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UNIVERSITY

**THE CONTRIBUTION OF COFFEE PRODUCTION TO THE STANDARDS OF
LIVING OF COFFEE FARMERS
IN BUNGOKHO-MUTOTO SUBCOUNTY
MBALE DISTRICT**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF STATISTICS AND
PLANNING IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF BACHELOR OF
BUSINESS STATISTICS OF MAKERERE UNIVERSITY**

DECLARATION

I ASIO JOAN AGNES, declare that the report entitled "The contributions of coffee production to the standards of living to the farmers of Bungokho-Mutoto sub county in Mbale" is my original piece of work, and it has not been published or submitted anywhere for any academic purposes.

SIGNATURE.....

DATE: 11/07/2025

ASIO JOAN AGNES.

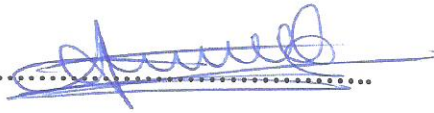
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SUPERVISOR'S APPROVAL

This is to certify that this dissertation presented by **Asio Joan Agnes** was written under my supervision and I recommend it for presentation to the Board of Examiners in partial fulfillment of the requirements to the award of Bachelor of Science in Business statistics of Makerere University.

SUPERVISOR: MR. ATUHAIRE LEONARD

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DATE:

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LIST OF ABBREVIATIONS

NAADS: National Agricultural Advisory Services

MAAIF: Ministry of Agriculture, Animal Industry and Fisheries

UCDA: Uganda Coffee Development Authority

GDP: Gross Domestic Product

ICO: International Coffee Organization

ICC: International Coffee Council

USAID: United States Agency for International Development

ABSTRACT

This study aimed at finding out the contributions of coffee production to the standards of living of coffee farmers in Mbale District. The specific objectives of this study included finding out the relationship between earnings from coffee and expenditure on health, education, food, leisure and assets and also finding out the relationship between earnings from coffee and other variables such as sex of the farmer, level of education, land size, household size and marital status. Simple random sampling was used to find the sample size that was considered during this study where a total of 119 farmers were interviewed. Also, ANOVA and multiple regression analysis were used to find out the association between earnings from coffee and expenditure on health, education, food, leisure and assets. Data analysis was done using STATA.

The results from this study showed that there were more males (78%) than women (41%) and most of the farmers were married (83%). The results further revealed that earnings from coffee had a positive weak relationship with expenditure on education ($r = 0.0431$, $p = 0.6419$) and food ($r = 0.1394$, $p = 0.1306$) and a negative relationship with expenditure on health ($r = -0.1206$, $p = 0.1913$), leisure ($r = -0.1316$, $p = 0.1537$) and assets ($r = -0.0099$, $p = 0.9147$). In addition, a higher average expenditure on education was also recorded (861,747) and lower expenditure on leisure (126,505). The study also revealed that the relationship between earning from other sources and expenditure on health and education was significant with r and p values; ($r = 0.2528$, $p = 0.0055$) and ($r = 0.3345$, $p = 0.002$) respectively.

I recommended however, that more efforts are still needed in coffee production so that farmers can meet their expenditures. Furthermore. Research should be done on the contributions of coffee production to the growth and development of SACCOS in Mbale district.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter gives some highlights about the area of study and what will be achieved as far as the study is concerned.

1.2 Background of the study

Coffee is the third most consumed beverage in the world after tea and water. It is no surprise therefore that coffee seeds are in high demand globally, making coffee the world's second most traded commodity after crude oil accounting for \$100 billion trade (Abafita & Tadesse, 2021).

Globally, coffee production reaches 170.94 million 60 kilograms bags as of 2018/19, up from 158.07 million 60 kilograms bags in 2017/18. The majority of the world's coffee is produced by South America, especially Brazil. In a recent report by the internal coffee organization on Global coffee exports, Ethiopia and Uganda featured as number five and eight respectively among the top ten producers and exporters of coffee. Ethiopia is the largest producer in Africa producing approximately 384,000 metric tons annually and currently sells the most of its coffee to Europe, The United States and Japan. Uganda on the other hand produces 228,000 metric tons and forecasts its coffee exports to rise by 16% boosted by weather and expanding acreage for coffee plantations (Abafita & Tadesse, 2021).

According to Mwanika, State, Atekyereza, & Österberg, (2021), agricultural sector is the Uganda's leading sector contributing 42% of the total GDP. Agriculture is dominated by small scale farmers and coffee is the major cash crop with about 353,907 hectares under coffee cultivation by an estimated 1.7 million households. Uganda grows two types of coffee: Robusta and Arabica in the ratio of 4:1. Arabica is grown at altitudes ranging between 1,300-2,300m above the sea level; while Robusta is grown at altitudes ranging from 900-1,500m above the sea level making Uganda to produce very intrinsic qualities due to high altitude, soil and farming systems not easily found elsewhere in the world (ICC, 2019). Coffee is mostly grown in mixed farms where it's intercropped with food crops such as bananas and beans which ensure household's food security. It is also grown among shed trees that result into sustainable coffee production, while ensuring a social, economic and sustainable environment that requires a minimal use of agro-chemicals such as fertilizers, pesticides and fungicides (Buyinza, Nuberg, Muthuri, & Denton, 2022).

Despite recurrent fluctuations in the world prices and subsequent reduction in coffee production in many African countries, Uganda has successively managed to maintain coffee as the main engine of the national economy, exporting on average four million 60 kilo bags per year. This indicates that coffee remains the most important crop in Uganda, the birth of Robusta coffee (Nalunga, 2021).

1.3 Problem Statement

Despite the increasing performance and benefits from coffee production in Uganda, few farmers are engaged in coffee production. Among those involved, their standards of living are still not quite satisfactory compared to other farmers that deal in other cash crops (NUCAFE, 2019). Government of Uganda through NAADS program greatly invested in coffee production with the aim of improving standards of living of the coffee farmers. In spite of the fact that the government made all the above, statistics still show that 70% of the coffee farmers in Uganda district lie below poverty line, coffee production and its contribution to the standards of living of coffee farmers need to be established so that farmers shouldn't be seen working but gaining nothing. The World Bank (2011) demonstrates that in circumstances when coffee prices are high, smallholders may not benefit, and most of the gains go to relatively large scale producers or other actors in the coffee value chain (Mbowa, Odokonyero, & 2019).

Different studies have been conducted in relation to livelihood and coffee production in Uganda including gender, and income inequalities but no study has been conducted to assess the contribution of coffee production to farmers' standards of living in Uganda. It is from this background that this study will seek to evaluate the contribution of coffee production to the farmers' standards of living in Bungokho-Mutoto Sub County in Mbale District.

1.4 Objectives of the study

1.4.1 Main objective

The main objective was to evaluate the contribution of coffee production to the standards of living of the farmers in Bungokho-Mutoto Sub County in Mbale District.

1.4.2 Specific objectives of the study

The specific objectives of this study were to describe what was researched during the study; our Specific objectives helped us to make our main objective smaller and logically connected to

systematically address the various aspects of the problem. The specific objectives of this study were;

- i. To examine the factors affecting coffee production in Bungokho-Mutoto Sub County in Mbale District.
- ii. To establish the levels of standards of living of coffee farmers in Bungokho-Mutoto Sub County in Mbale District.
- iii. To examine the contribution of coffee production on farmers standards of living in Bungokho-Mutoto Sub County in Mbale District.

1.5 Research Hypothesis

The following hypotheses enabled the researcher to discover a relationship between variables and with their outcomes. This study adopted a null Hypothesis. A Null hypothesis is assumed to be true unless there is strong evidence to the contrary (Frick, 1995).

- (i) Living standards of coffee farmers in Bungokho-Mutoto Subcounty in Mbale district are determined by coffee productivity.
- (ii) The living standards of coffee farmers in Bungokho-Mutoto Subcounty in Mbale district is low
- (iii) Coffee production contributes greatly to the standards of living of the farmers in Bungokho-Mutoto Subcounty in Mbale district

1.5 Scope of the study

1.5.1 Geographical scope

The study took place in Bungokho-Mutoto Subcounty in Mbale district. This area was selected because it is one of the major coffee growing districts in Uganda. In addition, coffee is the second most cultivated cash crop in Bungokho-Mutoto Subcounty in Mbale district but also there is high level of reported poverty in the area.

1.5.2 Content Scope

The study focused on evaluating the contribution of coffee production on the standards of living of coffee farmers in Bungokho-Mutoto Subcounty in Mbale district. In the study, much emphasis was put on the factors affecting coffee production, levels of standards of living and the contribution of coffee production on farmers' standards of living in Bungokho-Mutoto Sub County in Mbale District.

1.5.3 Time Scope

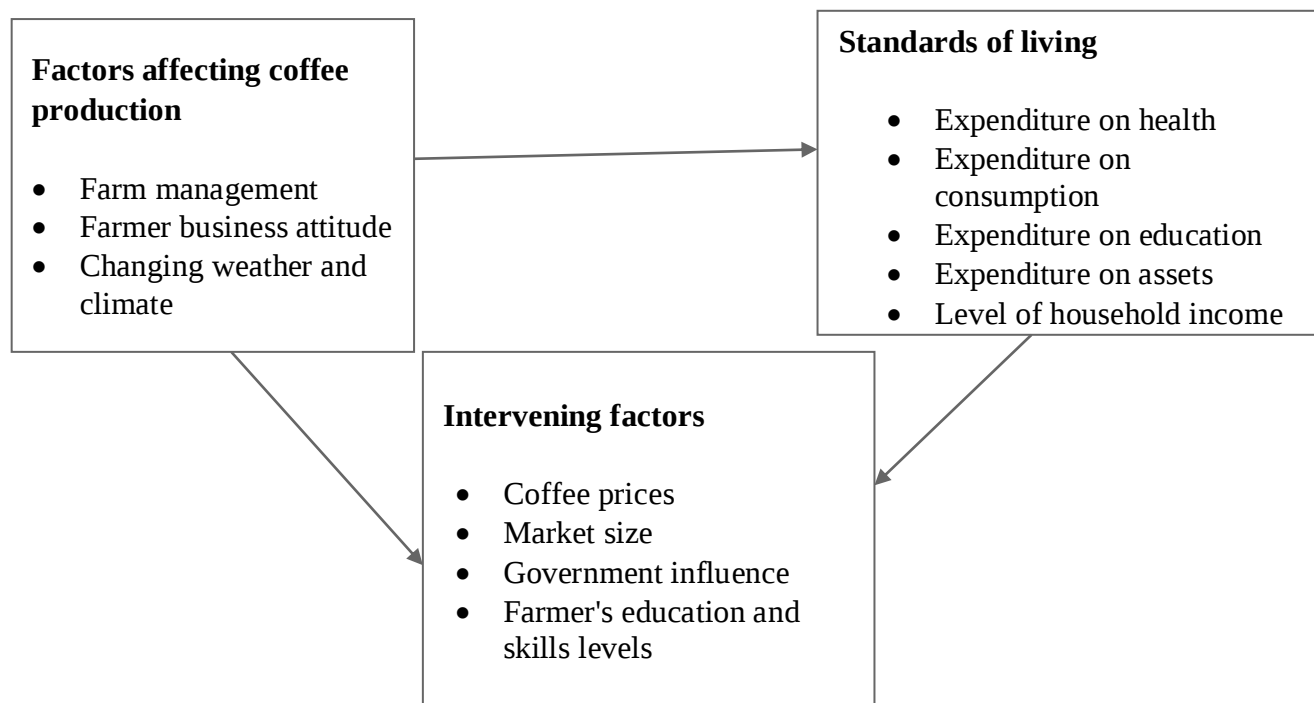
The study was conducted in a period of two (3) months that is to say from October 2022 to November 2022. This time was enough for the entire research process. This period was considered because it would help the researcher to collect adequate information and data required for the study.

1.6 Significance of the study

- i. This study will be a source of knowledge to academicians, practitioners and the public in general. It will also be a useful source of information and knowledge to policy makers who wish to improve coffee production in Uganda.
- ii. This study will be of importance both at local and national levels. Locally the study will be of importance for the partners in the coffee supply chain and local governments in understanding the issues affecting coffee production and the standards of living of coffee farmers in Uganda.
- iii. The study will offer an opportunity for the practitioners, recognized NGOs and local governments to get feedback from the people such as more information, recommendations and suggestions on what can be done better to increase coffee production and farmers' standards of living.
- iv. The study is a prerequisite for the award of a Bachelor of Business Statistics of Makerere University.

1.7 Conceptual Framework

Sekaran, (2003) states that, a conceptual framework helps to hypothesize and test certain relationships which improve the understanding of a situation.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, several materials for example scholarly articles, newsletters and internet publications will be consulted to make a review of related literature of the study. This chapter also provides literature following the objectives 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 (Madanda, 2018). 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 (Seninde, Chambers & Chambers, 2020).

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 (Namayega, 2022).

2.2 factors affecting coffee production

Farm management

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. 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 (Ndiritu, Kinama, & Muthama, 2022).

Farmer business attitude

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 (Ssekitooleko, 2019). Smallholder coffee production varies widely by the degree to which éonventional technologies such as inorganic fertilizers and pesticides are adopted, as well as the extent to which technologies and agro forestry technologies are adopted (Madanda 2019). This variation means differentials in the productivity, profitability and competitiveness of coffee fanning. Farming as a Business (FAB) 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 (Galabuzi, Agaba, Okia, Odoul, & Muthuri, 2021).

Changing Weather and Climate

The Meteorological Department of Uganda recorded an increase in the frequency of drought, identifying the occurrence of seven notable droughts between 2000 and 2020; almost four times the number of events logged between 1990-2000 and more than doubles that of the previous decade with the highest number of drought events (1980-1991) (Mukasa, Olaka, & Yahya. 2020). Climate change is impacting crop performance and agricultural systems around the world

with implications for coffee farmers and consumers. We carried out a systematic review to synthesize evidence regarding the effects of environmental factors associated with climate change and management conditions associated with climate adaptation on the crop quality of a culturally-relevant perennial crop, coffee (*Coffea arabica* and *Coffea canephora*) (Koch, Ibisch, & Bloch, 2022).

Age of coffee trees

While coffee plants can live up to 100 years, they are generally the most productive between the ages of 7 and 20. Proper care can maintain and even increase their output over the years, depending on the variety. Rahmanta, Purba & Supriana, (2018) indicate that as long as the coffee plant is still in productive age, the increase of coffee plant age will lead to increased production of arabica coffee that is at the age of 6-20 years. In accordance with research conducted by under the title 'Analysis of Factors Affecting Production in Central Aceh District' where the results showed that the plant age, the land area, and the number of plants have a significant effect on coffee production (Yunus, Yuliana, & Harijati, 2022).

2.3 Standards of living of coffee farmers

Standard of living is the level of income, comforts and services available, generally applied to a society or location, rather than to an individual. Standard of living is relevant because it is considered to contribute to an individual's quality of life. Standard of living is generally concerned with objective metrics outside an individual's personal control, such as economic, societal, political and environmental matters – such things that an individual might consider when evaluating where to live in the world, or when assessing the success of economic policy (Forsyth, & Molinsky, 2021).

In international law, an "adequate standard of living" was first described in the Universal Declaration of Human Rights and further described in the International Covenant on Economic, Social and Cultural Rights. To evaluate the impact of policy for sustainable development, different disciplines have defined Decent Living Standards in order to evaluate or compare relative living experience. During much of its use in economics, improvements to standard of living was thought to be directly connected to economic growth, increase amount of energy consumption and other materials (Weissbrodt, 2021). . However, the IPCC Sixth Assessment Report found that literature demonstrates that improvements in sustainable development practices as well as changes in technological efficiency and energy production and

use, allow for a Decent Living Standard for all people without fossil fuels and ~15.3 GJ per capita by the end of the 21st century. This allows for climate change mitigation by demand reduction as well as other sustainable development practices (Smil, 2019).

As the backbone of Uganda's economy, the agriculture sector is critical to the country's economic development and this growth will be realized when smallholders increase their yields and incomes. Implementing sustainable and certification is contributing to the Ugandan Government's target to increase coffee production from 4.6 million bags a year to 20 million bags a year by 2025 (GIZ, 2021).

Many factors make it difficult for these farmers to earn decent livelihoods. As family land has been subdivided over the years, average farm size will be significantly decreased. As farms shrink, smallholder coffee farmers will earn less, and will be unable to invest in the farm improvements that will help them earn more from their coffee leading to further decreases in production and sales. And while global coffee prices have fluctuated over the years, low market prices hit coffee farmers particularly hard when they are already struggling with these ongoing challenges (Patra, 2022).

2.4 Contribution of coffee production on farmers' standards of living

Contributions of coffee production on employment

About 125 million people depend on coffee for their livelihoods globally through the generated income, the delivery of the much desired rural employment for both women and men in the labor-intensive production and harvesting processes (Goetz, 2022). In Ethiopia, almost fifth of the population relies on coffee for their livelihoods. In Uganda, about a million smallholder households producing coffee and the value chain activities of coffee sub-sector is the source of income for about 8 percent of the population or 2.5 million people. However, the significance of coffee in reduction of poverty among households will be reduced in conditions of extreme drop in prices of coffee like the 1999-2004 coffee crisis when the price of Arabica plummeted to 45 cents a pound (a 30 year lowest price). This has overwhelming economic, social and political consequences for countries in Africa, Latin America and Asia. Export earnings dropped from around \$10bn to \$6bn, reducing rural incomes and trapping farmers growing coffee and their families into poverty (Ndiritu, Kinama, & Muthama, 2022). Numerous farmers growing coffee will be forced to leave business, majority abandoning their farms in search for work migrating to neighboring countries or towns, along with thousands of landless plantation workers. As part of

literature, we also make a review of the overtime trends in the world prices of coffee as a source of risk that it may negatively have influence on the results from intensive efforts to promote growing of coffee in mid-Eastern and western Uganda (Galabuzi, et al., 2021).

Contributions of coffee production to household assets

Studies by (Fafchamps et al., 2003) indicates that families that grow coffee have more assets unlike those depending on their crops. “An advance in procession of other household assets like; mobile phones and bicycles by farmers growing coffee is observed both at national level and Mbale district in particular. When producers of coffee are related to non coffee producers, outcomes demonstrate that farmers producing coffee are fairly better off in terms of wellbeing,” states the report, which analyses the possible influence of production of coffee towards reduction of poverty in Uganda.

Studies by Himmelstine, & Phiona, (2021) precisely focuses on direct changes in standards of living among households growing coffee in mid-Eastern Uganda. The districts that will be observed are: Lira, Gulu, Kapchorwa, Soroti, and Tororo. They are selected because the Uganda coffee Development Authority has put emphasis on the area for the introduction of clonal coffee and the study will focus on 1,634 farmers, of which 439 are coffee producers and 1,195 are non coffee producers. 60 percent of the coffee farmers say that they have observed a direct rise in their wellbeing because of the crop.

Contributions of coffee production on Education

The coffee industry employs about 100million workers globally, most of whom live in low developing countries. Numerous small holder farmers lack the business skills needed to consistently produce quality coffee for the global market (Mhando, & Mdoe, 2018). Certifiers and roasters will invest in education programs since better farming husbandry usually yields better coffee harvests and sold at higher prices from companies looking for a constant and lasting supply of coffee. Farmers then use this money to acquire health care, education and food supply thus raising their entire standards of living. Programs of training also support farmers diversify their crops so as to ensure price variations that will historically hurt communities heavily dependent on sole community (Nalunga, 2021). Uganda's coffee sub-sector in 1991 emerged with countless reforms making activities related to coffee to be private sector headed ventures which will encourage numerous people to join growing of coffee from which they earn money to

pay school fees for their children leading to higher academic level of the farmer's children (Scofield, 2021).

Contributions of coffee production to household income

USAID (2010) reports that coffee plays a great role in terms of revenue generation through exports in Uganda. In relation to supporting livelihood and/or contributing to farmer's standards of living. USAID further elaborates that; farmers sell their coffee as soon as it is harvested in order to spend on necessities such as medical care, food stuffs and school fees; and if better processing of coffee will be done, Uganda has a potential of doubling its income, for instance when farmers move away from home processed coffee and increase on processing of wet mills, for better and consistent quality. Mbowa, & Odokonyero, (2019) demonstrates that, standards of living can be improved where an individual person is enabled to produce 700 kilograms of clean coffee per year. Families growing coffee in mid-Eastern Uganda are richer than those relying on seasonal crops such as groundnuts, maize as a study proves.

According to Scofield, (2021) there is a possibility of coffee production liberating Ugandans from poverty, he reveals that households producing coffee will be linked to lesser poverty incidences, at 21.7 percent, unlike the households producing coffee with higher poverty incidence of 31.6 percent "Evidence from this data, therefore, shows that production has a strong influence on reduction of poverty at household level." In the same way, a group of scholars at the Economic Policy Research Centre (EPRC) will also in line with his findings. Traditionally, Mbale district was not known for growing coffee, which partially explains why it's always, be lagged behind by its counterparts from other regions (Arslan, 2020).

2.5 Conclusions

Internal and external factors significantly impact coffee production, which smallholders dominate. Unaddressed factors will affect coffee production sustainability. However, smallholders face some constraints. Coffee farmers lives are under increased pressure as agricultural revenues decline while input costs and expenditures on food and non-food products increase. Due to the perennial nature of coffee evaluating the contribution of coffee production on living standards remains a challenge. As a result, an evaluation of social and economic behavioral patterns and expenditure tendencies are the foundation for a for this study analysis

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter includes the different methods that was used in data collection, determination of sample size, data analysis and data presentation.

3.2 Research Design

The researcher used a cross sectional research design. This method was preferred because it was an ideal method that eased the collection of information from the respondents. Cross-sectional research design was relatively cheap and less time-consuming than other types of research additionally, cross-sectional Research Design allowed us to collect data from a large pool of subjects and compare differences between groups. The research findings were presented in frequency tables with figures in percentage form.

3.3 Study area

This study was conducted in Mbale district and a sample of coffee farmers were interviewed from Bungokho-Mutoto which was the case study.

3.4 Sample size determination

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

$$n = z^2 pq / e^2$$

$$n = 1.96^2 * 0.5 * 0.5 / 0.09^2 = 119 \text{ respondents}$$

Where **n** is the sample size, **p** and **q** are assumed to be 0.5 since there is an equal chance of getting the required information from every respondent to be sampled, **z** is a statistical value of the level of precision to be assumed which is 95% and **e** is the margin of error.

3.5 Sample selection procedure

Mbale district is composed of 20 sub-counties. Stratified sampling was used to select the sub-counties from Mbale district in which a sample of parishes are selected using simple random sampling. One two sub-counties were selected that is Bungokho-Mutoto Sub-county and Bufumbo Sub-county and four parishes were selected that is Bubirabi, Bumbobi, Bukhumwa and Bumageni. A sample of farmers were then allocated among the parishes using a simple random sampling and were interviewed. A total of 119 farmers werer selected based on a sample selection formula.

3.6 Data collection instrument

3.6.1 Questionnaire

Kumar (2005) defines a questionnaire as a written list of questions, the answers to which are recorded by the respondents. The questionnaire was employed as a research instrument; specific research statements were formulated by the researcher and given to respondents to answer them. The questionnaire had both closed and open ended and respondents' answers were limited to both a fixed and open set of responses. The questions focused on evaluating the contribution of coffee production on the standards of living of coffee farmers. The questionnaire was used since it was easy for respondents to answer according to how they perceived the questions.

3.7 Measurement of variables

The choice of this measurement is that each point on the scale carries a numerical score which is used to measure the respondents' attitude and it is the most frequently used summated scale in the study of social attitude. According to Bill (2011), the Likert scale is able to measure perception, attitudes, values and behaviors of individuals towards a given phenomenon.

The variables studied were the contribution of coffee production to producer's standards of living which were; employment levels, household asset level, household income levels and household consumption levels.

3.8 Quantitative Data Analysis

The objective of quantitative research was to develop and employ mathematical models, theories or hypotheses related to the phenomena being studied. The process of measurement is central to quantitative research because it provides the important connection between empirical observation and mathematical expression of quantitative relationships. Quantitative research is unlike qualitative research because qualitative work employs analyses and interpretations of observations for the purpose of discovering underlying meaning and patterns of relationships. In qualitative research, validity applies to an interpretation or description with which it is used.

Therefore, data were sorted using the Statistical Package for Social Sciences (SPSS) method. SPSS has a host of built-in statistical functions and a spreadsheet format for easy data entry. It has faster and easier basic function access, a wider variety of graphs and charts making it easier to find statistical tests (Junker and Pennink, 2010). The analysis relied on both descriptive and inferential statistics. Quantitative data got from the questionnaires were computed into frequency counts and percentage. SPSS was used to make cross tabulations that was used to establish

effects on a given independent variables. The Pearson's chi square test of 95% significance was used where necessary. This test is chosen because of its convenience in testing proportions, correlations and regressions and other associations of interest are made much easier.

SPSS was also used to make cross tabulations that were used to establish effects on a given independent variables; level of education, sex, age and profits. The ANOVA test of 95% significance was used where necessary. This test was chosen because of its convenience in testing proportions, correlations and regressions and other associations of interest are made much easier.

3.9 Ethical considerations

According Wulff (1979) and Sigma (1986) ethical conduct was an important aspect of research and means in respect of showing consideration to the people who participated in the study with us. There were four areas of concern where the rights and dignity of the subject must be preserved. These areas were: consent, harm, privacy and deception - Wulff 1979 and Sigma Xi (1986). The researcher abided by these ethical issues when conducting the study

Honesty: There were several reasons why it was important to adhere to ethical norms in research. First, norms promote the aims of research, such as knowledge, truth, and avoidance of error. For example, prohibitions against fabricating, falsifying, or misrepresenting research data promote the truth and avoid error. Second, since research often involved a great deal of cooperation and coordination among many different people in different disciplines and institutions, ethical standards promote the values that are essential to collaborative work, such as trust, accountability, mutual respect, and fairness (Amin, 2005). To avoid plagiarism, works of different authors will be acknowledged whenever they are used.

Anonymity: Respondent's name was withheld to ensure anonymity and confidentiality in terms of any future prospects. In order to avoid bias, the researcher interviewed the respondents one after the other and ensure that she informs them about the nature of her study.

Confidentiality: The researcher protected confidential communications, such as papers or grants submitted for publication and personnel records.

CHAPTER FOUR

PRESENTATION AND DISSEMINATION OF FINDINGS

Introduction

This chapter covered the univariate, bivariate and multivariate analysis of the independent and dependent variables. Univariate analysis was carried out using percentages, frequencies mean etc. bivariate analysis was carried out using correlation tests and ANOVA test and lastly multivariate analysis was carried out using multiple linear regression.

4.1 Univariate analysis

This section presents the descriptive statistics of variables in the study both categorical and scale variables. It indicated frequencies, percentages, means, minimum and maximum of the variables of the study.

Table 4.1.1: The descriptive summary of categorical variables used in the study.

Variable		Frequency	Percentage
Sex	Female	41	34.45
	Male	78	65.55
Marital status	Married	83	69.75
	Single	14	11.76
	Others	21	18.49
Level of education	None	27	22.69
	Primary	49	41.18
	Secondary	24	20.17
	University	19	15.97
Factors affecting coffee production	Farm management	40	33.61
	Farmer business attitude	44	35.77
	Changing weather and Climate	35	29.41
Intervening factors	Coffee prices	45	30.59
	Government influence	21	17.07

	Farmers education and skills	21	17.07
	Market size	32	26.02

Results from Table 4.1.1 indicated that majority of the respondents were males (65.55%). Further the study investigated the marital status of the farmers and it revealed that majority of the farmers were married (69.75%).

In line with Education levels, the study showed that most of the farmers had only completed primary education (41.18%) and a few had completed university (15.97%). The study further revealed that the farmers were majorly challenged by poor coffee prices (30.59%) and a few faced a challenge of market.

Table 4.1.2: The summary statistics of continuous and count variables in the study

Variables	Mean	Minimum	Maximum
Age	48.41	30	82
Household size	4	1	8
Number of acres	2.5	1	8

Incomes from coffee	729,412	270,000	2,500,000
Incomes from other sources	755,117	116,000	1,723,000
Expenditure on health	199,286	50,000	810,000
Expenditure on education	861,747	414,000	190,000

Expenditure on leisure	126,505	52,000	300,000
Expenditure on food	367,008	156,000	650,000
Expenditure on assets	268,689	84,000	859,000

The study on the contribution of coffee farming towards improving standard of living indicated that coffee production was dominated by the elderly and this indicated by the average age and minimum 48 and 30 respectively. On average majority of the households had 4 persons and 2.5 acres on average. The results from Table 4.2.2 showed that majority of the farmers spent most of their income on educating their children (861747 shillings).

4.2 Bivariate analysis

This the second stage of analysis. It covers the analysis of two variables mostly the dependent and independent variables in the study

Table 4.2.1: The association between expenditure on health, education and food with background characteristics using ANOVA.

Expenditure on health				
Variables		Mean	F	Prob<F
Sex	Female	209129.3	0.41	0.5226
	Male	194111.5		
Level of educ	None	240080	0.88	0.4991
	Primary	181629.2		
	Secondary	201916.7		

	University	192042.1		
Marital status	Married	201186.7	0.44	0.9562
	Single	192431.8		
	Others	198785.7		
Expenditure on education				
Variables		Mean	F	
Sex	Female	816334.4	2.31	0.1310
	Male	885617.8		
Level of Educ	None	872500	1.44	0.2143
	Primary	811302.3		
	Secondary	965667.2		
	University	851993.4		
Marital status	Married	853824.1	0.19	0.8289
	Single	888704.5		
	Others	866357.1		
Expenditure on food				
Sex		Mean	F	prob>F
	Females	371365.9	0.11	0.7441
	Males	364717.9		
Level of Educ	None	355800	0.77	0.5701
	Primary	358416.7		
	Secondary	389333.3		
	University	372105.3		
Marital status	Married	361433.7	0.42	0.66604
	Single	389333.3		
	Others	374214.3		

Results in Table 4.2.2 investigated the association between expenditure on health, education and food with background categorical variables and the findings revealed that there is no significant relationship between expenditure on health, education and food with categorical variables since all their p-values are greater than 0.05

Table 4.2.2: The correlation analysis between household expenditures with incomes from coffee and incomes from other sources.

	Exp on health	Exp on education	Exp on leisure	Exp on food	Exp on assets	Income from others sources
Income from coffee Exp health	-0.1206 (0.1913)					
Exp on education	0.0431 (0.6419)	-0.0269 (0.7712)				
Exp on leisure	-0.1316 (0.1537)	0.1995* (0.0296)	0.2959* (0.0011)			
Exp on food	0.1394 (0.1306)	0.0747 (0.4196)	-0.0147 (0.8794)	-0.0779 (0.3999)		
Exp on assets	-0.0099 (0.9147)	0.2177 (0.0174)	0.0621 (0.502)	0.0716 (0.4390)	1203 (0.1924)	

Income from other sources	0.0649 (0.4834)	0.2528 (0.0055)	0.3345 (0.002)	0.0699 (0.45021)	0.0146 (0.8801)	-0.0156 (0.8660)
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The study aimed at investigating the relationship between incomes from coffee and expenditures and the results revealed that expenditure on health, expenditure on food and expenditure on assets had a negative weak relationship with income from coffee. However, expenditure on health and expenditure on food had a positive relationship with incomes from coffee though not significant.

In line with incomes from other sources, the results indicated that there was positive weak relationship of expenditure on food, leisure, education and health with income from other sources where by the relationship with health and education were significant with r and p values as follows (r=0.2528, p= 0.0055) and (r=0.3345, p=0.002) respectively

4.3 Multivariate analysis

This section covers the analysis of the relationship between various expenditures and the independent variables shows the relationship between expenditure on health and others study variables.

Table 4.3.1: The regression analysis of household expenditures with other study variables.

Variables	Exp on health	Exp on Educ	Exp on food	Exp on leisure	Exp on assets
Sex	-9371.629	66951.26	-14368.55	4579.372	29927.14
Age	-305.5079	-2234.136	56.14574	-124.7766	-2052.534
No. of acres	-23345.2	3921.368	-14557.88	-4853.518	-13947.76
HH size	8721.703	14615.35	4879.488	5951.921	23132.9
Marital status	5086.044	3650.87	14242.03	-662.7781	14448.6
Level of educ	-6619.038	10253.06	5596.052	-4174.544	-2472.468

Incomes from coffee	0.008806	0.01907	0.0631023	-0.0112535	0.0228727
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*p<0.05 **p<0.01 ***p<0.001

Results from Table 4.3.1 investigated the regression analysis of household expenditures with other background characteristics and the findings were as follows;

Sex of the farmer has a negative contribution on expenditure on health as well as expenditure on food. However, sex of the farmer affects expenditure on education, leisure and assets positively.

Age of the respondent has a negative effect on expenditure on health, expenditure on education, leisure and assets. However, age of the respondent affects expenditure on food positively.

On the other hand, number of acres has a positive contribution on expenditure on education and a negative contribution on expenditure on health, food, leisure and assets.

Furthermore, household size has a positive contribution towards expenditure on health, education, food, leisure and assets though the contribution is not significant.

In addition, marital status has a positive contribution towards expenditure on health, education, food and assets though the contribution is not significant.

In line with the level of education of the respondent, its contribution on expenditure on food and education is positive though not significant.

Whereas incomes from coffee have a positive contribution towards spending on health, education, food and assets though the contribution is not significant. On the other hand, there existed a negative effect of earning from coffee on expenditure on leisure.

CHAPTER FIVE

DISCUSSION OF FINDINGS, SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

5.0 Introduction

This section presents the discussion of findings, summary of findings, conclusions and recommendations. It presents various discussions on previous research in comparison with the study findings which can be made to better the coffee sector in Mbale District.

5.1 Discussion of findings

Findings based on this study showed that earning from coffee was positively related with expenditure on education and food which are some of the major household needs and this further shows a strong influence on reduction of poverty. This was in line with the study findings by (*Dorosh, 2003*) which showed that production of coffee has a strong influence on reduction of poverty at household level in Eastern Uganda.

Research findings from this study indicated a high average income spent on assets. This is explained by the fact that coffee provides income throughout the year thus more income for investment than those depending on other sources. This was in line with the study findings in the by (*Fafchamps et al., 2003*) which indicated that families that grow coffee have more assets than those depending on other crops

Studies by (*Opoku-Ameyaw et al., 2003*) precisely focused on direct changes in standards of living among households growing coffee in mid-northern Uganda and concluded that 60 percent of the coffee farmers had observed a direct rise in their wellbeing because of the crop. This is in line with the findings of this study which indicated a high average income earned from coffee together with the positive relationship between earning from coffee and spending on education, health, food, and assets.

Research findings from this study indicated that income from other sources and expenditure on health and education had a significant and positive relationship and this was because some farmers earned most of their income from other sources. This was in line with the study by

(Mbowa *et al*) which indicated that coffee production was not the only source of income of Mbale people.

5.2 Summary of findings

The main objective of the study was to find out the contributions of coffee production to the standards of living of coffee farmers in Mbale District. I used expenditure on health, education, food, leisure and assets as a measure of standards of living.

Summary results indicated that majority of the respondents were males (65.55%) and yet a higher percentage of the farmers were married (69.75%). In addition, the study showed that most of the farmers had only completed primary education (41.18%) and a few had completed university (19%). The study further revealed that the farmers were majorly challenged by poor coffee prices (30.59%) and a few faced a challenge of market. The results showed that majority of the farmers spent most of their income on educating their children (861747 shillings).

The study aimed at examine the factors that have influenced coffee production, the study showed that farmers business attitude and farm management were the major factors influencing coffee production in Mbale district. However, the results further indicated that the coffee prices and market size had also an effect on coffee production

The study aimed at investigating the relationship between incomes from coffee and incomes from other sources with household expenditures and the results revealed that incomes from coffee had a positive correlation with expenditure on education and expenditure on food. However, results further indicated that there was a negative weak relationship between expenditure on assets, leisure and health with income from coffee. It further revealed that incomes from other sources had a positive weak relationship with expenditure on health, education, food and leisure though the relationship between incomes from other sources and expenditure on health and education was significant.

Study also investigated the association between household expenditures and level of education, sex of the farmer and marital status of the farmer and the findings revealed that household expenditures were not significantly related to level of education, sex of the farmer and marital status of the farmer.

Basing on regression analysis, farmers who completed from primary education are more likely to pay more money for health than those who had not acquired any education. A unit increase in the size of the household increases the expenditure on education by 19368.47 shillings. A unit

increase in the size of the household increases the expenditure on food by 5319.79 shillings. Males are more likely to spend much of their income on investing in assets than females. Single farmers are less likely to invest in assets than married farmers.

5.3 Conclusions

The study findings concluded that coffee production was the leading source of income of coffee farmer and that it contributed more to household expenditures especially education and food which are among the basic needs thus coffee production contributes positively to Mbale District farmers' standards of living.

The study concluded that incomes from other sources had a significant relationship with expenditure on education and health. Other factors such as expenditure on leisure, food and assets had no significant relationship with incomes from other sources. However, using ANOVA test, the study concluded that there was no significant relationship between household expenditures and level of education, sex of the farmer and marital status of the farmer though the relationship was positive.

The study investigated the challenges faced by farmers in Mbale District and it concluded that farmers were faced by fluctuating coffee prices.

5.4 Recommendations

The recommendations of the study were;

1. Coffee production should be further improved to meet farmer's expenditure levels so as incomes from coffee can be significantly related to household expenditures.
2. Youth should be encouraged to engage in coffee production so as to improve on the output since they are considered the energetic and more innovative group.
3. The problem of fluctuating coffee prices should be addressed so as to ensure stable incomes for coffee farmers to meet their needs as well as their standards of living.

5.5 Recommendations for further research

Further research should be done to investigate the contribution of coffee production to the growth and development of SAACOs in Bushenyi district. More research needs to be carried out to establish the contribution of matooke growing towards improving standards of living of the

farmers of Bushenyi. In addition, more research should be done on the distribution of agricultural extension services to farmers in Mbale district.

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APPENDICES

QUESTIONNAIRE

Dear respondent,

My name is Asio Joan Agnes a student of Makerere University pursuing a Bachelor's degree of Business Statistics. I am conducting a research study on the topic; the contribution of coffee production to the standards of living of coffee farmers in Bungokho-Mutoto Sub county Mbale District. The study is absolutely for academic purposes and all the information provided will be kept confidential. I thank you in advance for your maximum cooperation.

You are kindly requested to tick the most appropriate answer or give your opinion where necessary.

Circle the appropriate opinion and fill in where required.

SECTION A: Farmers details

Circle on the right option

Q1. Age of the respondent

1. 20-29
2. 30-39
3. 40-49
4. 50 and above

Q2. Gender of the respondent

1. Male
2. Female

Q3. Respondent's level of education

1. None
2. Primary
3. Secondary
4. University

Q4. Marital status of the respondent.

1. Married
2. Single
3. Others

SECTION B: Demographic factors

Q5. How many acres of coffee do you have?

.....
Q6. What is your household size?

.....

Q7. I would like to know how much you spend on the following annually on average;

Variable	Expenditure
Health	
Education	
Consumption	
Assets	

Q8. How much do you earn from coffee sales per season on average?

.....

SECTION C: Factors affecting coffee production

Q9. What are the factors affecting coffee production

1. Farm management
2. Farmer business attitude
3. Changing climate

Q10. Are there other factors affecting coffee production. If yes, specify

.....

THANK YOU.