranged between 30 to 45years. Majority, (78.7%) of coffee farmers were married people. There was a very low correlation between level of education and yield of coffee by small scale farmers

37.84% of respondent attributed low yield to techniques production techniques adopted. The study further established that 63.04% of the respondents did not attribute production techniques adopted to be a cause of low coffee yields.

According to the study pests and diseases (93.5%) attributed much to the low coffee yields by small scale farmers. The study established that there was consumption of 57.6% of coffee by the coffee farmers .Those who did not consume coffee attributed it to coffee not being available and not affording it. Some claimed they prefer other beverages. The study also established there was low adoption of irrigation by 5.6% and Mechanization adoption was 6.5%. The study revealed that education level of the farmers was not correlated with productivity of coffee per tree. Farmers were less satisfied with roles of cooperative society management farmers in this area of study.

CHAPTER ONE

1.0 Background to the Study

Coffee is one of the most important cash crops across the world and a major source of export earnings. It is second only to crude oil as the most important internationally traded commodity in monetary value (FAO, 2004). In spite of high export earnings from coffee globally, coffee produced in most African countries fetch low prices compared to coffee from other continents due to relatively lower quality coffee (Bibangambah, 1989).

As a result, most coffee farmers get lower incomes from coffee sales, which make very little difference in helping them out of poverty. Coffee is also the world's widely traded tropical agricultural commodity accounting for exports worth estimated US\$ 15.4 billion in 2009/2010 when 93.4 bags were shipped (ICO, 2013). Coffee production by small scale farmers support about 25 million people around the world (Waston and Achineli, 2008)

Coffee is produced in more than 70 countries of the world (ICO, 2013). Countries that dominate the world's coffee production are found in South America, Africa, and Southeast Asia (Indonesia Investment, 2014). The top coffee producing countries in the world are, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Ethiopia, Guatemala, Honduras, India, Indonesia, Java, Ivory Coast, Mexico, Nicaragua, Papua New Guinea, Peru, Tanzania, Thailand, Uganda, Vietnam, Angola, Cameroon, Cuba, and Democratic Republic of Congo.

Globally, like in Brazil Coffee production is responsible for about a third of all coffee, making Brazil by far the world's largest producer, a position the country has held for the last 150 years. Coffee plantations, covering some 27,000 km² (10,000 sq miles), are mainly located in the southeastern states of Minas Gerais, São Paulo and Paraná where the environment and climate provide ideal growing conditions.

Brazil has been the world's largest producer of coffee for the last 150 years, currently producing about a third of all coffee. In 2011 Brazil was the world leader in production of green coffee, followed by Vietnam, Indonesia and Colombia. The country is unrivaled in total production of green coffee, arabica coffee and instant coffee. In 2011, total production was 2.7 million tones, more than twice the amount of Vietnam, the second largest producer. Some 3.5 million people are involved in the industry, mostly in rural areas.

There are about 220,000 coffee farms involved in the industry, with plantations covering about 27,000 km² (10,000 sq miles) of the country. Plantations are mainly located in the southeastern states of Minas Gerais, São Paulo and Paraná where the environment and climate provide ideal growing conditions. Minas Gerais alone accounts for about half of the country's production. Most plantations are harvested in the dry seasons of June through September, usually in one huge annual crop when most berries are ripe. All coffee in Brazil is processed using the dry process (also called unwashed or natural coffee). The entire cherries are cleaned and placed in the sun to dry for 8–10 days (or up to four weeks during unfavorable conditions). The outer layer of the dried berry is then removed in a hulling process before the beans are sorted, graded and packed in 60 kg bags.

Several species in the coffee genus, *Coffea*, can be grown for their beans, but two species, arabica and robusta, account for virtually all production. Arabica dominates both Brazil and the world as a whole with about 85% of the production; robusta accounts for the remaining 30%. In Brazil, arabica production is located in the main coffee-growing cluster of states led by Rio where arabica is produced almost exclusively. Robusta is primarily grown in the northwestern much smaller state of Espírito Santo where about 80% of the coffee is robusta. More recently, the northwestern state of Rondônia entered the market and produces large shares of robusta.

The processing industry is divided in two distinct groups, ground/roasted coffee and instant coffee. The ground/roasted coffee market is highly competitive.. Brazil is the world's largest exporter of instant coffee, with instant coffee constituting 10–20% of total coffee exports. Both types of coffee are mainly exported to the US, the world's largest coffee consumer.

In Venezuela coffee production began in the late eighteenth and early nineteenth centuries in the premontane forest region of the Andes Mountains. José Gumilla, a Jesuit priest, is credited with introducing coffee into Venezuela, in 1732. Its production is attributed to the large demand for the product, coupled with cheap labor and low land costs. It was first exported to Brazil. Coffee production in Venezuela led to the "complex migration" of people to this region in the late nineteenth century. Coffee production occurs in the Coast Range and the western Andean region with the only requirements being sufficient top soil and moisture. The coffee production system followed in the Andes region, which is the premontane moist forest, is a multilayered system (3 to 4 layered canopies) in which there is multi-species of plants. In this system, trees provide the

shade needed for growth of coffee. This region is a part in the three geographical regions of Venezuela namely, the Mountains and Caribbean Coastal region, the Llanos region, and the River Delta region, and the Guayana region.

The plantations are generally in the altitudinal range of 1,000–5,000 feet (300–1,520 m), bordering with Colombia. Better grades are noted at elevations of 6,000 feet (1,800 m) or higher but these elevations are characterized by slower growth and lower productivity.

The coffee growing area was extended to marginal agro climatic region in the elevation range of under 600m 600 metres (2,000 ft), called the premontane dry forest, though the area produced low yields (less than 300 kg per hectare each year), which was made good by the enterprising small farmers with crop diversification. Statistical survey has indicated that coffee plantations are generally in the elevation range of 800–1,700 metres (2,600–5,600 ft) on the hills of the Andean with slopes of 5 to 60%. The land holders were mostly small farmers who accounted for 87.5% of the total land holdings, with each holding of about 3.5 hectares (8.6 acres) under coffee and with traditional multilayered agro forestry practice.

As a perennial crop, the area covered under coffee was 280,000 hectares (690,000 acres) with the Andean region alone accounting for 125,000 hectares (310,000 acres).

The “Maracaibo’s” coffee exported from the Maracaibo port has sub varieties called Cucuta, Mérida, Trujillo, and Tachira. The eastern mountains coffee is known as Caracas, named after the capital city. While these are the local varieties of coffee grown in Venezuela, the basic universal coffee varieties under which the Venezuelan one fall under are the arabica (*Coffea arabica* L.) which grows better in the high land regions, and the Robusta (*Coffea canephora* p. ex Fr.) which grows in the low land regions; the former variety grows under forest canopy while the latter grows under partial shade.]

Lava do Fino is the country's highest grade of coffee. The best quality of Venezuelan coffee is reportedly from the western region which borders Colombia. The coffee is shipped from Maracaibo and the coffee is also named as "Maracaibos"; the coffee grown is characterized as “bright flavors with a clean, crisp finish.” It is also light weight and of simple structure but less acidic as compared with other Latin American coffee.

Coffee trees can be harvested within four years after planting. Each tree lives for about 50 years. While two pickings occur annually (October and November; December, January, and part of February) the latter one provides the larger harvest of the two. However, the picking season does vary by elevation and local conditions such that trees at elevations greater than 3,000 feet (910 m) are harvested later than those in lower elevations. Coffee production peaked to 1 million bags per year before 1914, and after local consumption much of its exports were second only to Brazil. In the Andean frontier region coffee production had increased ten times (between 1830 and 1930) making it the second largest coffee producing nation in the world. More than 82,000 tonnes of coffee were produced in 1919; however, poor agricultural practices, soil erosion, less incidence of rainfall and over use of soil strength caused a drastic decline in the yield, in the 1920s, which resulted in the decline of the coffee industry in the country; petroleum extraction compounded its downfall. Typically, coffee production is at its greatest during the months December and January. And shipping of Venezuelan coffee takes place between October to May. Coffee grown in Venezuela is largely consumed by locals and the rest is sold mainly to the United States, Belgium and Germany.

Peru is one of the top 20 coffee producers in the world as of 2014. It ranks fifth in the export of Arabica in the world market.

CENFROCAFE is a cooperative with more than 80 farm associations as well as six dry mill processing and finishing associations. Under this practice, the produce is marketed by the finance, marketing and sales office in Jaen, with direct accessibility to international export markets, ultimately benefitting several hundreds of coffee growers of the region. All the coffee marketed by the associations is from an area above 1,000 meters (3,300 ft) elevation. This organization has facilitated a large number of farm families access to international markets. The coffee marketed through CENFROCAFE, to the extent of about 92%, is organic; 100% is certified as Fair Trade. This has resulted in improved quality, and greater demand for Peruvian coffee in the international market, at competitive rates. The processing of coffee in Peru is mostly by wet milling on the site of the plantations. By this process, the moisture content of the coffee seeds is reduced to about 20% and then it is transported to the dry mills. However, this decentralized system is unfavorable for coffee growing areas of northern Peru as it has led to quality inconsistencies, promotion of rot and the growth of fungus. The three prominent coffee

growing areas, located in the eastern slopes of the Andes, are Chanchamayo, the Amazonas and San Martin regions, and the southern highlands. St Ignacio, close to the Ecuadorian border, is the centralized area of coffee plantations in northern Peru. Arabica is the dominant coffee crop, 70% of which is Typica, 20% is *caturra*, and the remainder being of other types. About 75% of the coffee growing area lies at an elevation range of 1,000–1,800 meters (3,300–5,900 ft), and planting done in the shaded areas is to the extent of 2,000 plants per ha. Farming is done largely by small farmers, and coffee is handpicked. Organic coffee is grown on 90,000 hectares (220,000 acres).

Coffee produced in the country is mostly exported, and during 2012, 264,343 tons was exported to US, Germany, Belgium, Colombia, Sweden and others, while internal consumption was limited to about 10%. During 2014, coffee rust disease (*Hemileia vastatrix*) affected 130,000 hectares (320,000 acres) in the central highlands of the country causing a decline of 6% in production vis-à-vis the 2013 figure; compared to the highest ever production of 30,900 tons, the shortfall was 15%.

In Africa coffee is grown in many countries and the selected countries are ; Ethiopia, Rwanda , and Uganda.

Ethiopia is the origin of coffee Arabica, and it grows wide variety of exemplary coffee, highly differentiated, most of which are shade-grown by small farmers without chemical inputs (Dempsey 2006). Ethiopia is the largest producer of coffee and ranks fifth in the world and first in Africa by annual coffee production. For the past three to 12 four decades, coffee has been and remains the leading cash crop and major export commodity of the country. Coffee accounts on average for about 10% of total agricultural production, 5% of Gross Domestic Product, and constitutes about 41% of total export earnings of the country (Worako 2008).

The number of coffee growers has been estimated in about one million smallholders' farmers. Most of them hold less than half a hectare of land, and grow 95 per cent of the coffee output (Oxfam 2008). Total annual coffee production is of approximately 280,000 metric tons (Dempsey 2006). Less than 40% of total national production of coffee is directed to official export markets (Worako 2008). The same study (Worako 2008) indicated that, annual domestic coffee consumption per household in the country is 24.5 kg and the per capita consumption is 4.5 kg. In Ethiopia livelihoods of approximately one quarter of the population depend on the coffee

sub-sector (Petit 2007). However, small holder coffee growers in Ethiopia face high transaction cost, lack of market information, poor infrastructure, and weak capital markets.

The coffee value chain in Ethiopia is composed of a large number of actors. It includes coffee farmers, collectors, different buyers, processors, primary cooperatives, cooperative unions, exporters and various government institutions (Gemech and Struthers, 2007). Ethiopian coffee is sold both at local level and at the international market, the latter mainly through the commodity exchange market and directly to international buyers through specialty market channels by coffee cooperative unions.

Normally, all Ethiopia coffee should pass through commodity exchange market since 2001, however, cooperatives have been granted permission to by-pass auction opening ways for direct sales (Dempsey, 2006). Cooperative Societies are advocated by the government of Ethiopia as the main pillars of development and key market institutions in its Agricultural development led industrialization strategy. This plan aims to unlock Ethiopia's agricultural growth potential by providing a better institutional environment for integrating small scale farmers into international market.(FDRE, 2001).

Rwanda produces the prized Arabica Bourbon coffee, highly sought after in specialty coffee markets world over (SNV, 2012). It is grown by approximately 500,000 smallholder farmers on a total area of 33,000 ha (OCIR-Café, 2005). Despite the important role that the crop plays in the livelihoods of rural farmers, national coffee throughput has been declining since the early 1980s. National production reached a peak of 43,000 tons in the 1986/87 coffee season. Between 2000 and 2004, national coffee production hovered between 16,000 and 25,000 tons with an average yield of 2tons/ha (OCIR-Café, 2005). The production is relatively low when compared with main coffee producers in Africa such as Ivory Coast and Uganda, which produce an annual average of 3.5 and 2.7 million tons respectively.

Problems related to international coffee marketing include stringent quality standards, costly standards for certification and enforcement systems, bulking difficulties which limit regular supply of economic volumes, increased variability in prices and limited opportunities to manage price risk (ECART, 2007).

A number of initiatives have been crafted by both public and private sectors which have focused on the technical or productivity constraints affecting coffee farmers at the expense of institutional marketing arrangements for the crop. Rwandese coffee is considered to be of high quality and is sold to conventional markets such as the US, Europe and other parts of the globe. Strides have been made to improve the quality of Rwanda's coffee following the promulgation of the new coffee sector strategy in 1998.

However, the country's export coffee remains largely obscured on the global market.(Mutandwa, Kanuma, Rusatira, Kwiringirimana,Mugenzi,Govere and Foti, 2009) Challenges exist on how to effectively establish the country's coffee on the international market and also to ensure that the marketing system keeps up with changes in the dynamic global market for high quality coffee (Ntahontuye, 2008). Strategic management of the country's niche markets remains largely unexplored. This factor has also contributed to declining export earnings for coffee in the country (Mutandwa et al,2009)

In Uganda Coffee is one of the most important cash crops playing a major role in the livelihoods of many poor people and is a major foreign exchange earner in Uganda. Uganda Coffee Development Authority (UCDA), the government agency responsible for the sector, estimates that about 500,000 households depend on coffee production. There are two main types of coffee grown in Uganda namely Arabica and Robusta coffee. Annual production on average is made up of 15% Arabica and 85% Robusta. In addition to serving as a main source of income, coffee has many other uses and thus provides many opportunities for value addition investment.

Coffee can be used as a medicine to cure asthma, headaches, and Alzheimer's disease. As a stimulant, coffee can inhibit sleep which can make someone to keep working for longer hours.. Coffee is mostly grown in mixed farms where it is intercropped with food crops such as bananas and beans which ensure households' food security. It is also grown among shade trees that result into sustainable coffee production, while ensuring a social, economic and suitable environment that requires a minimal use of agro-chemicals such as fertilizers, pesticides and fungicides. Cheap labor available in Uganda enhances great opportunities for investment in the coffee sector.

Coffee is a perennial crop and there are two main harvest seasons in Uganda for both Arabica and Robusta coffee (March-June and September-November). The main production season for

Robusta ranges May-August for Masaka and Western regions and November to February for Central, Eastern regions. In the case of Arabica, the main seasons are April to June for Western Region and October to February for Eastern and West Nile Regions.

For Arabica coffee, main crop This begins in April- July and the following crop is October to February. This is mainly in Ibanda and Kasese district.

Robusta Coffee is grown in the low altitude areas of Central, Eastern, Western and South Eastern Uganda up to 1,200 meters above sea level. Arabica coffee on the other hand is grown in the highland areas on the slopes of Mount Elgon in the East and Mt. Rwenzori and Mt. Muhabura in the South Western Region (1500-2,300 m above sea level). Unlike Robusta whose native habitat is the Lake Victoria Crescent, Arabica coffee is an introduced crop originating from Ethiopia. Arabica coffee is more competitive on the international market because of its superior quality. Uganda Robusta too has intrinsic quality attributes which also attract a premium on the international coffee market. There is, also, a new Arabica variety locally known as Tuzza,

commonly referred to as catimors which performs well in low altitude areas of the country predominantly zoned for Robusta coffee, (1,200-1,500 m). This variety is known for its high yielding capabilities, drought resistance and tolerance to diseases presenting a very attractive opportunity for investment.

Coffee growing areas in Central are Luwero, Mpigi, mukono, mityana, kayunga, masaka, rakai, mubende, kiboga. In Western Bushenyi, Ntungamo, Mbarara, kasese, Ibanda, Rukungiri. Generally the western region produces the highest quality of coffee. Other producing areas include; Buwenge, Jinja, Iganga, Kamuli. These districts are generalized as Busoga. This area produces the worst quality of coffee mainly because of post harvest handling and in addition they harvest mainly pre-mature coffee which had low levels of quality.

Coffee farmers in Uganda use mainly the low input system and households strongly rely on family labour for production. There is minimal use of agro-chemicals (fertilizers, pesticides and fungicides) and this practice has made Uganda a suitable country for organic coffee production. In general, the inputs in coffee production include land, labour, farm implements, seedlings, mulching, fertilizers, pesticides and fungicides, as well as transport. Good storage facilities are also essential for guaranteeing quality. Under medium management level, the yield of Robusta

and Arabica is 5000 kg/ha and 1,100 kg/ha of clean and parchment coffee respectively. The average costs of production and yields per hectare are indicated in table 2 below product per day. Apart from exporting green coffee beans Coffee can also be roasted, ground to make coffee powder which is in local coffee shops to prepare coffee drinks. Encouraging of local coffee shops and local people to consume coffee could also help on value addition.

Coffee is grown and exported by more than 50 developing countries, but the major consumers are in all industrialized countries like USA, EU and, more recently, Japan. Globally, coffee is the second major traded commodity to oil and thus plays a vital role in the balance of trade between developed and developing countries, providing the latter with an important source of export earnings to pay for imports of capital and consumer goods. World consumption of coffee is projected to increase by 0.4% annually from 6.7 million ton in 1998 - 2000 to 6.9 million tons in 2010. Coffee consumption in developing countries is projected to grow from 1.7 million tons in 1998 - 2000 to 1.9 million tons in 2010, at an annual rate of 1.3%, while their share in the world market is expected to increase from 26% in the base period to 28% in 2010. The projected higher growth rate for developing countries compared to developed countries is due mainly to higher income and population growth in developing countries, with increased coffee consumption continuing to be concentrated in the major coffee producing countries. Finally, World production for coffee in the crop year 2006/07 (April-March) was 121.57m bags, an increase of 11% over the previous season, while consumption was forecast at 116m bags, according to the International Coffee Organization (IOC).

Uganda's coffee export volumes grew by 30% from 126,000 metric tons in 2006 to 265,853 metric tons in 2007. Values grew by 40% from US\$ 189 million in 2006 to US\$ 265.8 million in 2007. Uganda Coffee Development Authority 2006 report indicated that yields and international prices for coffee were expected to increase in 2008, which offers significant opportunities for investment in the sector. Therefore coffee export volumes are predicted to increase along with values.

Most of Uganda's coffee in the 2006/07 season was exported to the European Union which accounted for 72% market share of total exports as indicted below. The main country destinations were: The UK, Netherlands, Spain, Italy, Denmark and Norway. Outside the European Union, the main importing countries were Sudan, Singapore and China.

There are twelve main companies that imported Uganda's coffee in 2006/07. These were: Ecom Agro Industries, Olam International, Sucafina, Socadec, Drucafe, Cofftea, Luois Dreyfus, Bernard Rothfos, Volcafe, Dectrade, Icona café and El Mthalib. The addresses and other details of leading importing companies of Uganda coffee can be obtained on www.ugandacoffee.org

1.1 Statement to the Problem

In the recent report on coffee exports in Uganda, in September 2017 coffee exports amounted to 341,839 60-kilo bags worth US \$ 38.58 million comprising 284,276 bags (US\$ 31.50million) of Robusta and 57,563 bags (US\$7.09 million) of Arabica.

Compared to the same month last year, Robusta exports increased by 98.99% while Arabica exports decreased by 12.91%. Similarly, Robusta value increased by 116.29% while Arabica decreased by 14.63% compared to September 2016. Coffee exports for 12 months (October 2016-September 2017) totalled 4.61 million bags valued at US\$ 545 million compared to 3.32 million bags worth US \$ 327 million in the corresponding period the previous year, an increase of 38.92% and 66.97% in quantity and value respectively.

Owing to this increase (38.82%) in quantity and 66.97% in value, there must have been an increase in coffee production from the regions producing and as per my case study the production of coffee by small scale farmers in Sironko District is determined by some factors, like social factor, coffee production technology adoption and management of coffee cooperative societies.

It is inevitable to assess the influence of these factors on the production of coffee by small scale farmers since this contributes to the total production of coffee that is exported by Uganda.

The results from the study will be useful to the Farmers, Scholars, Business Development Service Providers, Cooperative Society Management, Policy makers and Implementers to know which factors determine production of coffee and income from coffee.

1.2 Purpose of the Study

The purpose of the study was to assess the factors that influence coffee production by small scale farmers of two sub counties of Budadiri Town council and Busulani sub county in Sironko District.

1.3 Specific Objectives

The specific objectives were to:

- i. Assess the influence of social factors on small scale coffee production in two sub counties of Budadiri Town council and Busulani sub county in Sironko District.
- ii. Assess the influence of adoption of coffee production techniques on small scale in two sub counties of Budadiri Town council and Busulani Sub County in Sironko District.
- iii. Establish the influence of coffee cooperative societies' management on small scale Coffee production in two sub counties of Budadiri Town council and Busulani sub county in Sironko District.
- iv. Examine influence of coffee value addition on small scale coffee production in two sub counties of Budadiri Town council and Busulani sub county in Sironko District

1.4 Research Questions

The research questions of the study were:

- i. To what extent do the social factors of the small scale famers influence coffee production in the two sub counties of Budadiri Town council and Busulan sub county, sironko District?
- ii. To what extent does adoption of coffee production technology by small scale farmers influence coffee production in two Sub counties of Budadiri town council and Busulani Sub County?
- iii. How does management of coffee cooperative influence small scale coffee production in the two sub counties of Budadiri Town council and Busulan sub county, sironko District?

iv. To what extent do coffee value addition influence small scale coffee production in the two sub counties of Budadiri Town council and Busulani sub county, Sironko District?

1.5 Significance of the Study

The study findings and recommendations are hoped to generate both practical and theoretical awareness important to other researchers, policy formulators, policy implementers, coffee Cooperative Societies, coffee factory Management and coffee stakeholders in revitalizing coffee sector.

The study was to form the ground for replication by development practitioners while designing coffee revival projects. It was also hoped to provide basis for further studies and also documenting factors influencing coffee production within the sub counties and the all district as well.

1.6 Scope of the Study

1.6.1 Content Scope

The study was conducted to assess the factors influencing of coffee production of small scale farmers of Sironko District in two sub counties of Budadiri town council and Busulani sub county.

The study was also carried out to establish the impact of cooperative societies' management on production of small scale farmers in Busulani sub county, Budadiri town council in Sironko District.

1.6.2 Geographical Scope

Sironko district is found in Eastern Uganda and it is neighboring Kenya. Budadiri and Busulani are found in Sironko district.

1.6.3 Time Scope

The study was for five month and the first month was spent looking for the research topic. This took a lot of time as being so keen on which research topic to take on .The second month after the topic was got ,the research started on the proposal which is chapter one and the rest of the work continued in the remaining months.

1.7 Basic Assumptions of the Study

The basic assumption of the study was that the sample was representative of the target population and the respondents were truthful

1.8 Definitions of Significant Terms

Coffee Brewed beverage prepared from the roasted beans of several species of an evergreen shrub of the genus *Coffea*.

Cooperative Society Firm owned, controlled, and operated by a group of users for their own benefit. Each member contributes equity capital, and shares in the control of the firm on the basis of one-member, one-vote principle.

Technology Adoption Technology is also referred to as innovation which is anything new successfully applied into economic and or social processes. In coffee Production would refer to management of coffee plantations including the management of Nurseries, pruning and weeding procedures, use of fertilizers, pesticides, planting of new varieties and harvesting methods.

Strategic plan It is setting goals, determining actions to achieve the goals, and mobilizing resources to execute the actions.A strategy describes how the ends (goals) will be achieved by the means (resources).

Value addition To economically add value to a product and form characteristics more preferred in the market place.In Coffee value addition activities start at the very basic level of land preparation, fertilizer application,Pests and diseases control and management, irrigation, primary processing, secondary processing and facilities maintenance

1.9 Organization of the Study

The study was organized in five chapters where chapter one gives the Background of the study. Chapter two gives the literature review, conceptual frame Work and theoretical framework while chapter three provides information on study research methodology, target population, sample size and sampling procedure, data collection methods, validity and reliability of the instrument, data collection procedures, data collection techniques ethical consideration and operational definition of variables.

Chapter four gave data analysis, data presentation and interpretation and finally, chapter five gave a summary of findings, discussion, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter gives an overview on production of coffee in Uganda, overview of Cooperative concept, a review of related literature on independent variables of the study which includes influence of social factors, coffee production technology adoption, and management of cooperative.

The section has concluded by giving both theoretical and Conceptual framework of the study.

2.1 Overview of Coffee Production in Uganda

Coffee is Uganda's most valuable agricultural export commodity, contributing US\$ 544 million in 2016/17, about 20 percent of total export earnings. Furthermore, the crop, employs over 3.5 million households. (EPRC)

Coffee is mostly grown in mixed farms where it is intercropped with food crops such as bananas and beans which ensure households' food security. It is also grown among shade trees that result into sustainable coffee production, while ensuring a social, economic and suitable environment that requires a minimal use of agro-chemicals such as fertilizers, pesticides and fungicides. Cheap labor available in Uganda enhances great opportunities for investment in the coffee sector. Coffee is a perennial crop. However, there are two main harvest seasons in Uganda for both Arabica and Robusta coffee (March-June and September-November). The main production season for Robusta ranges May-August for Masaka and Western regions and November to February for Central, Eastern regions. In the case of Arabica, the main seasons are April-June for Western Region and October-February for Eastern and West Nile Regions.

Robusta Coffee is grown in the low altitude areas of Central, Eastern, Western and South Eastern Uganda up to 1,200 meters above sea level. Arabica coffee on the other hand is grown in the highland areas on the slopes of Mount Elgon in the East and Mt. Rwenzori and Mt. Muhabura in the South Western Region (1500-2,300 m above sea level). Unlike Robusta whose native habitat is the Lake Victoria Crescent, Arabica coffee is an introduced crop originating from Ethiopia. Arabica coffee is more competitive on the international market because of its superior quality. Uganda Robusta too has intrinsic quality attributes

which also attract a premium on the international coffee market. There is, also, a new Arabica variety locally known as Tuzza, Coffee farmers in Uganda use mainly the low input system and households strongly rely on family labour for production. There is minimal use of agro-chemicals (fertilizers, pesticides and fungicides) and this practice has made Uganda a suitable country for organic coffee production.

2.2 The Concept of Cooperatives

Cooperatives are user-owned, user-controlled and user-benefit organizations. They Could be agricultural, non-agricultural, unions or Savings and Credit Cooperatives(SACCOs). They operate in different sectors of the Economy including agricultural, handicraft, transport, housing development, building and construction, consumer services, banking and insurance (Gamba and Komo, 2006). Cooperatives are member-owned businesses; they aggregate the market power of people who on their own could achieve little or nothing, and in so doing they provide ways out of poverty and powerlessness. The representative body for cooperatives, the International Cooperative Alliance (ICA), defines a cooperative as an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations, through a jointly owned and democratically controlled enterprise.

This definition and the ICA set out seven cooperative principles: voluntary and open membership , democratic member control ,member economic participation, autonomy, independence, education, training and information.

The first four of these are core principles without which a cooperative would lose its identity; guarantee the conditions under which members own, control and benefit from the business. The education principle is really a commitment to make membership effective and so is a precondition for democratic control, while cooperation among cooperatives is a business strategy without which cooperatives remain economically vulnerable. The last principle, concern for community, is about corporate responsibility, and it leads into other concerns such as prevention of poverty and protection of the environment (ICA, 2002).

2.3 Literature Review on Independent Factors of the Study

This section reviews related literature on influence of social economic factors on small scale coffee production, technology adoption, management of coffee cooperatives, coffee value addition and influence of key players on coffee production.

2.3.1 Social Factors Affecting Small Scale Coffee Production

At both advanced and young age farmers rate of adoption of agricultural technology is low (Akudugu,Guo, and Dadzie, 2012) .

At the younger age, the scholar says farmers were not able to adopt modern agricultural production technologies, especially capital intensive ones because they did not have adequate resources to do so. At an older age they say that farmers' volumes of economic activities were reducing hence they were unable to pay for technologies.

Older farmers have accumulated years of experience in farming through experimentation and observations and may find it difficult to leave such experiences for new technologies. In addition, farmers' perception that technology development and the subsequent benefits, require a lot of time to realize, can reduce their interest in the new technology because of farmers' advanced age, and the possibility of not living long enough to enjoy it (Caswell, Fuglie, Ingram, Jans and

Kascak (2001), Khanna, (2001).

Elderly farmers often have different goals other than income maximization, in which case, they will not be expected to adopt an income –enhancing technology (Tjornhom, 1995).

Maximum level of education within the farm household has a positive relationship with the probability of adoption Akudugu et al, (2012).

The same author noted that farm households with well educated members are more likely to adopt modern agricultural production technologies than those without. This is because educated members even bring home modern agricultural production technologies, especially improved crop varieties and livestock breeds for relatives to adopt. This is consistent with the literature that education creates a favorable mental attitude for the acceptance of new practices especially of

information-intensive and management-intensive practices (Waller, Hoy, Henderson, Stinner and Welty (1998).; Caswell et al, 2001). Education involves impacting knowledge and skills to people which they use to generate income.

The more educated people thus have income to invest in agriculture thereby likely to adopt production technologies.

Gender is positively related to the adoption of modern agricultural production technologies by farm households. This means that male farmers are more likely to adopt modern agricultural production technologies their female counterparts. The reason for this is that men are the people who make production decisions in the study area and also control productive resources such as land, labour and capital which are critical for the adoption of new technologies (Akudugu et al, 2011). This finding contradicts those of Doss and Morris (2001) who in their study on factors influencing improved maize technology adoption in Ghana, and Overfield and Fleming (2001) studying coffee production in Papua New Guinea show insignificant effects of gender on adoption.

Age was found not to influence coffee eco certification certified and non-certified farmers in Tekangu cooperative society, Karatina by Kirumba and Pinard, (2010).

However, they found out that on average, certified farmers were slightly older than noncertified ones. The same trend was noted for household size, though certified households were slightly smaller than non-certified households. There was a highly significant relationship between the mean number of years spent in school for certified and noncertified farmers. The same Kirumba and Pinard, (2010) found no significant connection between mean number of household members on off-farm employment, farm size in hectares and the number of coffee bushes; for certified and non-certified farmers. The authors found that certified farms were larger in sizes, had more coffee bushes and more household members on off-farm employment than non-certified farms. They further observed significant relationships between the mean area under coffee in hectares, annual coffee production, number of adults working on farm, number of cattle owned, number of goats and sheep owned.

2.3.2 Adoption of Production Techniques

Innovations are referred to as anything new successfully applied into economic and or social processes. In coffee production this would refer to the way farmers manage their coffee plantations including the management of nurseries, pruning and weeding procedures, the use of fertilizers and pesticides, the planting of new varieties and the harvesting methods. The value of an innovation must be measured with regard to its potential to generate benefits, like increase yields, stabilize incomes or and contribute to sustainable development. The value of the innovation is also a major factor determining its adoption. (Hartwich, and Scheidegger, 2010).

Coffee requires good nutrition which results in vigorous growth of plant which reduces susceptibility to pests and diseases. Adequate supply of nitrogenous fertilizer is associated with larger bold beans which are of high quality thus price. Organic fertilizer in form of Ammonium Sulphate Nitrate (ASN), Calcium Ammonia Nitrate (CAN), Ammonia Sulphate(AS) or Urea are Some of the fertilizers applied in coffee.

Increased productivity and reduced cost of production are the best strategies to enhance competitiveness of coffee farming in order to face international competitiveness and maintain the most important source of livelihood for the rural farming population in predominantly coffee production zones (Gicuru, 2011). The same report also indicates that problems of smallholder coffee farmers are compounded by the strict coffee management regulations that prohibited intercropping and emphasized on regular application of expensive inorganic fertilizers and pesticide sprays which increases the likelihood of failure given the high cost system is unsustainable or unprofitable due to falling output prices. Smallholder coffee production varies widely by the degree to which conventional technologies such as inorganic fertilizers and pesticides are adopted, as well as the extent to which technologies like Ruiru II and Batian a new coffee cultivars, and agro forestry technologies are adopted. This variation means differentials in the productivity, profitability and competitiveness of coffee farming.

Purely business-oriented farms are likely to adopt open-grown coffee and the other extreme will involve integration of coffee with food crops and/ or trees (Gicuru, 2011).

Integration of shade trees with coffee has continued to receive renewed policy and research attention due to increasing costs of inorganic inputs coupled with the high risk on the

environment. Growing coffee under shade has the desirable effects of suppressing weeds and preventing build-up of certain pests, thereby cutting costs of production and preventing net losses of coffee berries from diseases and pests. The optimum shade conditions for pest suppression differ with climatic conditions, altitude and soils (Stayer, Guharay, Monterroso, and Muschler, (2001). Selection of tree species and density, pruning regime and spatial arrangement are important decisions that a farmer must make. Farmers who do not interplant coffee with trees or food crops have a less integrated system of growing coffee generally referred to as open-grown coffee farming.

Some farmers adopt shade-grown coffee by growing trees, shrubs or food crops in or around the field. These different coffee management systems have cost and productivity implications and may be significant factors affecting the profitability and survival of the coffee farming operation.

Apart from using shade trees in controlling weeds and pests, some coffee farmers adopt alternative low-cost technologies such as cover crops and mulching for weed control, cultural pest control as well as inter-planting food crops to hedge against risks. Other farmers continue to depend on high-cost systems that rely on external inputs. Overall, productivity of coffee is generally low but there is big farm-to farm variability implying that some farms are more productive than other farms.

The combination of different technologies and management techniques are likely to lead to differences in productivity and profitability (Gicuru, 2011).

In response to declining coffee prices, farmers have followed four distinct routes; namely, to uproot coffee, continue farming as before, or neglect the crop or practice coffee agro forestry.

Agriculture is not only an important source of income in developing countries, but it is also responsible for serious environmental damage. (Isik,2004; Sterner, 2003, World Bank, 2008a). A promising alternative to control the negative effects of agriculture on the environment and to increase the income of rural poor is ECO-labels. Awarded by a third party who controls that the production meets specific environmental criteria, ECO-labels allow consumers to compensate producers who use environmentally friendly and socially responsible practices.

Though the different labels privilege different environmental aspects of production, the non use of chemical fertilizers, the protection of the forest and the conservation of wildlife has been the focus of organic certificates. Certified organic cultivation generates positive impact to the community in the form of improvements in the environment. In addition, farmers benefit from improved market access and reduced health problems like intoxication due to misused of agrochemical (IFAD, 2003 ;Parrot, Olesen and Høgh-Jensen, 2007).

2.3.3 Cooperative Governance

Cooperative governance can be viewed in terms of the management committee who are elected members of the cooperative society and the cooperative manager who is an employee of the cooperative society and not necessarily a member of the cooperative society.

The Management Committee is the highest elected executive institution in a cooperative enterprise. Members of the cooperative society are eligible for election into the management committee which acts on behalf of the members. These factory farmers' representatives from the cooperative society management committee which manages the affairs of the society on behalf of the members.

Everything done in the cooperative must be approved by the management committee (Koopmans, 2006). The management committee ensures that decisions taken can in fact be executed. The Management committee must guarantee a close correlation between theory and practice, between decision and execution. It is always good management policy to view every decision action in the context of the total activities of the enterprise, present and future.

In this case, the management committee must seek to discover the correlation between current actions and their future consequences (Hussi, Murphy, Lindberg and Brenneman (1993).

The cooperative Manager is the chairperson of the management committee, and the only paid officer in the enterprise. The cooperative manager initiates and presides over the meetings of the management committee, and prepares the agenda for those meetings. It is this officer who is most directly involved in the personal problems of members of the cooperative and of its employees.

The manager represents the cooperative in other forums, institutions and government bodies; and it is this person who is in charge of the operation of the different departments of the organization as well as for the preparation and execution of the socioeconomic policy of the cooperative. It is the manager who proposes plans, executes and evaluates (Kegonde, 2005). Most farmers have become more business-minded as their own farm operations grow. They give more attention to their cooperative's management. They employ managers with more training and expect them to improve their knowledge and skills.

Also, a growing number of cooperative managers seek to become more proficient in managing the affairs of their cooperatives (Porvali, 1993). Public concern about food safety, pollution control, health and the environment, monopoly, standardization procedures and related issues focuses attention on the competence, integrity, and behavior of cooperative managers. As a result, cooperatives are becoming more aware of the need to indemnify cooperative managers who are subject to increased legal exposure. The growing impact of world markets, even on the individual family operation, is changing the management perspective from the local cooperative level.

The local is being viewed less and less as an independent entity and more and more as part of a system (Lindberg, 1993).

Poor governance and inefficiencies in cooperatives result in delays in supplying inputs to farmers, credit processing and payment to farmers for their produce. High costs of fertilizer and pesticides has, in some cases, forced the farmers to reduce application of these inputs, resulting in delivery of low quality cherries and substantial loss of small cherries during pulping stage in processing. The farmers get their earnings once a year, making it difficult for them to meet periodic expenses they incur both at the farm and at personal levels. In addition, there is still tight regulation in today's Kenyan coffee sector. The regulations not only all require smallholders to process their coffee through a cooperative, but prohibit direct purchase from farmers. Farmers also have limited information on the coffee market and existing member associations are structurally weak to act as feedback mechanism to farmers (Chege, 2012).

2.3.4 Coffee Value Addition

Value-addition for coffee range from very intricately processed and packaged, to simple additions or processes that can add to the worth of the final product. The Coffee Value addition activities start at the very basic level yet very crucial in determining the final quality of the end product. Such activities include essentials such as appropriate land preparation, fertilizer application, pests and diseases control and management, irrigation, primary processing, secondary processing and facilities maintenance (EPZ, 2014). Value additions along the coffee value chain have been dismally low and skewed against the farmer who gets seven percent of the market value, which is hardly a tenth of what accrues at the milling and marketing stage in the value chain. The bulk of value added accrues at the roasting stage of the value chain (Chege, 2012).

The high level of consumption has been achieved through a promotion strategy that offers various brands made available in social places. Increasing local coffee consumption can enhance local processing capacity that can be utilized for value addition and eventually the country should be able to export finished coffee products (Karanja and Nyoro, 2002).

Different ways of adding value to coffee includes: Grow organic Coffee which many buyers in the export market will happily pay 30 -60% more for better taste and health, in line with the emerging trends and lifestyle in the major target export markets, Sell something unusual or hard to find, have a special farm or estate label, or a recognizable brand, Sell direct and deliver to high-end consumers such as restaurants and hotels who put a premium on freshness and focusing on Coffee as product with unique or special qualities due to the soil in which it is grown, or altitude or special climatic niche (EPZ 2014).

Sustainable coffee is increasingly becoming an important segment of the market offering a lot of new opportunities with a lot of support from European supermarkets and roasters.

The four major European certifications for coffee production standards are Fair-trade, Organic, Rainforest Alliance and UTZ certified. Value added coffee by-products include: as a Source of dietary fibre; Coffee spirit; Charcoal production; Mushroom cultivation; Production of citric acid and gibberellic acid; Antioxidant compounds; Source of natural food colour; Production of aroma compounds; Biogas production and Sources of phenolic compounds (EPZ, 2014).

Coffee branding through the Geographical Indication for single-origin coffee is a relatively new concept that could improve value addition along the supply chain. Coffee branding according to the zones of origin widens the market through segmentation. The farmers could use coffee branding to strategically position themselves, through partnerships, and reduce price spread between producer and retail level. This may be achieved through joint ventures in investment that allows local roasting and packaging of the product before exportation. Further, the partnership can take the form of contract farming. Contract farming has ancillary benefits in the form of credit arrangement for critical inputs and may also embrace insurance schemes. For such developments to be useful to farmers, the government may need to play a role in mediating and establishing the ground rules for this arrangement.

2.4 Theoretical Framework

The study is based on Fredrick Taylor theory of management which led the development of a theory of management that analyzed work flows. Its main objective was improving economic efficiency especially labor productivity. He attempted to apply science to the engineering of processes and management. Taylor believed in standardization of best practices and wreathed traditions preserved merely for its own sake or to protect the social status of particular workers with particular skills sets.

He advocated for transformation of craft production into mass production and knowledge transfer between workers and from workers into tools, processes and documentation.

Taylor noticed that natural differences in productivity between workers were driven by various causes including differences in talent, intelligence or motivation. He applied science in understanding why and how these differences existed and how best practices could be analyzed, synthesized and then propagated to other workers through standardization of process steps. He believed that decisions based upon rule of thumb and tradition should be replaced by practical procedures developed after careful study of an individual at work, including via time and motion slides which would synthesis the one best way to do any given task. The goal and promise was both an increase in productivity and reduction of effort.

Taylor observed that some workers were more talented than others and that even smart ones were often unmotivated. He observed those workers who were forced to perform repetitive tasks

tended to work at the slowest rate that goes unpunished. Taylor observed that, when paid the same amount, workers tend to do the amount of work that the slowest among them does. This reflected the idea that workers had vested interest on their own well-being and don't benefit from working above the defined rate of work when it will not increase their remuneration.

He proposed that time and motion studies combined with rational analysis and synthesis could uncover one best method of performing any particular task and that prevailing methods were seldom equal to these best methods.

Taylor acknowledged that if each employee's compensation was linked to their output, their productivity could go up. His compensation plans included piece rates. He rejected the idea that the trades including manufacturing were black art that couldn't be analyzed. In his empirical studies he examined various kind of manual labour and discovered many concepts. He decided that labour should include rest breaks so that workers could get time to recover from mental and physical fatigue. As a result productivity increased (Kidombo, Ndiritu and Gakuu, 2013).

2.5 Conceptual Framework of the Study

The independent factors of the study included influence of: social factors, coffee

production technology adoption, management of coffee Cooperative Societies and value addition while the dependent variables included coffee productivity per tree and the number of tree per farm. Other factors affecting coffee production were government policies, weather, politics and culture.

The Conceptual Framework of the study is shown in Figure 1

2.6 Conceptual framework

Independent variable

Personal factors of small scale coffee farmers:

Gender, Age, Marital status

Level of education

Coffee Production Technology Adoption

Fertilizer and manure utilization, pests and diseases control, Irrigation use, Use of improved varieties, extension services availability, use of machinery, Coffee pruning, soil and water conservation practices and coffee pruning

Management of coffee cooperative societies:

Trainings, Experience, meetings, strategic planning, Education level, record keeping, staffing, resource allocation, payment rates, produce loss, time taken to pay farmers and time taken to pay loans

Moderating variable

Government policies

Dependent

Coffee production and income

Intervening variable

Politics
Culture

Extraneous variable

Weather

Figure 1: Conceptual framework

2.7 Related Literature Review on Production of Coffee

Akudugu et al, (2012) found both young and advanced age, gender and education level within household influenced modern agricultural technology adoption in Nigeria, while Overfield and Fleming (2001), Doss and Morris, (2001) study contradicts gender influences technology adoption in coffee in Papua New Guinea, Maize in Ghana.

Kirumba and Pinard (2010) noted that age did not influence coffee eco certification in Tekangu – Karatina, Kenya.

Both Gicuru (2011) and Staver et al (2001) agrees that adoption in technology like cultural practices will minimize cost of production but productivity will be low and adoption of more expensive technologies will improve profitability and advocates for higher payment for organic produced coffee. Both Parrot et al (2007) and IFAD, (2003) agree that organic cultivation will benefit farmers from market access and reduced health problems.

Chege, (2012) cites poor governance and inefficiencies of cooperatives to cause delay in supplying inputs and processing credits.

He also cites high cost of inputs, lack of information dissemination, poor leadership, strict regulations, delayed payment and lack of farmers' ownership of societies, over regulation of the industry, coffee value chain organization structure to contribute to low production.

According to Karanja and Nyoro (2002), low coffee production in Kenya results from international price fluctuation which saw Kenya reduce annual production of 130,000MT of clean cherry in 1987/88 to current 50,000MT.

The authors reported that increased cost of production has reduced profitability of the enterprise making it less competitive. He cited low profit of Kshs 14,000 per ton has resulted farmers uprooting the crop and farming other better paying crops and converting coffee farms to prime residential houses where such farms are around big towns like Kiambu, Nyeri town and Nyanza regions. This is also in agreement with Kegonde, (2005) coffee production is on decline.

He attributed low production to high cost of coffee production he says is contributed by inadequate credit facilities, high cost of credit and other inputs like fertilizers and irrigation, and strict laws by Coffee Board of Kenya of restricting production to gazetted area and laws

prohibiting uprooting crop which discourage farmers going in coffee farming. UNCTAD, (1999) cites massive overproduction, collapsing of international prices, deteriorating quality, diseases and climate change as the main causes of low coffee production.

The researcher addressed the knowledge gap of influence of social factors, influence of extent of technology adoption, influence of management of coffee cooperative societies, influence of coffee value addition and influence of roles of key players in small scale coffee production to both bridge the knowledge gap and also check whether the findings of study done elsewhere holds with the small scale coffee production in Budadiri Town Council and Busulani Sub county in Sironko district

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides an overview of the research methodology which was employed in the study. It gives a description of the research design used, the target population, sample size and sampling procedure and data collection methods and instruments.

Measures used to ensure validity and reliability of the instruments is also given in the chapter together with data analysis, presentation, procedures and ethical considerations.

3.1 Research Design

The research study employed a descriptive survey design. According to Best (2004), a survey is a means of gathering information about the characteristics, actions or opinions of a group of people, referred to as population. It describes data and characteristics about a population and phenomenon being studied. The descriptive survey design helps answer the questions like who, what, where and how on describing the phenomenon on study. This design is appropriate for the study because it will enable data collection from a large population.

3.2 Target Population

Target population is that population that the researcher wants to generalize the results of the study. Mugenda and Mugenda (2003) define target population as the entire group a researcher is interested in or the group about which the researcher wishes to draw conclusions. The target population of the study will be the 600 small scale coffee producers in Busulani sub county and Budadiri town council in Sironko District,

3.3 Sample Size and Sampling Procedure

According to Mugenda and Mugenda, (2003) non probability purposive sampling method is adopted where a group has the required information with respect to the objectives of the study and offer in depth information about the study.

In the coffee farmers' strata, the researcher will use the following formula adopted from Cochran, (1963) in order to determine the sample size.

$$n = N / [1 + N (e)^2]$$

Where; n = sample size N = Population size, e =Level of significance

$$n = 600 / [1 + 600(0.07)^2] = 152$$

3.4 Data Collection Methods

The study will use primary data, which will be collected using questionnaires and interview guides. The researcher will administer the questionnaires to respondents via personal interviews. The questionnaires shall comprise of a variety of questions which shall be structured into different sections with each of the sections addressing a specific objective. Both open and closed questions will be included in the data collection tool. Questionnaires for all strata will be structured in five parts. The first part shall capture the demographic information of the respondent while the second, third and fourth parts will be designed to collect data on technology adoption, cooperative management and value addition.

3.5 Validity of Instruments

According to Mugenda and Mugenda (2003), validity is a measure of relevance and correctness. It is the accuracy and meaningfulness of inferences which are based on the research results. Data collection techniques must yield information which is not only relevant to the research questions but also correct. For the purpose of this study, the researcher will consult the research supervisor. He will visit the Sub County Cooperative officer in Sironko before conducting the study in order to ascertain the validity of the research instruments. The specialists confirmed that the issues were pertinent to the topic of study. Construct validity will also be used which according to Mugenda and Mugenda (2003), is appropriate where no criteria or domain of content is accepted as an adequate measure of content. This will be determined by measuring correlation

between concepts with theoretical framework. High Correlation of factors with theoretical framework means that the instrument is valid.

3.6 Reliability of the Instruments

According to Mugenda and Mugenda (2003), reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. Methods used to test for reliability included pilot testing

3.6.1 Pilot Testing

Pilot testing as a smaller version of a larger study that is conducted to prepare for the study or to field test the survey to provide a rationale for the design (Orodho 2004). It involves pre-testing of the instruments to determine their validity and reliability. The researcher will pilot-tests the instruments by using a different but a similar group from a different division and then made necessary adjustments. A pilot study will be conducted in order to test the reliability and validity of the questionnaires. The aim of the pilot survey will be to test whether the design of questions was logical, if questions are clear and easily understood whether the stated responses were exhaustive and how long it would take to complete the questionnaire. The pre-test will also allow the researcher to check whether the variables collected could be easily processed and analyzed. The pre-testing will be carried out on a sample consisting of 10% of the respondents. Any question found to be interpreted differently during the pre-testing will rephrased so that could have same meaning to all respondents. Views given by the respondents during pre-testing will be analyzed and used to improve the questionnaires before actual collection of data.

3.7 Data Collection Procedures

Three research instruments were to be used in the study for data collection: Interview schedules for Coffee Cooperative Societies Management staff and stakeholders and questionnaires for coffee farmers.

The researcher was formulating the instruments and administers them to the respondents whereby relevant questions concerning the study were asked through face to face to interviews.

The researcher sought approval for the study from the University supervisor and after the study proceeded with: data collection process and study instrument administration; Pilot testing;

Revision of the data collection instruments after the pilot study; Reproduction of required copies for data collection upon approval by supervisor; Administration of data collection instruments to respondents; Collection of duly completed research instruments, assessment of filled questionnaires through serialization and coding for analysis; Data analysis and discussion; preparation of conclusions and recommendations.

3.8 Data Analysis Techniques

Once all the data was collected from the field, it was cleaned and captured for coding. then the variables were entered and analyzed using Statistical Package for Social Sciences of any version IBM 20 and EXCELL.

3.9 Ethical Considerations

The researcher relied on ethical issues as identified by Mugenda and Mugenda (2003), while undertaking this study. The researcher followed the three principles of ethics which include respect, beneficence and justice. The participants were informed of the purpose of the study before information was sought from them thus conforming to the principle of voluntary and informed consent. Honesty, integrity and confidentiality was highly maintained throughout the study.

3.9.1 Operational Definition of Variables

The operational definition of variables is presented in Table 3.0

Table 3.1 Operational definition of Variables

objective	variable	Indicators	Measurement scale	Tool of analysis	Type of analysis
	independent				
Assess the influence of social factors on small scale coffee production in Budadiri town council and Busulani sub county Sironko District	Social factor	Gender of household head	Nominal	percentage	Descriptive, inferential
		Age of the household head	interval	percentage	Descriptive, inferential
		Marital status of household head	Nominal	percentage	Descriptive Inferential
		Education level of household head	Ordinal	percentage	Descriptive Inferential
Assess the influence of adoption of coffee production technologies on small scale coffee production in	Coffee production technology adoption	Fertilizer of organic manure utilization	ordinal	percentage	Descriptive Inferential
		Adequacy of soil and water conservation strategies	ordinal	percentage	Descriptive
		Pests and diseases incidences	nominal	percentage	Descriptive Inferential

Budadiri town council and Busulani sub county Sironko District		Coffee pruning	nominal	percentage	Descriptive Inferential
		Use of irrigation	nominal	percentage	Descriptive Inferential
		Number of improved varieties	ratio	percentage	Descriptive Inferential
		Type of improved varieties	ordinal	percentage	Descriptive
		Adequacy of extension visits	nominal	percentage	Descriptive
		Use of machinery	nominal	percentage	Descriptive
		Adequacy of coffee shading	nominal	percentage	Descriptive
Establish the influence of coffee cooperative societies management on small scale coffee production in Budadiri town council and Busulani sub county Sironko District	Manageme nt of coffee Cooperativ e Societies	Meeting held	nominal	percentage	Descriptive
		Strategic planning	nominal	percentage	Descriptive
		Coffee marketing	nominal	percentage	Descriptive , Content
		staffing	Nominal	Mean, percentage	Descriptive
		Education level of management	ordinal	Mean, percentage	Descriptive
		Experience level of management staff	ordinal	Percentag e ,mean	Descriptive

		Record keeping	nominal	percentage	Descriptive
		Produce loss	ratio	percentage	Descriptive
		Payment duration	ratio	percentage	Descriptive
		Debts owned	ratio	percentage	Descriptive
		Loan payment duration	ratio	percentage	Descriptive
		Training held	nominal	percentage	Descriptive
Examine the influence of coffee value addition on small scale coffee production in Budadiri town council and Busulani sub county Sironko District	Coffee value addition	Domestic coffee consumption	ratio	Percentage, mean	Descriptive
		Utilization of coffee- by products Ratio	ratio	Percentage, mean	Descriptive
		Amount of fertilizer applied per tree	ratio	Percentage, mean	Descriptive
		Amount of manure applied per tree	ratio	Percentage, mean	Descriptive

		Adoption level of crop protection	Interval	percentage	Descriptive
			interval	percentage	Descriptive
		Coffee marketing	nominal	percentage	Descriptive Content analysis
	Dependent Improved coffee production	Coffee yield in Kilograms	ratio	Mean, percentage	Descriptive Inferential
		Number of coffee trees	ratio	Mean, percentage	Descriptive Inferential

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Introduction

This chapter provides analysis, presentation, interpretation and discussion of the data collected from the study on factors influencing small scale coffee producers in Budadiri Town Council and Bususlani Sub county in Sironko District.

4.1 Questionnaire Return Rate

A total of 124 questionnaires which included 108 from small scale coffee farmers 2 from coffee cooperative management staff and 4 from key coffee stakeholders were used in the study and all were returned which was good for analysis and report writing.

4.2 Social Composition of the Respondent

The researcher sought to investigate influence of social factors on small scale coffee production. The social factors studied included age, gender, marital status and education level of small scale coffee farmers.

Table 4.2.1 Social Composition of the Respondent by Gender and Age

			age of the respondent				Total
			Less than 30 years	30-45 years	45-60years	Over 60years	
Gender of the respondent	male	count	12	47	22	8	89
		% of Total	11.1%	43.5%	20.4%	7.4%	82.4%
	female	Count	3	7	7	2	19
		% of Total	2.8%	6.5%	6.5%	1.9%	17.6%
Total			15	54	29	10	108
			13.9%	50.0%	26.9%	9.3%	100.0%

Source: Researcher,2018

From Table 4.2.1, there is inequality in small scale coffee growers gender. 82.4% were males compared to the females who made 17.6%. Most small scale farmers were in the age bracket of 30-45 years and males dominated (43.5%) compared to females with 6.5%. Young farmers made 13.9% compared to those above 60 years (9.3%).

Table 4.2.2 Respondents Marital Status

marital Status of the respondent

	N	Percent
single	6	5.6
married	85	78.7
Widowed	8	7.4
Divorced	8	7.4
Any other specify	1	.9
Total	108	100.0

Source: Researcher, 2018

Table 4.2.2 shows that the majority of the farmers were married, (78.7%), 5.6% single, 7.4% widowed and the same number were divorced.

Table 4.2.3 Composition of Respondents by Level of Education

	Frequenc y	Percent
Primary	47	43.5
Secondary	42	38.9
Diploma	15	13.9
Degree	4	3.7
Total	108	100.0

Table 4.2.3 shows that majority of the farmers had Primary education (43.5%), 38.9% had Secondary education, 13.9% had Diploma, 3.7% had degrees.

4.3 Coffee Production Technique Adoption

The researcher sought to assess influence of coffee production techniques adoption on yield.

4.3.1 Coffee Production Management Practices

The researcher sought to investigate extent to which adoption or lack of adoption of agricultural techniques influenced coffee yield by assessing whether: pests and diseases, manure application, fertilizer application, coffee pruning practices, use of irrigation, extension services, mechanization, coffee shading and soil and water conservation strategies influenced yield in a 'Yes' response for attribution and 'No' for not attributing to yield loss. Results of analysis are shown in Table 4.3.1

Table 4.3.1 Influence of Coffee Production Techniques on Coffee Yield

Issue	Causes of low coffee yields		
	N	Yes percentage	No percentage
Pests and diseases	108	93.5	6.5
Manure utilization	108	40.7	59.3
Fertilizer utilization	108	38.0	62.0
Pruning practices	108	38.7	61.3
Use of irrigation	108	5.6	94.4
Soil and water conservation	108	50	58
Extension services	108	12	88
Mechanization	108	6.5	93.5
Coffee shading	108	55.6	44.4
Mean	12	37.84444	63.04444

Source: Researcher, 2018

Table 4.3.1 shows that low coffee production by small scale farmers is caused pests and diseases 93.5%, the majority were losing crop due to technological adoption.

4.3.2 Ranking influence of Coffee Production Technologies

The researcher sought to investigate the extent to which various coffee production techniques adoptions practices influenced production. This was achieved by asking the farmers to rank the importance of: use of inorganic fertilizer, manure use, pruning practice, adoption of improved cultivar and pests and diseases incidence in influencing coffee yield. A category of 1 not important, 2 important, 3 fairly important, 4 very important and 5 extremely important was used.

Table 4.3.2 Ranking of technological factors affecting coffee production

Type of the technique	N	Rank on 1 to 5 point liker scale Percentage
Fertilizer application	108	59.3
Manure application	108	13.9
Poor pruning practices	108	3.7
Use of improved varieties	108	13.9
Pests and diseases	108	9.3
Mean		20.02

Source: Researcher,2018

From Table 4.3.2 shows that factors were ranked low with 20.02%.fertilizer application was ranked highest by 59.3% and poor pruning practices ranked lowest with 3.7%.

4.3.3 Analysis of correlation between factors

The researcher correlated above factors to establish the relationship between them and measure the extent of relationship using Pearson Correlation. The results are shown in Table 4.3.3

		Fertilizer Application	Manure Application	Poor Pruning practices	Use of improved varieties	Pests and diseases
Fertilizer Application	Pearson Correlation	1	-.287**	.069	-.303**	.014
	Sig. (2-tailed)		.003	.477	.001	.888
	N	108	108	108	108	108
Manure Application	Pearson Correlation	-.287**	1	-.078	.330**	.008
	Sig. (2-tailed)	.003		.425	.000	.931
	N	108	108	108	108	108
Poor Pruning practices	Pearson Correlation	.069	-.078	1	-.035	.300**
	Sig. (2-tailed)	.477	.425		.717	.002
	N	108	108	108	108	108
Use of improved varieties	Pearson Correlation	-.303**	.330**	-.035	1	.061
	Sig. (2-tailed)	.001	.000	.717		.529
	N	108	108	108	108	108
Pests and diseases	Pearson Correlation	.014	.008	.300**	.061	1
	Sig. (2-tailed)	.888	.931	.002	.529	
	N	108	108	108	108	108

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

From Table 4.3.3 there is a low correlation between manure application and use of improved varieties, 0.33.

This is 33% of manure application was adopted with use of improved varieties.. There is a negative correlation between use of improved varieties and fertilizer use. The same is with poor pruning practices and manure application.

4.3.4 Adoption of Improved Cultivars

The researcher investigated the level of adoption of coffee improved cultivars which are higher yielding and resistant to diseases as an indicator of low cost production, quality and yield. The results are shown in Table 4.7

Table 4.3.4 shows number of tree varieties.

Coffee variety	Mean
SL14	1535.28
SL28	606.88

Table 4.3.4 shows that most farmers had local varieties of SL14 which dominated with a mean of 1535.28 and SL28 with a mean of 606.88. these varieties are resistant to diseases and pests. Many farmers had no improved varieties.

4.3.5 Inorganic Fertilizer Adoption Rate

The researcher sought to investigate the level of input application by farmers which influence yield and quality by assessing inorganic fertilizer adoption rate.

Table 4.3.5 : Inorganic fertilizer adoption rate

Application of fertilizer to coffee trees

	N	Percent
Yes	76	70.4
No	32	29.6
Total	108	100.0

The results in Table 4.3.5 show that 70.4% of the sampled farmers were applying fertilizer to coffee against 29.6% who did not apply.

4.3.6 Inorganic Fertilizer Usage

The researcher sought to find out whether the farmers were using the recommended fertilizers for coffee production. Use of proper type of fertilizer ensures nutrients are available for use of the crop when needed. Improper use of inputs is wasteful as the nutrients are not available to the plant when needed. Usage of fertilizer by the small scale farmers is indicated in Table 4.3.6

Fertilizer type	N	Percent
CAN	38	35.2
NPK	40	37.0
Total	78	72.2
Did not apply	30	27.8
Total	108	100.0

Source: Researcher,2018

NB: CAN= Calcium Ammonium Nitrate (CAN), ASN=Ammonium Sulphate Nitrate (ASN), NPK= Nitrogen Phosphorus and Potassium

Table 4.3.6 shows that 35.2% of farmers used correct fertilizer recommended by coffee extension officers,37.0% used NPK27.8% did not apply fertilizer at all.

Out of the farmers sampled, 72.2% applied fertilizers in their coffee farms.

4.4 Influence of Cooperative Society Management on Coffee yield

Good governance of organizations influences performance by motivating employees and other stakeholders. The researcher sought to investigate whether management of coffee cooperative societies in Budadiri Town Council and Busulani sub county was satisfactory to the members which influence commitment in increasing productivity.

4.4.1 Satisfaction of Farmers with Governance of Coffee Cooperative Societies

The researcher measured the level of satisfaction of the farmers coffee yield by asking the farmers to rate their satisfaction with governance of their societies compared to those of their competitors in 1 strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree point Likert scale. The governance issues included satisfaction with: Farmers meetings, strategic planning, payment rates, and efficiency of resource management, staff hiring process and farmer's trainings.

Farmers Satisfaction Level with the Cooperative Society Management

Tab4.4.2 The manager calling for farmer's, meetings

	N	Percent
strongly disagree	67	62.0
disagree	35	32.4
Neutral	3	2.8
strongly agree	3	2.8
Total	108	100.0

Source: Researcher,2018

Tab4.4.3 The cooperative society has the best strategic plan

	N	Percent
strongly disagree	55	50.9
disagree	40	37.0
Neutral	1	.9
agree	4	3.7
strongly agree	8	7.4
Total	108	100.0

Source: Researcher,2018

Tab4.4.4 The cooperative society gives us better payment rates than any other channel of marketing

	N	Percent
strongly disagree	40	37.0
disagree	50	46.3
Neutral	1	.9
agree	7	6.5
strongly agree	10	9.3
Total	108	100.0

Source: Researcher,2018

Tab4.4.5 The cooperative society manages the resources efficiently

	N	Percent
strongly disagree	44	40.7
Disagree	46	42.6
Neutral	3	2.8
Agree	6	5.6
strongly agree	9	8.3
Total	108	100.0

Source: Researcher,2018

Tab4.4.6 The cooperative society is more robust in hiring staff

	N	Percent
strongly disagree	39	36.1
Disagree	49	45.4
Neutral	8	7.4
Agree	4	3.7
strongly agree	8	7.4
Total	108	100.0

Source: Researcher,2018

**Tab4.4.7 The Cooperative Society Officers
trains us on best method of managing coffee**

	N	Percent
strongly disagree	46	42.6
Disagree	47	43.5
Neutral	6	5.6
Agree	1	.9
strongly agree	8	7.4
Total	108	100.0

Source: Researcher,2018

86.1% contend with the fact that cooperatives offer trainings on best methods of managing coffee and 8.3% agreed. Concerning hiring staff 89.5% were not satisfied, 11.1% were satisfied and 7.4 were neutral. On resource management majority and payment rates, 83.3% were not satisfied.

In general, the results show the farmers' feelings about the cooperative management were negative. This shows cooperative services to the farmers did not benefit them.

The researcher shared with only (2) two cooperative society staff .and this was from two societies of Yawe Growers cooperative society and Sulani Growers cooperative society. These were the only active ones and only in Busulani sub county.

These were all men, married and over 60years of age.

In Yawe growers' cooperative society the information given showed that they did not get credit from any financial institution compared to Sulani where they could get credit it took them on year to pay back.

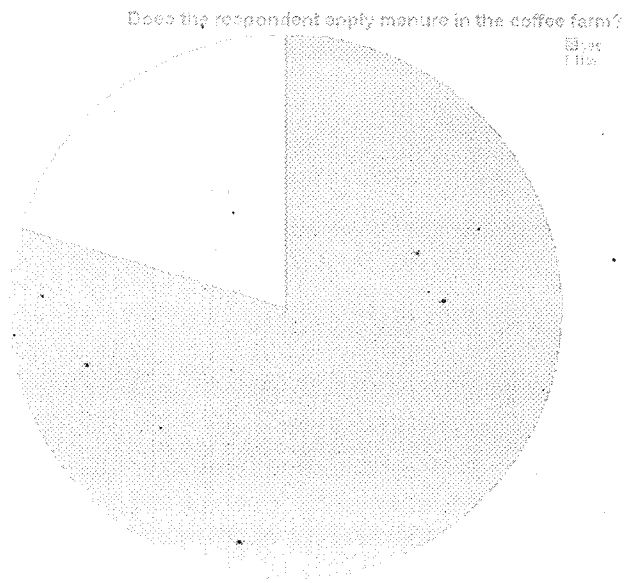
In these societies, they had a committee comprising of ;

Chairman, vice chairman, Treasurer, security, weighs man and other 3-4 committee members.

The chairman is the Head of the society and these two I interacted with were chairmen.

In their speech ,they revealed that key coffee grower s have out competed them(cooperatives) due to more extension services offered to the farmers and the relatively better prices offered by them.

4.5 Input Utilization Rate



The researcher sought to find out the level of manure use in the coffee farms by coffee farmers.

Figure 4.5 shows manure utilization by farmers

Figure shows that most farmers used mature in their coffee farms.

4.5.1 Domestic Coffee Consumption

The researcher sought to find extent of domestic coffee consumption which influences level of coffee management hence quality s ,price and income .

Table 4.5.2: Domestic coffee consumption

	N	Percent
yes	62	57.4
No	46	42.6
Total	108	100.0

Source: Researcher,2018

From the table 4.5.2, 57.4% consumed coffee and 42.6% did not consume coffee.

The most coffee consumed here is locally made by farmers themselves.

Table 4.5.3: Utilization of coffee by- products

	N	Percent
Charcoal	19	17.6
Agro forestry	7	6.5
Manure	60	55.6
None	21	19.4
Total	107	99.1
Missing System	1	.9
Total	108	100.0

Source: Researcher,2018

Table 4.5.3 shows that 55.6% of the coffee by-product is used as manure during the study farmers who make by-products of coffee as manure put back in the gardens as mulches, 19.4% coffee by-products is not used for any work.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings, a comparative discussion and conclusions based on research findings. The chapter ends with recommendations for coffee revival, policy action and further research.

5.2 Discussion

This section presents discussion of findings on factors affecting coffee production in Budairi Town Council and Busulani Sub County. They include; influence of social factors, agricultural techniques adoption, and management of coffee cooperative societies.

5.2.1 Influence of Social Factors

The study established that coffee farming in Budadiri Town Council and Bususlani Sub County In sironko district was a male dominated enterprise with 82.4% male ownership against 17.6% women. Age of majority of farmers (50%) ranged between 30 to 45 years. Majority, (78.7%) of coffee farmers were married people. There was a very low correlation between level of education and yield of coffee by small scale farmers.

This disagrees with Akudugu et al, (2012) findings that technology adoption was higher with maximum education level within a household. These findings also agree with Akudugu et al (2012) that at both young and advanced age farmers were financially constrained to invest in high cost technology.

The study contradicts Akudugu et al (2012) findings that gender of farmer influence technology adoption hence production but agrees with Doss and Morris (2001) and Overfield and Fleming (2001) findings that gender insignificantly influence technology adoption hence production.

5.2.2 Influence of Agricultural Technique Adoption

The second objective of the study was to assess the influence of coffee production Techniques on yield. The study established that 37.84% of respondent attributed low yield to techniques production techniques adopted. The study further established that 63.04% of the respondents did not attribute production techniques adopted to be a cause of low coffee yields.

According to the study pests and diseases (93.5%) attributed much to the low coffee yields by small farmers in this area of study.

In addition they disclosed that poor pruning practices as also a cause of low coffee yields in their farms of coffee. They added that proper pruning methods clears weeds and other clipping plants that grow on coffee trees, branches are cleared and given enough light to bear the cherries after flowering.

The study agrees with both Kegonde, (2005), Karanja and Nyoro (2002) findings that low coffee yield is due to low technology adoption. Both authors attributes low technology adoption to high cost of inputs, poor infrastructure.

5.2.3 Influence of Cooperative Society Management

The third objective of the study was to establish the influence of coffee cooperative societies management influence on small scale coffee production. The study established that small scale coffee farmers had by 86.1% contended with the fact that cooperatives offer trainings on best methods of managing coffee, Concerning hiring staff 89.5% were not satisfied, On resource management and payment rates majority, 83.3% were not satisfied.

With the findings out of the study, there was no much influence of the cooperative management on the production of coffee by small scale farmers in these two sub counties in Sironko district. This comes with the fact that many coffee key players have out competed the societies. for example Olam (U) LTD, Kyagalanyi , Nasaaga Investments. These buy from farmers and they have extended services to almost every coffee grower willing to partner with them.

5.2.4 Influence of Coffee Value Addition

The fourth objective of the study was to examine the influence of coffee value addition on small scale coffee production. The study established that there was consumption of 57.6% of coffee by the coffee farmers. Those who did not consume coffee attributed it to coffee not being available and not affording it. Some claimed they prefer other beverages. The study also established there was low adoption of irrigation by 5.6% and Mechanization adoption was 6.5%.

5.3 Conclusions

The conclusions made from the study are given below:

1. The study revealed that education level of the farmers was not correlated with productivity of coffee per tree. This was seen when a farmer with a primary certificate produces more coffee than those with diploma.
2. Low yield was due to low utilization of inputs, poor agronomic practices and high incidences of pests and diseases. High pests and diseases irrespective of high adoption of fertilizer were due to underutilization.
3. Farmers were less satisfied with roles of cooperative society management

5.4 Recommendations

The following recommendations were made from the study;

1. The National Government needs to develop law on minimum education requirement for farmers just like any other career academic skills requirement. This will ensure increased output as the better educated farmers are able to understand technology and apply them and also promote education
2. The Ministry of Agriculture should promote adoption of improved cultivars which are more yielding than the traditional varieties and pests and diseases resistant. This will improve yield and quality and make the enterprise more profitable. This could be achieved by putting up factory managed nurseries.
3. Government should increase manpower by hiring more agricultural extension workers and agronomists. It must also revive Coffee cooperative societies and should introduce a capacity building programme in which farmers are taken through seminars on good coffee agricultural practices. In turn, the graduates should become trainers of their colleagues on best practices.

4. To ensure high return for the produce the county Government comes up with farm input subsidy programme and also ensures the inputs are supplied to farmers timely. This will be through improving of transport and communication infrastructure. To ensure proper utilization of inputs, the ministry of Agriculture staff should sensitize farmers through trainings. To ensure adherence to the standard the factory management should put up surveillance systems on crop management

5. The cooperative societies need invest in mechanization of operations to ensure efficiency and also put improve factory infrastructure like drying tables and automation of services.

5.6 Suggestions for Further Research

The following are suggested areas for further research

1. The study looked at influence of social factors affecting coffee production in Budadiri Town Council and Busulani Sub County but did not look at economic factors. Another study on influence of economic factors on coffee production in the same area need to be done. Secondly,
2. A study to ascertain the economic factors influencing adoption of improved coffee cultivars need to be done. Thirdly,
3. A study to ascertain influence of soil PH on coffee yield need to be done in various coffee growing zones in order to come up with coffee fertilizer recommendation for farmers.

REFERENCES

- Akudugu M., Guo E. and Dadzie S. (2012). *Adoption of Modern agricultural Production Technology by Farm Households in Ghana. Journal of Biology, Agriculture and Healthcare*
- Best, J.W, and James, V. (2004). *Research in Education (7th Edition): Prentice hall, New Delhi. India*
- Bibangamba, J.R. (1989). *Managing Rural Development in Uganda: Uganda Cooperative Alliance Development Papers.*
- Caswell, M., Fuglie, K., Ingram, C., Jans S. and Kascak C. (2001). *Adoption of Agricultural production practices: Lessons learned from the US. Department of Agriculture Area Studies Project. US Department of Agriculture, Resource Economics Division, Economic Research Service, Agriculture Economic Report No. 792. Washington DC*
- Chege J. (2012). *A Case Study of Institution Building and Value Chain Strengthening to Link Ethiopian Cooperative Coffee Producers to*
- FAO 2004. *The State of Agricultural Commodity Markets. FAO, Rome*
- FAO (2004). *Post harvest handling and processing of Coffee in African countries:*
- Federation Development Republic of Ethiopia (FDRE 2005). *A Plan for Accelerated and Sustainable Development to End Poverty, Addis Ababa, Ethiopia*
- FNC (2008) *Informacion Económica Cafetera. Estadísticas Históricas*
- Gemech, F. and Struthers, J. (2007). *Coffee Price Volatility in Ethiopia: Effects of Market Reform Programmes. Published online 4 May 2007 in Wiley Inter Science, Journal of International Development.UK..*
- Giovannucci, Daniel. (2002). *Colombia: Coffee Sector Study. Document of the World Bank. Latin American and Caribbean Regional Office*
- Hartwich, F. and Scheidegger, U (2010). *Fostering Innovation Networks: the missing piece in rural development? Rural Development News 1(2010).*

Hussi, P., Murphy J., Lindberg O. and Brenneman L. (1993). *The Development of Cooperatives and Other Rural Organizations: The Role of the World Bank*. World Bank Washington, D.C.

ICO (1997). *Coffee price determination and volatility*. International Coffee Organisation. . London,Uk

ICO, (2004). *Total Production of Exporting Countries International trade Centre. Coffee: An Exporter's Guide*. London,Uk

ICO, (2013) (http://www.ico.org/trade_e.asp) retrived on 6/01/2014

IFAD (2003). *The adoption of Organic Agriculture amongst Small Farmers in Latin America and the Caribbean: Thematic Evaluation*. IFAD Report no.1337 *Cooperatives and Other Rural Organizations, Agriculture and Rural Development Series, No. 8*, Washington, D.C., World Bank.

MINICOFIN Report (2003). *Poverty Reduction Strategies Draft Report*, MINICOFIN, Rwanda.

Ntahontuye F. (2008). *Factors affecting the adoption of coffee growing in Rwanda: A case study of Rubavu District*, Higher Institute of Agriculture and Animal Husbandry, Busoga, Rwanda pesticide use in the Philippines. MS. Thesis, Virginia Polytechnic Institute and State University, Virginia

UNCTAD (1999). *Sustainability in the Coffee Sector: Exploring Opportunities for International Cooperation: A Background Document for Brainstorming Uganda Coffee development Authority Uganda bureau of Statistics*

Sironko District Local Government planning unit

Sironko District Local Government production Unit

Multi - Strata Agroforestry Systems with Perennial Crops. Bib. Orton IICA / CATIE. pp. 34–. GGKEY:EXRAQNAQUX4. Retrieved 12 May 2013."Venezuela,1992; the 5th centenary of Evangelization in Venezuela, Scott 1604d". Manresa-sj organization. Retrieved 12 May 20 The Society 1895, p. 832.

"Peru: Coffee Annual" (pdf). USDA Foreign Agricultural Service. Retrieved 7 June 2015.

"Peru: Coffee, green, yield (hectogram per hectare)". Factfish.com. Retrieved 7 June 2015.

APPENDICES

APPENDIX 1: TRANSMITTAL LETTER FOR RESPONDENTS

TRANSMITTAL LETTER FOR RESPONDENTS

Madanda Benard

Budadiri Town council

Sironko district.

benardmadanda@gmail.com

Tel: 0706805703

Dear Respondent,

I am a student of the Kampala International University pursuing a Bachelors Degree of Science in Statistics.

I am conducting academic research study on the assessment of **Factors influencing Coffee Production in Busulani Sub county and Budadiri Town council in Sironko district**. This questionnaire has been prepared to obtain information on factors affecting coffee production for individual farmers. Please note that all the information provided for this study will be treated with utmost confidentiality. Your ability to answer all the questions comprehensively and to the best of your knowledge will be highly appreciated.

Thank you for your co-operation and precious time.

Yours faithfully,

Madanda Benard

1153-05194-02059

.....

APPENDIX 2: HOUSEHOLD QUESTIONNAIRE FOR SMALL SCALE COFFEE FARMERS

HOUSEHOLD QUESTIONNAIRE FOR SMALL SCALE COFFEE FARMERS

Instructions

Please tick in the appropriate box and also fill in the blank spaces provided for those questions where answers are required. You are requested to complete this questionnaire as honestly and objectively as possible. Use the space at the back of this questionnaire if you need more space for your responses.

Respondent initials..... Date..... Lcn.....

Part A Demographic Data

- 1A. Gender of the respondent 1. Male ☐ 2. Female ☐
- 2A. How old are you? 1. Less than 30 years ☐ 2. 30-45 years ☐
3. 45 – 60 years ☐ 4. Over 60 years ☐
- 3A. What is your marital status 0. Single ☐ 1. Married ☐ 2. Widowed ☐
3. Divorced ☐ 4. Any other specify.....
- 4A. What is your level of education 1. Primary ☐ 2. Secondary ☐
3. Diploma ☐ 4. Degree ☐ 5. Any other specify.....

Part B production technique Adoption

Please tick the number that best describe causes of low coffee yield in your farm

5. Pests and diseases infestation 1. Yes ☐ 2. No ☐
3. Any other specify ☐
6. Manure use 1. Yes ☐ 2. No ☐
3. Any other specify ☐
7. Fertilizer use 1. Yes ☐ 2. No ☐
3. Any other specify
8. Coffee pruning practices 1. Yes ☐ 2. No ☐
3. Any other specify.....
9. Use of irrigation 1. Yes ☐ 2. No ☐
3. Any other specify

10. Water and soil conservation strategies 1. Adequate [] 2. Inadequate []

3. Any other specify

11. Extension services 1. Yes [] 2. No []

3. Any other specify [].....

12. Mechanization of farm operations 1. Yes [] 2. No []

3. Any other specify

13. Shading of coffee trees 1. Adequate [] 2. Inadequate []

3. Any other specify.....

14. In a scale of 1-5, please rank below factors as influencing low coffee yields

0. Fertilizer Application _____ 1. Manure Application _____

2. Poor Pruning practices _____ 3. Use of improved Varieties _____

4. Pests and diseases _____

1= Not Important 2= Important 3= Fairly Important 4=Very important

5= extremely Important

15. How many coffee trees do you have in your farm?.....

16. How much coffee do you produce per year?.....

17. How many of these varieties do you have?

S.NO	Variety	Number of trees
1	SL14	
2	SL28	
3	SL32	
4	Any other specify _____	

17. Do you apply fertilizer to your coffee trees? 1. Yes [] 2. No []

18. If no. 18 above is answer is yes, which fertilizer do you apply to coffee during long rain

season? 1. CAN [] 2. Urea [] 3. NPK [] 4. ASN []

5. Any other specify..... 6. I do not apply []

Part C. Cooperative Management

Please tick the number that best describe your feeling about the management of your coffee cooperative society compared to your competitor

1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

ITEM	1	2	3	4	5
19 The manager calls for farmer's meetings more frequently The cooperative society has the best strategic plan					
21 The cooperative society gives us better payment rates than any other channel of marketing					
22 The cooperative society manages the resources efficiently					
23 The cooperative society is more robust in hiring staff					
24 The cooperative society officers trains us on best method of managing coffee					

Part D Coffee value addition

25. Do you apply manure to your coffee trees? 1. Yes [] 2.No []

26. If answer to question number 25 is yes, how much manure do you apply per tree per year in?

.....

28. Do you consume coffee at home? 1. Yes [] 2.No []

29. If no, why?

0. I don't like it []

1. It is not available []

2. I cannot afford []

3. Others specify.....

30. In what other ways do you utilize coffee and it's by products?

1. Charcoal []

-
2. Agro forestry []
 3. Manure []
 4. None []
 5. Others specify.....

APPENDIX 3: COOPERATIVE SOCIETY MANAGEMENT STAFF QUESTIONNAIRE

COOPERATIVE SOCIETY MANAGEMENT STAFF QUESTIONNAIRE

Please tick in the appropriate box and also fill in the blank spaces provided for those questions where answers are required. You are requested to complete this questionnaire as honestly and objectively as possible. Use the space at the back of this questionnaire if you need more space for your responses.

Factory Name.....Society Name.....

Respondent initials.....

Part A: Respondent bio data

1. Gender of the respondent. 1. Male [] 2. Female []
2. How old are you? 1. Less than 30 years [] 2. 30-45 years []
 3. 45 – 60 years [] 4. Over 60 years []
3. What is your marital status? 1. Married [] 2. Single [] 3. Widowed []
 4. Separated [] 5. Any other specify.....
4. What is your level of education? 1. Primary [] 2. Secondary []
 3. Diploma [] 4. Degree [] 5. Any other specify.....

Part B: Production technique adoption

5. On average, how many cherry do you society handle in one year in Kgs ?
6. Are you satisfied with above production level? 1. Yes [] 2. No []
 3. Any other specify.....
7. What are the major causes of low production? Please list them
i.
ii.
iii.
iv.
8. What do you think can be done to improve productivity of your society?
.....
.....
.....

Part C: Cooperative Society Management

9. Which post do you hold in the society?

1. Manager [] 2. Secretary [] 3. Treasurer []
4. Any other specify.....

10. For how long have you been in that post? 1. Less than 3 years []

2. 3-5 years [] 3. 5-10 years [] 4. others specify.....

11. Do you keep records in your society? 1. Yes [] 2. No []

3. Any other specify.....

12. Have you had any training for the last one year? 1. Yes [] 2. No []

13. How many times have you held farmers meeting in the last one year?

1. 1-3 times [] 2. 3-5 times [] 3. Over 5 times []

4. Other specify.....

14. Do you sometimes take credit from financial institutions or any other lending institutions?

1. Yes [] 2. No []

15. If yes, how many months does it take to clear the loan?.....

16. How long do your members take to be paid after delivering the produce to your society?

.....

APPENDIX 4: INTERVIEW SCHEDULE FOR COFFEE STAKEHOLDERS

INTERVIEW SCHEDULE FOR COFFEE STAKEHOLDERS

You are requested to complete this questionnaire as honestly and objectively as possible. Use the space at the back of this questionnaire if you need more space for your responses.

Respondent Initials..... Date.....

A. Bio Data

5. Gender of the respondent 1. Male [] 2. Female []
6. How old are you? 1. Less than 30 years [] 2. 30-45 years []
 3. 45 – 60 years [] 4. Over 60 years []
7. What is your level of education 1. Pre primary [] 2. Secondary []
3. Tertiary [] 4. University [] 5. any other specify.....
8. Institution of the respondent 1. UCDA [] 2. Cooperatives [] 3. Key coffee players []
4. Any other specify.....

Part B. Production technique adoption

9. What is the average coffee production per farmer per tree?.....
10. What is the potential production in kgs per tree?.....
11. What are the major causes of farmers not achieving the potential production?
.....
.....

Part C. Cooperative society Management

12. What percentage of small scale coffee is sold through cooperative society?.....
13. What is the gross payment per Kilo?.....
14. Are there differential in payment among factories or coffee societies?.....
15. If there are, what practical measures can management take to improve their efficiency?

Please list them

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

Part D: Coffee value addition

16. What is the level of usage of the following inputs by small scale coffee farmers?

- i. Fertilizer.....
- ii. Manure.....
- iii. Diseases control chemicals.....
- iv. Pest control chemicals.....
- v. Irrigation.....

17. What various ways do farmers utilize coffee and it's by products? Please list them

.....
.....

18. As a key coffee stakeholder, what practical measures do you think can be taken to revive the sectors?

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.....
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Thank you