FACTORS AFFECTING ACCESS TO FORMAL CREDIT: A CASE STUDY OF SMALL SCALE FARMERS IN BUSIA COUNTY, KENYA

BY

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DECLARATION

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

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DEDICATION

I dedicate this work to the Almighty God Jehovah for his love and blessings to my family and myself. Secondly my thoughts go to my loving husband David Mukabane for his unrelenting encouragement and support. A special dedication to my children, to whom I dedicate this work as a challenge; and to the Principal Bukura Agricultural College, Mr. Justus Simiyu for approving my study leave and sponsorship for me to undertake the study. I am also grateful to all those who have contributed something consciously for the betterment of humanity.

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ABSTRACT

Agriculture is the leading Economic activity in Kenya and it is the way of life for most rural households. It accounts for about 18% of wage Employment and contributes about 26% of the country's GDP. The main objective of this study was to investigate factors that affect access to formal credit amongst small scale farmers in Busia County. The study also aimed to establish the farmer characteristics that determine access to credit and Economic characteristics that affect access to credit. The data was collected from a cross sectional survey of 375 rural households who were proportionately sampled from a population of 15,705, interviewed 2 K-Rep officers, two officers from Agricultural Finance corporation, and two officers from Kenya Women Finance Trust. Interviews, structured questionnaires, observation and document analysis were used to collect quantitative data from the sampled households. Descriptive and linear regression were used to analyze quantitative data. The regression coefficients were tested at 5% level of significance. Findings of this study revealed that the joint effect of the explanatory variables in the model accounted for 90.6% of the variations in the factors affecting the farmers' credit access. Sixteen out of the eighteen variables (and coefficients) are significant at 5% and hence greatly influence credit access. It was only the marital status and sales increase for the past two years that did not have a significant coefficient. The results revealed that 32.9% of small-scale farmers accessed agricultural credit, whereas 67.1% did not access credit. The findings also revealed that agricultural credit access by female farmers is still very limited (25.6%) compared to male dominance (74.4%). Generally, ability to pay the loan in due time, education level, Marital status, family size, Gender, number of employees, source of income other than farming, the length of time farm had been in operation, farming, business or group association, size of the farm, age, credit program, keeping financial records for your farm, distance of farm from the nearest town, and the number of years in farming were highly important in influencing access to agricultural credit. Most farmers in the region have not fully exploited their potential in agricultural production due to capital constraints and small land size. Government should improve service delivery in terms of extension services and where not possible should encourage public private partnerships in delivering extension services to the farmers. Awareness campaigns on the need to adopt new technologies and use of fertilizer should be encouraged. Enabling environment for group marketing of agricultural produce to increase the bargaining power for better prices so that farmers can increase their productivity. Government should therefore promote forums that can be used to educate the farmers on the need to borrow credit and link them to the lending institutions. Effective training programs that would include; insurance to mitigate the risks in farming, financial literacy programs to familiarize smallholder farmers with the skills required to effectively understand, access and utilize credit financial services to enhance their agricultural activity. Financial institutions should consider issuing production credit in form of farm inputs in order to improve the impact of credit on production. Effort should be focused on how the credit input services can be enforced to lend in kind to reduce fungibility into consumption expenditures. There is need to review existing policies and in some cases development of new ones that will enable policy mechanisms to realize equitable access to credit for small holder farmers.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AFC	Agricultural Finance Corporation
ARDAP	Appropriate Rural Development Agriculture program
ASDS	Agriculture Sector Development Strategy.
DLPO	District livestock production office
ERS	Economic Recovery Strategy
KCB	Kenya Commercial Bank
KWFT	Kenya Women Finance Trust
NALEP	National Agriculture and livestock extension programme
NMK	*Njaa Marufuku* Kenya
PALWECO	Programme for Agriculture and Livelihoods in Western communities.
SPSS	Statistical Package for social scientists.
SRA	Strategy for Revitalizing Agriculture

DEFINITION OF TERMS

Access to Credit: The study considered a farmer to have access to credit if the farmer is able to successfully borrow either the full amount, greater or less than the full amount of credit the farmer applied for. On the other hand, a farmer is said to have no access to credit if the farmer‘s credit application is completely rejected.

Reference period: The time frame the respondent is being asked to consider when answering a question (e.g., August 1 to December 15, 2013).

Reliability: The extent to which repeatedly measuring the same property produces the same result.

Response dimension: The scale or descriptor that a survey question asks the respondent to use to describe their observations, actions, attitude, evaluation or judgment about an event or behavior.

Response rate: The number of completed surveys divided by the number of eligible potential respondents contacted.

Sample: A list of people drawn from the group from which information is needed.

Target population: The group of people whose activities, beliefs or attitudes are being studied

Validity: The extent to which a survey question accurately measures the property it is supposed to measure.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter lays an important foundation of this research. It consists of the problem statement, the objectives of the study, hypothesis, justification and the significance of the study, and lastly gives the scope of the study.

1.2 Background to the Study

Kenya export earnings come from agriculture and accounts for 26 per cent of the Gross domestic product (GDP) (G.O.K, 2010). Agriculture employs more than 80 per cent of Kenya's labour force and contributes about 57 percent of the national income. Accordingly Agricultural credit can be used to enhance production and promote standard of living thereby breaking the vicious cycle of poverty for small-scale farmers. According to Ololade and Olagunju (2013), agricultural credit can be very important if sustainable agricultural development is to be achieved all over the world. Credit to the rural community can be used to greatly enhance development and reduce poverty. Use and repayment of credit has enhanced development in the developing world Nigeria included (Nwachukwu, Alamba, and Oko-Isu, 2010). Agricultural credit has become a requirement for farmers to increase their output in the process of agricultural development of a country. In Ethiopia, lack of finance is one of the fundamental problems hampering production, productivity and income of rural farm households. Access to institutional finance is very limited, forcing farmers to search financial services through informal channels. In their study on analysis of factors affecting smallholder farmers' access to formal credit Gemessa and Gemechu (2016) found out that credit access to female headed households was limited and the wealth difference between group access to credit from the formal sources was also statistically significant.

As credit is one of the most important factors required for smallholders input utilization, it is important to have sustainable agricultural development. Agriculture is a fundamental instrument when it comes to ensuring sustainable development and reducing poverty but, 'financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders' ability to compete'. (Tura, Kenea & Kaso, 2017).

The agricultural sector in Kenya is large in terms of employment created, yet it contributes less than its proportionate share to gross domestic product (GDP), a feature that is common among many developing countries (Adam et al., 2010). Like most Sub-Saharan Africa countries, the performance of the agricultural sector has significant consequence for Kenya's economic growth and development. The sector contributes up to 30% of the country's GDP, and 80% of the raw materials used in industrial manufacturing as well as accounting for about 60% of total export earnings and employment of over 75% of the country's labour force (FAO, 2014; RoK, 2006). According to the World development report (WDR), of 2008, Kenya is categorized as agro-based economy because agriculture accounts for an average of 32 percent of the growth and approximately 79 percent of the poor population derive their livelihood in the rural areas. The Kenya agricultural sector performance decelerated from the 6.4 per cent recorded in 2010 to 1.5 percent growth in 2011. This was occasioned by the unfavorable weather in some regions, high cost of agricultural inputs, a weak Kenyan shilling coupled with high inflation among others that has contributed significantly to the low production. On the other hand, prices paid to farmers for the various commodities such as maize, coffee, tea, sugar cane, sisal, beef and cotton increased during the review period as per the Economic Survey Report (ESR) (RoK, 2012). Despite this challenges, the sector is therefore, expected to play a leading role in

steering the country towards achieving its policy objective of attaining the status of a newly industrialized economy by the year 2030. It is also crucial in meeting key millennium development goals, including poverty eradication, enhancing equity in wealth distribution, empowerment of women, improving nutritional-health, attaining environmental sustainability, and enhancing institutional linkages and partnerships (United Nation, 2006; World Bank, 2008).

Agricultural credit is an essential element for agricultural growth in developing countries. It is a temporary substitute for personal savings and it accelerates technology change to stimulate agricultural production by enhancing smallholder farmers' productivity, asset formation, food security and subsequently, rural agricultural income (Kimuyu and Omiti, 2000). In India and Brazil, for example, agricultural financing is given very high priority. The World Bank through its private financing arm, International Finance Corporation (IFC), among other banks has also promoted agricultural credit. The availability of formal finance to the smallholder farmers is essential, if they are to produce a marketable surplus and thereby contribute to the development process (World Bank, 2008). Poor access to credit by smallholder farmers who are the majority of the sector drivers is among the major constraining factors. Studies in the focus areas of this study in Kenya have cited low credit access to be featuring prominently as one of the major constraints to improved input use, productivity gains, and overcoming rural poverty (Odendo *et al.*, 2002; and RoK, 2006). A report by the Central Bank of Kenya indicates that agriculture is the most underfinanced sector, receiving only an average of 3.3% of the total credit extended to the economy (RoK, 2012). This is far below the Maputo declaration of having up to 10% of the country's annual budget allocated to the Agricultural sector. Financing the agricultural inputs and labor wages therefore requires liquid cash that often is not

readily available with the smallholder farmers and hence, it is essential to expand the status of rural credit at large to improve agricultural productivity.

In their study on agricultural credit sources and determinants of credit acquisition by farmers in Idemili local government area of Anambra State, Nigeria Ijomu and Osondu (2015) described socio-economic characteristics of rural farmers; identified sources of agricultural credit available to rural farmers; determined socio-economic factors that influence agricultural credit acquisition of farmers ascertained reasons for any credit misappropriation and identify problems that constrain farmers from agricultural credit acquisition. By randomly selecting 90 farmers by multi stage random sampling technique and using semi-structured questionnaires, descriptive statistics and multiple regression model found that 74.44% of respondents were males with a mean age of 45 years. Majority (76.67%) were married with large house hold sizes. Majority (93.33%) received different level of education, with sources of credit from friends/relatives (30.00%), cooperative societies (43.33%), money lenders (14.44%), and cumulatively from formal sources ((12.22%). The result of the multiple regression analysis revealed age, household size, membership of cooperative societies, marital status, education level, farm size and amount of loan repaid at varied signs and levels as significant predictors of amount of agricultural credit acquired by farmers. The most common reason given among the respondents (55.89%) of those who misappropriated acquired agricultural credit, was meeting nonfood needs of the household. The farmers encountered problems of high interest rate (78.89%), lack of collateral (75.56%), long distance from source of credit (50.00%), poor harvest (37.78%), moratorium (33.33%) and delay in loan approval/disbursement (44.44%) as constraints to acquire credit. The study recommends that the state government should pass policies aimed at providing free educative seminars to all illiterate farmers to teach them possible ways and methods

of acquiring credit. To ensure mass attendance to such seminars, little incentives should be given to farmer participants.

Access to credit refers to the ability of individuals and enterprises to obtain external funding to enable them ease cash flow problems (Osoro & Muturi, 2013). Credit can be either short term or long term depending on the lenders assessment of the borrowers' ability to repay. Access for credit by SMEs in Kenya has been identified as a necessary condition for job creation and economic growth. The ability to access credit for by businesses is a critical factor of private sector growth and especially for SMEs' that most often lack adequate capital that they need to grow and expand. Credit access also has an impact on the agricultural sector where expenditure on inputs exceeds the returns from sale of the proceeds. (Martina & McCann) Also (Monteiro, 2013) observed that smaller enterprises generally have limited access to non- bank lenders due to lack of creditworthiness in their information which is usually unpublished hence they are challenged by finance.

Small farms grow most of the maize as well as produce potatoes, bananas, beans and peas. But about one half of Kenya's total output is non-marketed subsistence production (Larsen, et al. 2009). Even in farming potential areas, agricultural practices are still traditional and farmers rely on rain waters in farming thus, the country's grain yield has remained flat over the past two decades (Yegoh and Kimeli, 2014). Despite many well intentioned efforts and with a growing population of about 3% per annum, the country faces a daunting task to meet food sufficiency. This and the fact that agricultural practices are still traditional have contributed to hunger and extreme poverty in many rural areas in Kenya (Mwangi and Ouma, 2012). Food production from 2001 is on the decline as a result of poor methods of farming, erratic rainfall pattern and escalating costs of farm inputs (Mwangi and Ouma, 2012). Another factor that has contributed to

this situation is land fragmentation which has been occasioned by population growth. In Busia County Sub-County what used to be viable land has been subdivided into very tiny holdings, some as small as 0.1 acre popularly referred to as "pointi" and are not agriculturally viable because with such small farms, much of the produce is used by the farmers. In addition, small scale farmers are afraid to diversify their farming activities because the risk of trying a new crop is much worse than for a more prosperous farmer; the loss of crop could mean not only monetary loss but also starvation (Muiruri *et al.*, 2012)

Small scale farmers have little extra money to spend on seeds and fertilizer so they find it difficult to change to a new crop variety (Larsen et al., 2009). So within their small farms, farmers mainly cultivate maize (white corn) and are afraid to venture into other farming activities. The problem of poor production is complicated by inaccessibility to credit facilities. Owing to low incomes, most land owners cannot process title deeds and so cannot offer their land as collateral in financial institutions.

At the national level, extreme hunger and poverty is a recurrent phenomenon. In 2003, 56% of the population was still living below poverty line and it is projected that 65.9% of Kenya's population would be living below poverty line by 2015 (UNDP). As far as food situation is concerned, Kenya's long term goal of attaining food sufficiency remains unmet (Yegoh and Kimeli, 2014). Frequent droughts have always led to food shortage. The most affected group is the pastoral communities. In March 2011, an estimated 1.4 million pastoralists faced moderate to high food insecurity due to impacts of consecutive poor seasons (WFP). In July 2011 an estimated 4 million people were seriously affected by famine and majority of them were unlikely to meet food needs until September 2011(Yegoh and Kimeli, 2014)

Farm credit has been described as one of the pre-requisites for farmers to increase the agricultural output in the process of development of sustainable agricultural sector of a country. Despite the crucial role of credit in agricultural production and development, farmers still have limited access to farm credit. Awoke, (2004), noted that its acquisition and repayment are fraught with a number of problems especially in small holder farming. Large rate of credit repayment defaults have been a perennial problem in most agricultural credit schemes organized or supported by Kenyan government. Most of these defaults arise from poor management procedures, loan diversion and unwillingness to repay loans. According to Saleem, *et al.*, (2014) various researchers have put forward the benefits, problems, access and role of credit for increased productivity. But prompt repayment of credit is necessary for good credit worthiness.

Inability of borrowers to repay amount of loans collected is crucial for the long-term sustenance of the credit institutions. As a result, many studies have tried to examine loan repayment performance of many socioeconomic groups. A number of empirical studies (Kohansal, *et al.,* 2008; Kohansal and Mansoori, 2009; Oladeebo and Oladeebo, 2008; Ololade and Olagunju, 2013) revealed income, sex, farm size, age of farmers, years of farming experience with credit, size of loan, household size, timeliness of loan disbursement, level of education of farmers, sales of crops, degree of diversification, income transfer and the quality of information as significant determinants of agricultural credit access and repayment and have also contributed positively to the credit worthiness of farmers. Considering the socioeconomic and environmental peculiarities across regions it is therefore necessary to carryout thorough investigation of the determinants of credit access worthiness and availability, particularly at the smallholder farmer level because of its importance to policy makers and the lending institutions.

Farmers in Sub-Sahara Africa lagged behind in technology use, that would help them add value to their products, fetch higher prices in the domestic and export markets due to capital deficiency (Lynam, 2007). Credit is a very important component in the modernization of agricultural activities. Since modern technology is expensive, farmers resort to credit in order to finance different agricultural operations. Nevertheless, farm credit is not only, necessitated by the limitations of self-finance but also by uncertainty pertaining to the level of output and time lag between inputs and outputs (De- Janvry and Sadoulet, 1995). Recent studies have shown that the growth rate of agricultural investment is less than growth of other economic sectors, implying that agricultural financing is one of the most important factors needed to develop rural agriculture in developing countries. Therefore, there is need for facilitation of access to agricultural credit, in order to raise amount of productive investment thereby playing a crucial role in elimination of farmers‟ financial constraints for investment in farm activities, increasing productivity and improving farm technologies.

Hence, this study was designed to ascertain the major socio-economic and organizational factors that affect credit access capacity of small-scale farmers in Busia County.

1.3 Problem Statement

Despite its contribution to the economy the amount of credit extended by the banks to the agricultural sector has stagnated over the years and compares poorly with other sectors. Even though there is a well-developed banking system, the impact of the credit services is yet to be felt in the rural areas. A study by Kibaara, (2006) showed that 82% of those households that tried to obtain some sort of credit actually received. However, among those who did not receive credit, 62% had tried to borrow for farming purposes. An indication that although there is dominant need for farm credit, most farmers do not

get the required credit. This is partly associated with the nature of agricultural farming which has high covariant risk.

Risks associated with agribusiness coupled with complicated land ownership laws and tenure systems that limit the use of land as collateral make financing agriculture unattractive to the formal banking industry. It also limits the participation of women in the uptake of credit since most of them have no title deeds yet they are the major players in the farming industry. This development has forced many banks to charge their customers, who include farmers, prohibitively high interest rates to remain afloat. The high cost of bank credit and the limited number of banks in rural areas are some of the factors that make it difficult for farmers to access credit.

To increase agricultural production and improve farming as a business, farmers need greater access and proper use of inputs and credit. Farmers need capital investment for irrigation infrastructure, value-addition technologies and general farm development, and to comply with food safety regulations in order to meet the market demands.

Many small scale farmers in Busia County still continue to keep poor quality animals, and even those with improved breeds can barely feed them adequately and carry out the routine management practices as required. Most farmers in this County have smaller pieces of land (an average landholding of 1.2 acres per person) and large family sizes. This makes it difficult for them to access loans since they lack collateral. Their farming methods are less intensive due to inadequate capital.

The study was therefore designed to investigate the factors affecting access to credit by small scale farmers in Busia County, Kenya, with a view to coming up with recommendations that will provide Financial institutions, training institutions and

policy makers with new insights on loan evaluation process and develop tailor made training programmes for farmers and farm managers.

1.4 Research Objectives

1.4.1 General objective

To investigate the factors that affect access to formal credit among small-scale farmers in Busia County.

1.4.2 Specific objectives

i. To determine the farmer characteristics that affect access to credit by small scale farmers in Busia County
ii. To determine farm characteristics that affects access to credit among small scale farmers in Busia County
iii. To determine economic characteristics that affect access to credit among small scale farmers in Busia County

1.5 Hypothesis

H_{O1}: Farmer characteristics do not affect access to credit among small holder farmers.

H_{O2}: Farm characteristics do not affect access to credit among small holder farmers.

H_{O3}: Financial characteristics do not affect access to credit among small holder farmers.

1.6 Justification

It is common knowledge that Agricultural growth is dependent upon technical change, and adoption of new technology is dependent on the availability of funds and terms of financing among others. Yet smallholder farmers are usually capital constrained. To address the problem of capital constraint, the Kenya government has over the years participated in the development of Agricultural credit programs, but not without problems. The government has not been able to meet credit needs of farmers, especially

small holders, and many farmers have been reluctant to apply for loan funds. The Agricultural sector receives only about 10 percent of the total formal credit extended to the economy. Furthermore, funds meant for agricultural purposes have been diverted to other uses by borrowers, and repayment performance has been generally poor.

Financial sector stakeholders agree that there is a serious problem of limited access to financial services in Kenya among lower income and rural households. Considerable efforts have been made to address this problem that impacts directly on the livelihoods of poorer people as well as economic growth. The Government of Kenya's Economic Recovery Strategy for Wealth and Employment Creation (ERS) specifically sites the importance of the financial system and the need to improve access to financial services across the economy especially in the agriculture sector, and among micro and small enterprises. However, despite agreement regarding the limited access to funding, there has been no reliable data to indicate the extent of the limitations, and therefore no means of measuring progress made by the government, the financial services industry and development. In short, there has been no clear quantitative measure for the extent of access to financial services in Kenya. Better access indicators can be valuable in promoting wider access to financial services for the poor in Kenya by providing information to the private sector about market opportunities, providing information to policy makers about the main barriers to access, providing a solid empirical basis to track progress and an impetus for necessary reforms.

This study sought to bridge the gap by analyzing the factors affecting access to credit among small scale farmers, with a view of coming up with recommendations that would overcome the bottlenecks that limit access to formal credit by small scale farmers.

Credit market failures are a long acknowledged problem in developing economies and have multiple implications in terms of efficiency and equity. Credit enables investment and is a primary source of working capital for those too poor to save. A growing empirical literature analyzes the impacts of credit constraints both on long term investments such as fixed farm assets (Carter and Olinto, 2003)and short term profitability (Foltz, 2004)

Many banks and micro finance institutions have come up to offer credit to small scale farmers and small business enterprises in Kenya. Busia County is one of those regions in Kenya with favorable climatic conditions for Agricultural production, but majority of the small scale farmers still suffer poor yields and low income from their farms as compared to their counter parts in other parts of the country who have even smaller pieces of land. This study therefore sought to investigate the factors affecting access to formal credit by smallholder farmers in Busia County. The results will educate policymakers, credit agencies and training institutions, provide fresh perspectives on the loan appraisal investigation process and the adaptation of new training programs for farm managers / owners.

1.7 Scope of the Study

The study was carried out in Busia County, Kenya. It involved only small scale farmers. Busia is a County in the former Western Province of Kenya. It borders Kakamega County to the east, Bungoma County to the north, Lake Victoria and Siaya County to the south and to the west. The altitude rises undulating from about 1,130m above sea level in the shores of Lake Victoria on the extreme southern end to an average of 1,375m in the central and northern regions. Though most residents of Busia County are ethnically Luhya, there is also a substantial population of Luo and Iteso residents.

The size of the population was 15,705 small scale farmers from the sub-county. The sample size was 384 respondents.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literature related to the study. This chapter delved into factors that determine access to credit by small scale farmers; theoretical and empirical review was done. Conceptual framework was done. Further, the researcher did critical review of the literature in order to ascertain the missing link. For the purpose of this research, it was important to define terms that were used from time to time.

2.2 Review of Factors Determining Access to Credit

In many parts of Kenya, rural livelihoods greatly rely on subsistence farming where productivity is hardly adequate to sustain the family (Cunguara & Darnhofer, 2011; Fulginiti, *et al.,* 2004; Savadogo, *et al.,* 1998). Despite some recent improvement, the agricultural sector's growth remains insufficient to adequately address poverty and lead to sustained GDP growth on the continent (Salami et al., 2010). Furthermore, an ever rising population size needs to be fed while severe limitations hinder smallholder farmers from increasing production (Wambugu *et al.,* 2011).

Besides the problem of land scarcity and degradation, they operate in an environment of incomplete and poorly functioning markets for everything from labor, land, and credit, to commodities, risk and information (Timmer, 1997) while support policies are limited (Adesina, 2010). The dominant production systems are still characterized by low input use, mixed cropping and extensive livestock keeping (Pender and Ruben, 2004) with a high rate of self-reliance. This explains the persistent low crop production, food insecurity, hunger and malnutrition in poor African farming communities (Nkala *et al.,* 2011).

Utilization and repayment of borrowed agricultural funds has been one of the many challenges of agricultural development in the developing world and Kenya is no exception (Ifeanyi *et al.,* 2010). Borrowed agricultural funds, which are also defined as agricultural credit, are amongst the requirements for farmers to increase agricultural production in the process of agricultural growth of a country. As cited by Oladeebo and Oladeebo (2008), agricultural lending involves giving out of credit (in cash and kind) to small- scale farmers for the purpose of farming. There is no doubt about the crucial roles of credit in economic development. According to Ifeanyi *et al.,* (2010) Credit is an important tool for enhancing the welfare of the poor explicitly through a smoothing of consumption that reduces their vulnerability to short-term income. It also increases the production capacity of low resource farmers by funding investment in their human and physical resources.

There is no question that in recent time, there has been considerable concern on farmers in Kenya by farmers' economists, designers, policy makers, agri-business managers, farmers, financial institutions and NGOs. The topic of loan repayment is one of these revived interests for improving the status of rural capital by extending credit to poor farmers. Without any expense repercussions, the credit is not received. A number of considerations are taken into account prior to the benefit, and one of them is the willingness of the beneficiaries to recover the loan. According to Ugbomeh *et al.,* (2008), credit repayment performance could be influenced by a myriad of factors such as interest rate, unstable prices of agricultural commodities, and the social relations and responsibilities of the borrower.

Many other factors abound including membership of self-help group (SHG); a voluntary association of people at the grass roots level to meet the challenges of economic and business activities in the rural cash economy, like cooperative societies

which have been described as a user-owned and democratically controlled enterprise in which benefit is received according to use. Such platform has been used by the governments at various levels to improve the productivity of the farmers and also alleviate the poverty and sufferings of the rural resource poor famers. Accordingly, Dadson (2012) noted that in developing countries, improvement in productivity through investment in productive ventures, especially in the agricultural sector where majority of the population derive their livelihood is necessary for accelerated economic growth. At low levels of income, the accumulation of savings may be difficult. Under such circumstances, access to loans can help poor farmers to undertake investment and increase productivity.

Credit is the back bone for any business and more so for Agriculture (Yusuf, 1984). Agricultural credit is an integral part of the process of modernization of Agriculture and commercialization of the rural economy. Agriculture as a sector depends more on credit than any other sector of the economy because of the seasonal variations in the farmers returns and a changing trend from subsistence to commercial farming. Credit may contribute for the farmers to earn more money and to improve their standard of living.

Credit is an important input into the production system and it contributes to increased food productivity. Access to credit increases the farmers' working capital enabling the farmers to buy productivity enhancing inputs such as good quality seeds, feeds, fertilizers, chemicals, drugs, and veterinary services. Data from the 2004 Tegemeo survey shows that only 39% of the households sought credit. The main reasons for trying to access credit were farming, consumption needs, school fees, medical and business. Credit for farming purposes remains the most dominant need because majority of the rural households, derive their livelihood from agriculture.

2.3 Theoretical Review

This study was guided by the following theories

2.3.1 Demand and Supply Theory

Demand theory was first raised as a fundamental principle of microeconomics by a French economist Walras (1834-1910). The theory is an analysis of the relationship between the demand for goods or services and prices which examines purchasing decisions of consumers and subsequent impact of prices on commodity demanded. According to Walras (1834-1910), price of a commodity influences its demand. This theory was criticized by later up-coming economists as shallow; however, they used it as a base to develop the law of demand, stated by many economists as: an inverse relationship exists between the price of a commodity and the quantity demanded of the product, that is, when the price of some commodities goes up, the quantity we consume of these commodities goes down and vice versa, other things held equal (Saleemi, 2000; Mudida, 2003).

Economists have attempted to explain consumer behavior on demand for a commodity using different theoretical and empirical economic concepts. A large number of social-economic factors play an important role in determining demand for a commodity by an individual entrepreneur. Credit is an important commodity for improving the welfare of the poor in their micro-economic activities especially in developing countries. In the Kenyan economy, most of small-scale farming is operated within the informal sector. The sector covers all semi-organized and unregulated economic activities that are small scale in terms of employment. Its economic contribution is more than double that of medium and large enterprise sectors that stands at 7% of the country's GDP (GoK, 2003). The sector therefore is a major source of employment and income to many households in Kenya.

When cost of credit goes up, the marginal utility per Shilling raised from that credit goes down. The household therefore chooses to consume, or use less of the credit (David, 2001). The concept of utility and marginal utility used by economists explains consumer demand on a commodity. Utility is the capacity or power of a commodity to satisfy the desire of a user (Lisper et al, 1987). Any commodity that satisfies human wants has utility. For example, if credit borrowed will satisfy financial needs of a household, then credit has utility (Saleemi, 2000). The main objective of any individual business operator is to maximize satisfaction out of any financial support borrowed, given or self-made.

Mudida (2003), points out that if income increases, the demand for most goods will increase. Small-scale investors tend to cluster and limit their business activities to similar products mostly of low quality that target low income earners. This leads to low business returns that cannot empower the business owners to borrow credit from formal institutions where the trader will be required to undergo implicit and explicit costs.

Livingston and Ord (1994) argued that the amount an individual wishes to buy of a commodity depends on several factors. Firstly is his/her taste or preference, which may be influenced by factors such as age, sex, education or religion. Secondly, the amount an individual buys may depend on the price of the commodity. Therefore, if the goods are very expensive, the buying power is reduced and vice versa. In the credit market, this consideration is on implicit and explicit costs of credit, which are added costs to business operators and have to be considered when making a decision to borrow or not to borrow and from which source. Thirdly, Livingston and Ord (1994) explained that amount bought is affected by availability of other goods. This applies more to close substitutes like in this case, consideration of borrowing credit from commercial formal

institutions, formal government subsidized institutions, or from informal credit markets. If formal markets prove expensive, borrowers are likely to turn to informal markets. The opposite will apply if the informal markets are expensive. Lastly, Livingston and Ord (1994) pointed out that the size of a household's income affects the amount it buys of a commodity. If the income increases, they will be able to buy more. This argument holds only for necessity goods such as credit borrowing to finance business operations, otherwise it will not apply to inferior goods.

2.3.2 The Pecking Order Theory

The pecking order theory of capital structure is among the most influential theories of leverage. Originally developed by Myers (1984), it considers the role of information asymmetries. According to Myers, firms use internal funds that are less costly than external funds. When internal funds are insufficient, firms then consider outside funds. Here, firms prefer debt to equity because of lower information costs associated with debt issues, while equity is rarely issued. Later, these ideas were refined into testable predictions and confirmed by Vogt (1994) who finds that internal funds have an important influence in firm's investment decisions. In agriculture, pecking order behavior is clearly pronounced where farmers who invest in this industry prefer to use internal funds (in many cases savings) and when the latter is not sufficient they resort to debt in form of loans from financial institutions to finance their farming investments.

2.3.3 The Signaling Theory

The concept of signaling was first studied in the context of job and product markets by Akerlof and Arrow (1970) and was developed into signal equilibrium theory by Spence (1973), which says a good firm can distinguish itself from a bad firm by sending a credible signal about its quality to markets. The signal will be credible only if the bad firm is unable to mimic the good firm by sending the same signal. If the cost of the

signal is higher for the bad type than that of the good type firm, the bad type may not find it worthwhile to imitate, and so the signal could be credible. Ross (1977) shows how debt could be used as a costly signal to separate the good from the bad firms. Under the asymmetric information between management and investors, signals from firms are crucial to obtain financial resources. Signaling of higher debt by managers then suggests an optimistic future and high quality firms would use more debt while low quality firms have lower debt levels. In this way, good firm can separate itself by attracting scrutiny while the bad firm will not ape because the bad firm will not want to be discovered. Two types of signaling inside information have been suggested: one is the costly signaling equilibrium discussed by Spence (1973), Leland and Pyle (1977), Ross (1977) and Talmor (1981) etc., the other is the costless signaling equilibrium as proposed by Bhattacharya and Heinkel (1982), Rennan and Kraus (1984). A signal is costly if the production of the signal consumes resource or if the signal is associated with a loss in welfare generated by deviations from distribution of claims in perfect markets. The signaling paradigm is multivariate for financial instruments.

Poitevin (1989) demonstrates that debt could be used as a signal to differentiate the potential competition of new entrant firms. Low cost entrants signal this fact by issuing debt while the incumbent or high cost entrants issue only equity; (Harris and Raviv, 1985) argue that calling firm's convertibles can be a kind of signal and Bhattacharya and Dittmar (1991) show stock repurchase is another kind of signal to represent firm value.

In farming industry, the signaling theory talks about financing tactics, where good firms try to distinguish themselves from bad quality firms by using different financing device. Farm owners also have incentives to get external financing by adopting such financing strategies. Unlike corporate firms who offer signals to stock market, farm owners send

signals to all potential lenders in agricultural capital market. The signal instruments for farm business can be its profitability, farm income, the historical good performance record (return on assets) farm leverage, risk management documentation, operating products

2.4 Empirical Literature

The section looks at the empirical review on need to access credit in general, and by farmers in particular.

2.4.1 The Need for Access to Credit

Martina *et al.,* (2008) reported the requirement of credit facilities to small holders of less developed countries (LDCs) for production and consumption smoothing. Governments of LDCs and aid agencies have spent a large amount of money on this sector. The motivation has been the belief that loans are an essential part of various input packages that were prescribed as part of agricultural investment projects designed to introduce modern technologies and thus stimulate change and growth in agriculture.

Access to credit makes traditional agriculture more productive through the purchase of farm equipment and other agricultural inputs, the introduction of modern irrigation system and other technological developments. It can also be used as an instrument for market stability. Rural farmers can build their bargaining power by establishing storage facilities and providing transport system acquired through credit (Yu, 2008). It can further be used as an income transfer mechanism to remove the inequalities in income distribution among the small, middle, and big farmers. It also creates employment opportunities for rural farmers (IFAD 2007).

Manganhele (2010) stated that facilitating credit may assist smallholder farmers to tap financial resource beyond their on means and take advantage of potentially profitable

small business opportunities. It could also aid landless farmers to establish or expand family enterprise. Short - term savings or borrowing can also help them to maintain consumption of basic necessities, when smallholder farmers experience temporary income shortages between agricultural seasons or after a bad harvest, credit helps in raising income of the poor.

Mohamed (2003) credit contributes to the productivity and incomes of rural households, thereby contributing to poverty alleviation. It also help on diversified farms that practice intensive production system and where labour constraint is experienced results in greater access to credit

A growing empirical literature analyzes the impacts of credit constraints both on long term investments such as fixed farm assets (Carter and Olinto, 2003) and short term profitability (Foltz, 2004) and quantifying the impact of credit constraints on farm productivity. The reviewed literature revealed that there are many factors that influence access and repayment of formal credit. For instance, Oladeebo and Oladeebo, (2008) examined socio-economic factors such as amount of loan collected and repaid, amount spent on agricultural production, annual net farm income, age, farm size cultivated, farming experience with credit use, and level of education influencing loan repayment among small-scale farmers in Ogbomoso agricultural zone of Oyo State of Nigeria. Among them amount of loan obtained by farmers, years of farming experience with credit use and level of education were the major factors that positively and significantly influenced loan repayment. However, age of farmers influenced loan repayment negatively but significantly. At the end it was concluded that for increase in agricultural production, further disbursement of loans should be targeted at young and better-educated farmers who are more likely to adopt new innovations in agricultural production than their older counterparts. Data was collected from 100 farmers from 10

villages in 2 local government areas from the zone through multistage random sampling techniques with the help of structured questionnaire and were analyzed using descriptive Statistics and multiple regression analysis. Chirwa, (1997) specified a probit model to assess the determinants of the probability of credit access and repayment among smallholders in Malawi. The model allows for analysis of borrowers as being defaulters or non-defaulters. Various specifications of the X-vector were explored by step-wise elimination. However, only five factors (sales of crops, size of group, degree of diversification, income transfer and the quality of information) were consistently significant determinants of agricultural credit repayment. The explanatory power of the model is plausible with the log likelihood statistically significant at 1- percent. Four independent variables – gender, amount of loan, club experience and household size were not statistically significant in various specifications.

According to a study done by Guirkinger and Boucher, (2007), credit constraints were defined in terms of quantity rationing, the transaction costs associated with screening, monitoring, and enforcing loan contracts and Risk that lenders require borrowers to bear some contractual risk. If this risk is sufficiently large, farmers will prefer not to borrow even if the loan would raise their productivity and expected income. However, all these are lender specific since there are characteristics of borrowers that are likely to prevent them from accessing credit. It has been demonstrated that productivity level reached by households who are constrained in the formal credit market depends upon their endowments of productive assets, while unconstrained households' productivity is independent of these endowments levels.

Several studies have shown that some credit constraints, all emerging from inadequate information, lead to suboptimal allocation decisions and lower farm productivity. Results of a study done by Ombuki (2005) in Kisii Sub-County using both semi-log

and double log models indicate that initial household endowment of housing services and investment in non- farm activities have very significant effects on farm credit investment. Specifically, sampled farmers with quality houses were observed to invest more of the credit they received on the farm.

The main non-farm activity to which most of the sampled farmers diverted farm credit was school fees. Purdy, et al, (1997) examined factors that influence the financial performance of a sample of Kansas farms. They discovered that operator age, financial efficiency, farmland tenure position, and leverage negatively impact farm financial performance, while farm size had a positive impact on financial health. This study dwelt more with social and economic factors of credit access while ignoring the environmental factors. Plumley and Hornbaker, (1991) analyzed the characteristics of successful Illinois farms, identified by net farm income per tillable acre. Their findings suggest that these successful farms have a balanced composition of assets, lower debt, and were not credit constrained. This implies that credit constraints can lead to suboptimal allocation of resources, which impacts negatively on profitability.

In rural areas, the availability of agricultural credit and financial services is perceived as a critical matter but the access to these financial services by rural farmers is another one. This is because their availability does not guarantee their accessibility. As argued by Duy et al. (2012), the success of credit provision for poverty reduction depends on the possible access by poor households to credit-providing institutions. According to De Klerk et al. (2013), in sub-Saharan Africa, where most people still live in rural areas and agriculture is the mainstay of the rural economy, access to financial services of all kinds appears still to be poor. In this line, Anyanwu (2004) states that collateral, credit rationing, preference for high income clients and large loans, bureaucratic and lengthy procedures of providing loan in the formal sector keep poor people outside the

boundary of the formal sector financial institutions in developing countries. According to Swinnen and Gow (1999), for most banks, financing agriculture is a high risk activity because of low profitability in the sector. As asserted by DID (2010), the other problem of lack of access is related to the fact that the farmer is faced with financing needs related to his family. The author also argues that women face significant family burdens related to child rearing, healthcare, clothing and other basic family needs, and this situation often leads them to exhibit greater aversion to risk and, therefore, be less inclined to use credit as a development tool.

There are also some studies that reveal the influence of socio-economic variables on access to credit. Land holding size mostly showed to have a significant influence on access to credit particularly the size of operational holding. Hussein (2007), Sissay (2008), Lensink et al. (2009) and Tang et al. (2010) found that a positive significant influence between farm size and access to credit. Amare (2005) and Remedan (2008) also, observed participation of farmers in non-farm income generating activities influence access to credit negatively. Sisay (2008) on his part showed farmers with large number of livestock did not use credit than farmers with lesser number of livestock. Similarly, Petrick (2005) found a significant negative relationship between livestock holding and credit access of farmers.

In Rwanda, besides the fact that some of rural credits are not adapted to the activities and profile of farmers, a number of factors including lack of awareness of rural farmers regarding rural credits availability and utility, fearing to take credit, difficulty to meet eligibility criteria for farmers to access bank credit, high interest rate on bank credits, physical access-distance to formal financial institutions, poverty and other deprivations have been identified as limiting the access of rural farmers to credits (MINAGRI, 2009; NISR, 2012a). The Government of Rwanda, through various

mechanisms such as setting up projects, task forces, funds and local saving and credit schemes as SACCOs in each administrative sector tried to find out solutions to overcome the aforementioned hindrances. Despite all the efforts made, Muhongayire et al. (2013) affirm that, access to formal credit remains steadily low even as the national economy is considerably growing. A study by NISR (2012a) reveals that in 2012, 71.9% of adult population were financially included (or have had access to formal and/or informal financial products) but only 7.4% applied for agricultural credit and 90.5% of them were approved. Agricultural inputs are less affordable to farmers because of lack of domestic sources of fertilizer and high cost of pesticide, while most farmers are poor and lack access to credit to finance inputs (IPAR, 2009). Consequently, agricultural productivity is still low and for some food crops such as maize, rice and other selected priority crops, the country relies on imports and many rural households are living in poverty with 44.9% in poverty and 24.1% in extreme poverty (NISR, 2012b).

Etonihu, Rahman and Usman (2013), obtained data from 125 farmers by administering structured questionnaire in 2008 production season through a two stage random sampling technique from a farming community of Nasarava State, Nigeria. Descriptive statistics and stepwise linear regression model were used to analyze the data. The study observed that education, distance to source of credit and types of credit source were significant factors affecting farmers' accessibility to agricultural credit in the study area. The study recommended that government policy that intends to improve the accessibility to agricultural credit facilities should create enabling environment to ease farmers' access to education and credit facilities.

Ololade and Olagunju (2013) examined the determinants of credit access by rural farmers in Oyo state Nigeria by identifying the socio-economic characteristics of the

rural farmers, examining the factors affecting access to credit by the rural farmers, identifying constraints faced by rural farmers in credit acquisition. Data were collected using structured questionnaires, administered on 21 respondents using multistage sampling procedure. The data were analyzed with the use of descriptive statistics and logit model. The sigma values of the binomial ($\sigma 2 = 90.32$) logit model that measured the significance of model showed that the data fit the model reasonably well. The binomial logit model revealed that significant relationships existed between sex (-2.0187), marital status (-1.9786), lack of guarantor (2.1517), high interest rate (6.8263) and access to credit. The variables were significant at 10%. The study concluded that there is need for financial institutions to help look into the conditions for obtaining credit by farmers, so that the less privileged among them will be able to benefit from credit disbursement especially in the aspect of high interest rate, guarantor and collateral security.

Some determinant variables were identified in the previous literature which have been associated with access to credit. The variables were classified as: farm characteristics, entrepreneur (management) characteristics, and financial characteristics. These were discussed in detail in the conceptual framework. They were also explanatory variables in this study. This study addressed some of the important gaps in the literature. Most notably this study addressed the association between the factors identified above and access to credit among small scale farmers in Busia County. Although most people agree that access to credit has the potential to reduce poverty; very few empirical studies have been done to ascertain the factors that prevent small scale farmers from accessing credit. This is particularly important because it's being carried out in western part of Kenya where farmers are believed to be risk averse and poverty levels are quite high

inspite of the fact that they are well endowed with a favourable climatic conditions and productive land.

2.5 Summary of Reviewed Literature

The capacity for small scale farms to fulfill their potential in an economy depends on the availability of financial Credit in particular for small and medium enterprises, since they are unable to finance themselves through retained earnings or equity financing. Despite the fact that funding is a major factor in the growth of small and medium-sized businesses, a number of studies and government inquiries have shown that, due to a market weakness in the credit markets, small holders face problems of accessing bank finance. While a large number of research papers have suggested that access to finance has been a major problem for smallholder farmers in developing countries, a literature survey in this field shows that there is a large gap in the understanding of the determinants of access to finance for smallholder farmers in developing countries, including Kenya.

There are very few studies that have been conducted that have studied bank credit determinants. However, these studies have been limited to a few categories of determinants and do not provide an overall image of the determinants of access to credit. For example, some studies, based on the theory of human capital, looked at the education, age, job experience and social history of the owner when obtaining credit from banks. Most recent studies have identified 3 categories of determinants of credit access among smallholder farmers and other medium scale enterprises. These are farm characteristics, financial characteristics and farmer/owner characteristics. These have been discussed in detail in the theoretical Framework and they will serve as the main variables for this study.

2.6 Conceptual Framework

The study was guided by the theory of the firm. In the theory, a firm (a farm in the context of this study) is seen as a production unit whose main aim is to maximize output and profits. A farm employs various factors of production which include land, labour, capital and management (Doll and Orazem, 1978). In this study, the factor of production that is of concern is capital. According to Milgrom and Roberts, (1992), capital consists of assets, resulting from past human effort, available to earn income in future. These assets can be produced on the farm or can be obtained from outside the farm.

Capital is also used in the creation of goods and services that are not themselves significantly consumed in the production process. Therefore capital includes buildings, equipment, machinery, livestock, land improvements and liquid cash. It is hence divided into three broad categories which are: long-term capital which consists of permanent durable assets which are fixed, medium-term capital which consists of capital invested in movable assets which are income earning, and finally short-term capital (working capital) which consists of assets used quickly to produce a regular flow of income in one production period and in running day to day activities on the farm (Doll and Orazem, 1978).

Creation of capital means giving up current consumption possibilities and hence the need for saving. Capital increases productivity of land and labor and that is the reward for sacrifices made to create capital. Money is usually used to acquire capital items. Therefore, there is a possibility that increased amount of money is tied up in capital goods. That is likely to give rise to liquidity problems. Shortages of capital can therefore lead to lower profits due to sub optimal allocation of resources. If the firm faces liquidity problems, then it has to look for external financing. That is where credit comes

in. Given the economic status of small scale farmers such as those in the study area, it is important that credit be assured in the presence of liquidity problems.

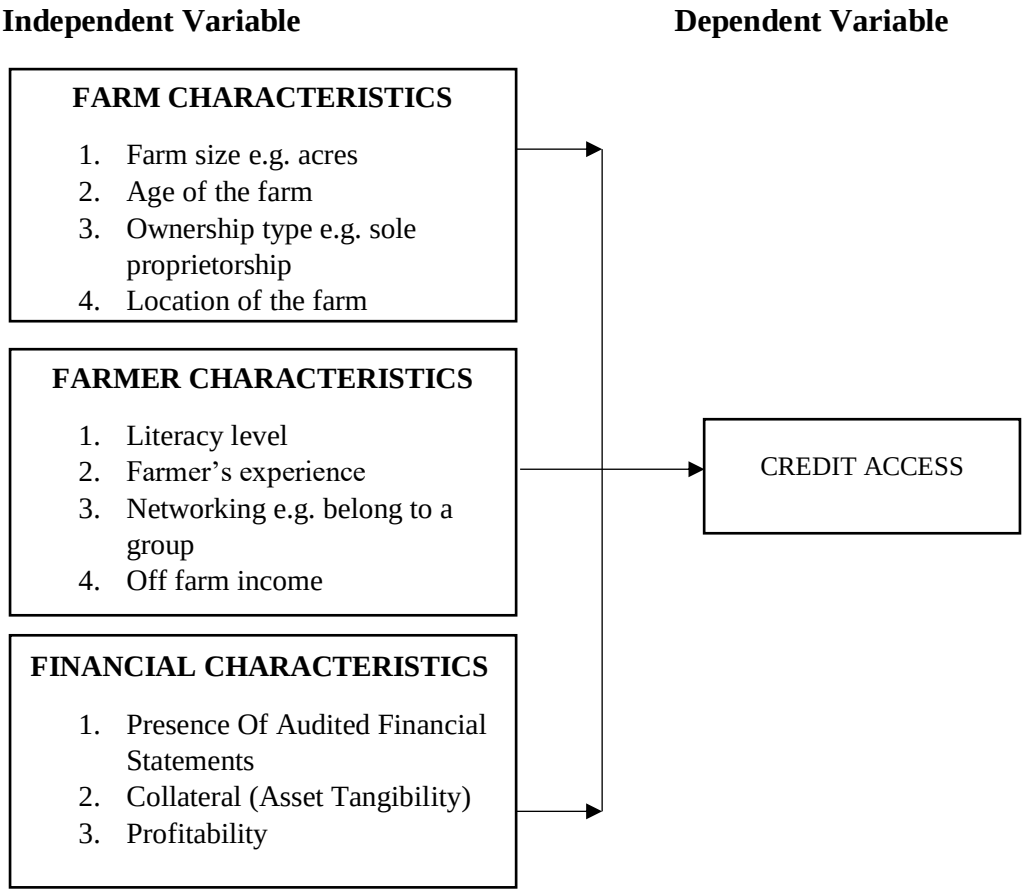

Figure 2.1: Conceptual Framework of the Study
Source: Researcher (2013)

The above variables have been identified in the previous literature as the determinants of access to credit. The variables have been classified as: farm characteristics, farmer (management) characteristics, and financial characteristics. These are discussed below: they will also be explanatory variables for the purpose of this study. The figure accentuates the factors that influence access to credit by small scale farmers. Access to credit is likely to be influenced by; farm characteristics such as farm size, age, ownership type, among others; Financial characteristics such as audited financial reports, collateral and profitability among others, and farmer characteristics such as

literacy, experience and networking. The study sought to find out whether these factors have the same effect amongst farmers in Busia.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methodology that was employed in the study. It contains a description of the research design, study area, study population, sampling size and procedures, data collection instruments, pilot study for validation and testing reliability of research instruments. The chapter also contains the data collection procedures and analysis techniques.

3.2 Study Area

Busia is a County in the former Western Province of Kenya. It borders Kakamega County to the east, Bungoma County to the north, Lake Victoria and Siaya County to the south and to the west. The altitude rises undulating from about 1,130m above sea level in the shores of Lake Victoria on the extreme southern end to an average of 1,375m in the central and northern regions. The altitude in Busia County is 1220m.

The annual mean maximum temperature ranges between 26 degrees and 30 degrees centigrade. The annual mean minimum temperature varies between 14 degrees and 18 degrees centigrade. The mean annual rainfall is 1750mm. The majority of the soils consist of well drained, deep brownish Sandy clays with high natural fertility. Drainage is through a system of perennial rivers, the most important of these being the Sio River with its major tributaries, the Walatsi and Busia County Rivers.

Though most residents of Busia County are ethnically Luhya, there is also a substantial population of Luo and Iteso residents. The County has a total population of 743,946 (2009 census).

The main economic activity is trade with neighboring Uganda, with Busia town as the County headquarters and largest town also a cross-border centre. Away from town, the County economy is heavily reliant on fishing and agriculture, with cassava, millet, sweet potatoes, beans, and maize being the principal cash crops. Brick making is a major activity in the Township area and its outskirts. Women groups in the Town secure business loans from micro-finance institutions i.e. Kenya Women Finance Trust, K-Rep, Danida and Action Aid. The following are the type of business supported by microfinance institutions; Dairy farming, poultry, brick making, cotton farming and production.

The Cotton ginnery which is operating below capacity due to mismanagement and administrative problems is the main industrial institution in the town. Action Aid is presently working with specific women groups to re-activate the industry.

The County was selected for the following practical and logical reasons; several microfinance institutions and banks are advancing loans to farmers in the County and yet very few farmers have access to credit. A cooling plant has been put up in Nambale town but it still receives milk from as far as Bungoma town.

3.3 Research Design

The study adopted Explanatory survey research design. The research design is capable of indicating what would be happening on the ground. The research was explanatory as it enabled the researcher to fully explain all the key variables under study and to establish the relationship among the variables (Kasomo, 2007). The explanatory survey design was relevant for this study because it assisted in capturing the attitudes, feelings and views of the respondents.

The study focused on variables that involved respondents attitudes and views on factors contributing to access to credit. In this research design data was collected by interviewing or administering a questionnaire to a sample population. It was used to collect information about people's attitudes, opinions, habits or any of the variety of issues (Orodho and Kombo, 2002). This design was selected because of its suitability to collect data and explain the social settings of a situation as it is (Mugenda and Mugenda, 1999). It also allows data to be collected as pertains to what currently exists about phenomenon without manipulating variables.

3.4 Study Population

The target population in this study consisted of small scale farmers in Nambale sub-county (approximately 15,705). The study was based on 375 small scale farmers picked through stratified random sampling.

3.5 Sampling Techniques and Sample Size

Sampling procedures and sample size of the study are discussed in the subsequent sections.

3.5.1 Sampling procedures and sample size

Neumann (2000) argues that the main factor to consider in determining the sample size is the need to keep it manageable enough. To get the required information from the small scale farmers, the sample size from the population of 15,705 small scale farmers was determined using the Cochran formula as follows:-

The alpha level was set at 0.05 and the level of acceptable error at 5%.

$$n = \frac{(t)^2 \, x \, (p)(q)}{(d)^2}$$

$$n = \frac{(1.96)^2\ x\ (0.5)(0.5)}{(0.05)^2}$$

$$n = 384$$

Where:

t=value of selected alpha level of .025 in each tail=1.96

(p)(q)=estimate of variance=0.25(maximum possible proportion of 0.5 *(1-maximum possible proportion)

d=acceptable margin of error for proportion being estimated=0.05

But 384 is less than 5%. 5% *15,705 =785.25

Therefore using the Cochran correction formula,

$$n_1 = \frac{n_0}{\left(\frac{1 + n_0}{population}\right)}$$

$$n_1 = \frac{384}{\left(\frac{1 + 384}{15705}\right)} = 374.385 = 375$$

Proportionate sampling was used to determine the respondents. The farmers were given random numbers and respondents were picked after every 41 farmers

$$= \frac{15{,}705}{375}$$

$$= 41$$

3.6 Data Collection Instruments

The research instruments that were used in the study included: questionnaire and document analysis.

3.6.1 Questionnaires for farmers

A questionnaire is a set of carefully designed specific research questions which subjects respond to in writing (Mugenda and Mugenda, 1999).The questions were formulated according to the study objectives with similar order and content for all the respondents. The questions were both closed and open ended.

The questionnaires consisted of four sections. Section 1 highlighted background information of the respondents, section 11 addressed farm characteristics that determine access to credit, and section III dealt with financial characteristics and section 1V addressed farmer characteristics that may determine access to credit.

The purpose of dichotomizing the scale is to reduce large volume of data into homogeneity in order to give meaningful interpretations and relationships (Kothari, 2004).

3.6.2 Document Analysis

A method used to get information mainly from office records. The records used were credit records. This information was collected from the financial institutions and the Sub-County Ministry of Agriculture Office. The information was used to collect data on actual access to credit by sampled farmers in the Sub-County.

3.7 Pilot Study

As Wisner, (2007) asserts that pilot study helps in refining the questions by removing some irrelevant items and adding others to genuinely engage with the participants. A pilot study is a mini-version of a full-scale study done in preparation of actual study.

The study made use of both Primary and secondary data. The data to be analysed was mainly categorical data. To achieve reasonable content validity, questionnaires were subjected to a pretest which involved administering 40 questionnaires to small scale farmers in the study area who did not comprise part of the selected sample. The rule of thumb is that 10% of the sample should constitute the pilot test (Creswell, 2013) therefore; the pilot was within the recommendation.

Content validity and reliability of the tools was ascertained using Cronbach alpha reliability Coefficient as described in the subsequent sections 3.6.1 and 3.6.2. The farmers used in the pilot study did not participate in the main study.

3.7.1 Validity of Instruments

The validity of an instrument is a measure of the measurement of an instrument (Kombo and Tromp, 2006). Validity is the exactness and significance of the facts based on the findings. The degree to which findings from data analysis are indeed indicative of the studied phenomenon (Mugenda and Mugenda, 1999). Therefore, it has to do with how accurately the data obtained in the study represents the variables of the study. The face validity of instruments in this study was ensured and assessed by a team of experts in the area from the Department of Agricultural Economics and Resource Management of Moi University who are authorities in the area of study. Their comments were used to improve the validity.

3.7.2 Reliability of Instruments

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda and Mugenda, 1999). The reliability of the measurement instrument was assessed using Cronbach's alpha reliability coefficient

which is a test for internal consistency in items. Thus each item was correlated with other items in a scale. The test used to ascertain the reliability of the instruments was:

$$r = \frac{S_{xy}}{S_x S_y}$$

$$That\ is; \frac{Covariance\ xy}{Std.Dev\ x\ .\ Std.Dev.y}$$

Whereby: S_x and S_y are respectively the sample standard deviations for $_x$ and $_y$.

Consequently, an alpha value of $0.60 \leq \alpha \leq 0.90$ is deemed to indicate that the measurement scale was reliable and accepted in line with suggestions by Tavakol and Dennick (2011). Reliability analysis in the current study was conducted for the three scales measuring for determining access to credit.

Table 3. 1: Scale reliabilities

Scale	Number of items	Reliability coefficient
Farm characteristics	10	0.713
Financial characteristics	20	0.617
Farmer characteristics	10	0.618

Source: Field data (2013)

As shown in table 3.2 above, contributors of access to credit were measured via a 12-item scale. The Cronbach's alpha reliability coefficient for this scale was 0.713. This value was higher than the acceptable value of 0.6 indicating that the scale was reliable in measuring farm characteristics. The reliability coefficient for financial and farmer characteristics scales were 0.617 and 0.618 respectively. These coefficients were in line with suggestion by Tavakol and Dennick (2011).

According to Tavakol and Dennick the number of test items, item interrelatedness and dimensionality affect the value of alpha. A low value of alpha could therefore be due to a low number of questions, poor inter relatedness between items or heterogeneous constructs. For example if a low alpha is due to poor correlation between items then some should be revised or discarded. The easiest method to find them is to compute the correlation of each test item with the total score test; items with low correlations (approaching zero) are deleted. If alpha is too high it may suggest that some items are redundant as they are testing the same question but in a different guise. A maximum alpha value of 0.90 has been recommended (Tavakol and Dennick, 2011)

3.8 Data Collection Procedure

Permission to carry out the study was obtained from National Commission for Science, Technology and Innovations (Appendix) through the School of Graduate Studies, Moi University. Notification letters were sent to the County Agricultural Officer, Busia County, and to the Frontline Extension Officer of the sampled farmers. Thereafter, personal visits were made to the officers concerned to establish rapport, brief them about the intended research and to set a date for data collection. Second visitations were made to collect data. Respondents were briefed about the study and given relevant appointment letters (Appendix 1 and 3). Data was then collected by administering the questionnaires. Once duly filled, the researcher collected the questionnaires.

The researcher also held brainstorming sessions/focus group discussions with key informants (officials from Ministry of Agriculture and Microfinance institutions), and small scale farmers to explore ways of enhancing credit access to ensure food sufficiency as well as generate income. This was also used to find out challenges facing small scale production. The researcher interviewed the Ministry of agriculture officials as well as the credit managers of various financial institutions to find out about credit

access situation and the Government effort to improve Agricultural production. The data that the researcher obtained was qualitative and quantitative.

3.9 Model Specification.

3.9.1 The Logit Model

This model is based on cumulative logistic probability functions.

$$\mathbf{Pi} = \mathbf{f(Zi)} = \mathbf{f(\alpha + \beta Xi)} = \frac{1}{(1+e^{-zi})} = \frac{1}{1+e^{-(\alpha+\beta Xi)}}$$

e Is the natural base of log

If we multiply both sides by $(1 + e^{-zi})$**Pi,** then divide by **Pi;** we get;

$$e^{-zi} = \frac{1}{Pi} - 1 = 1 - \frac{Pi}{Pi}$$

Therefore P_i on the left hand side is logically equivalent to 1 if the farmer has withdrawn from sugarcane farming and on the right hand side is equivalent to 0 if the farmer is in sugarcane farming.

3.9.2 Functional Form of the Model

The symbol reduced form of withdrawal from sugarcane farming.

$\mathbf{Z_i}$ is a function of **X**

X = Xi

i= 1, 2, 3…..n

Model form $\ln \frac{P}{(1-P)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots + \beta_7 X_7 + \mu$

The dependent variable is the natural log of the probability of withdrawing from sugarcane farming (P) divided by the probability of not withdrawing (1-P). Then the model will be estimated using the maximum likelihood method of STATA. The value of the dependent variable is therefore a linear combination of the values of independent

variables plus error term. The error term is assumed to be normally distributed with a mean of zero and a constant variance

Where;

$\boldsymbol{\beta_{is}}$= Logistic coefficients for the independent variables

$\mathbf{X_{is}}$ = are the independent variables such that;

X_1= age

X_2= Marital Status

X_3=Farm Size

X_4= Education level

X_5= Distance to the nearest town

X_6= Period of operation

X_7= whether sales increased

X_8= Off-farm income

X_9= years as a farmer

X_{10} = membership association

X_{11}= Gender

μ =error term

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter focuses on data presentation, interpretation and discussion of the findings of the study in line with the research objectives. The results are presented in form of tables. It starts with presentations of the response rate and demographic characteristics of the small scale farmers in Busia County which are fundamental in examining the factors contributing to credit access. The end of this chapter is an effort to explain the flow trends and the direction of data to resolve the main issues and goals of the study described in the previous chapters.

4.2 Response Rate

The sample population consisted of small scale farmers drawn from Busia County. As shown in table 4.1 below, a total of 375 copies of questionnaires were distributed to respondents. Out of these 352 copies of research instruments were returned out of which 12 copies were discarded for lack of response and some for incompleteness. This left a total of 340 copies of usable research instruments representing 90.670 percent response rate.

Table 4. 1: Response Rate

Questionnaire	**Frequency)f(**	**Percentage)%(**
Returned and completed	340	90.6
Either not returned or completed	35	9.4
Total	**375**	**100**

Source: Researcher 2020

Mugenda and Mugenda (1999) assert that a response rate of 70% and above is excellent for purposes of generalization of findings obtained from a sample onto the entire population. This response rate was deemed acceptable since according to (Fowler, 2002)there is no agreed-upon minimum response rate, the more the responses received the more likely it is that statistically significant conclusions about the target population will be drawn. According to Kothari (2004) a 50% response rate is adequate, 60% good and above 70% rated very well. Hence this response was very good.

4.3 Demographic Characteristics of the Respondents

The demographic characteristics of the respondents were assessed in terms of gender, age, and literacy level. All these issues were fundamental to the interpretation and discussion of the factors contributing to access to credit by small scale farmers and possible interventions.

4.3.1 Age distribution

Table.4.1 presents the study results regarding farmers' age distribution. The aim was to test whether age has influence on credit access. The age distribution of respondents is skewed towards the right, meaning that most farmers were aged 50 years and above. From Age 31 to 60 years, most the farmers are able to acquire and own land and make decisions to produce. The majority of farmers (45%) are above 50 years. Between 20 to 30 years, the young would be farmers are either still in school or still relying on the parents to make decisions for them to produce. In most cases they are still staying on the fathers' land. This will therefore impact on desire for credit access among small scale farmers. Older farmers are relatively more risk averse and tend to acquire fewer loans to avoid loan default.

Table 4.2: Age Distribution

Age	Frequency	Percent	Valid Percent	Cumulative Percent
>20 years	19	5.6	5.6	5.6
31- 40years	96	28.2	28.2	33.8
41- 50years	72	21.2	21.2	55.0
51- 60years	113	33.2	33.2	88.2
<60 years	40	11.8	11.8	100.0
Total	340	100.0	100.0	

Source: Researcher 2020

4.3.2 Gender distribution

As shown in the able, a majority (90.6%) of the 340 respondents were male while only 9.4% were female. This indicates that most farms are owned by males in Busia County.

This information implies that farming in the study area is dominated by male as opposed to female. This finding could be attributed to the predominantly patriarchal family settings common in most African rural communities. This area being in a rural set up, majority of the communities here believe that farming is male activity while female gender is mainly concerned with household affair. More males will therefore seem to have accessed farm credit than females as they have the necessary collateral in form of land title deeds. The coefficient of age (-0.06) was negatively Skewed and very significant at the marginal effects level. This result implies that the amount of agricultural credit acquired by farmers decreases with age.

Table 4.3: Gender Distribution

	Frequency	Percent	Valid Percent	Cumulative%
female	87	25.6	25.6	25.6
male	253	74.4	74.4	100.0
Total	340	100.0	100.0	

Source: Researcher 2020

4.3.3 Marital status

Majority (61.2%) of the respondents were married. It implies that access to farm credit is dominated by couples than the widowed or separated.

Table 4.4: Marital Status

Status Marital	Frequency)f(	(%) Percentage
Married	208	61.2
Single	47	13.8
Widowed	65	19.1
Total	**340**	**100**

Source: Researcher 2020

4.3.4 Household size

Majority (60.9%) of small-scale farmers in Busia County had family size ranging from 6 - 10 followed by 11-15 members (29.1%). This show that 90% of the families have 6- 15 members. Household size had a positive coefficient (0.310), which was significant at 1.0% level. As the size of a household increases, the household needs will also increase. In a bid to satisfy the increased household needs, relatively larger amount of loans will be acquired, if all the requirements are met. This coupled with small farm size; most of the farm production is therefore basically for feeding the large families

with insignificant quantities left for commercial purposes. This therefore lowers the incentive to access credit.

4.3.5 Education level

As shown in the table majority (73.3%) of the small scale farmers in Busia County had attained at least secondary school level of education. This implies that majority of the small scale farmers were educated and understood the significance of credit to boost farming. This agrees with Ijioma and Sondu (2015) who indicated that educated farmer borrowers have better tendency for loan management. This category of farmers should be able to meet the basic requirements for credit access as with a little training they should be able to keep basic farm records and write proposals.

Table 4. 5: Level of Education

Education Levels	**Frequency)f(**	**Percentage)%(**
No informal education/ Others)maddrassa, adult education(	19	5.6
Primary	65	19.1
Secondary	141	41.5
Tertiary/College	95	27.9
University	20	5.9
Total	**340**	**100**

Source: Researcher 2020

4.3.6 Family land under farming activities

Since most small-scale farmers have small pieces of land, majority of them tend to put the entire piece of land to farming activities. The question on the size of land was meant to give the researcher insight and knowledge to estimate what these lands would need in terms of resources i.e. farm inputs, labor and other requirements thus establishing the sources of the finances and to concentrate on credit source which is the backbone

of this study. In this study the majority (52.6%) had between one and five acres. This farm size provided adequate land that could warrant the need for credit.

Table 4. 6: Family Land under Farming Activities

Family land under farming activities	Frequency)f(	Percentage)%(
Less than1 acre	48	14.1
1- 5acres	179	52.6
6- 10acres	66	19.4
More than10 acres	47	13.8
Total	**340**	**100**

Source: Researcher 2020

4.3.7 Farming activity engaged by small-scale farmers in Busia County

This question was important as it showed how each farming activity is significant in this area. Most farmers (49.7%) in Busia County practice mixed farming and crop farming. It became apparent that mixed farming is a very important economic activity in this County.

Table 4.7: Farming activity engaged by small-scale farmers

Farming activity engaged by small-scale farmers	Frequency)f(	Percentage)%(
Mixed farming	169	49.7
Dairy farming	34	10.0
Crop Farming	117	34.4
Cash crop farming	20	5.9
Total	**340**	**100**

Source: Researcher 2020

4.3.8 Type of land ownership

Sampled farmers were found to mainly own land under freehold land tenure system whereby majority of them have title deeds for the portions they own. This category of farmers should be able to access credit if land was to be used as collateral. A significant proportion (30%) farm on communal or ancestral land (46.7%) whose title is held by their deceased forefathers. This complicates access to credit especially when land title is required as collateral.

Table 4. 8: Land Tenure and Ownership

Land tenure/ Type of land ownership	Frequency	Percentage)%(
Privately owned/ freehold)ancestral(land	162	47.6
Leasehold)Government rented(land	38	11.2
Rental land	38	11.2
Communal land	102	30.0
Total	**340**	**100**

Source: Researcher 2020

4.3.9 Source of technical information on farming

As illustrated in the table, majority of farmers rely on neighbours (67.6%) and ministry officers for advice on how to improve their farm production. This uncertified technical advice makes it impossible to predict or substantiate the potential of a farm and hence access to credit.

Table 4.9: Sources of Technical information

Source of technical information on farming	Frequency)f(	(%) Percentage
Ministry	36	10.5
Tours Visits	9	2.6
Agriculture	29	8.5
Agricultural extension officer	12	3.5
NGOs	27	7.9
Neighbours	230	67.6
Total	**340**	**100**

Source: Researcher 2020

4.3.10 Visits by agricultural extension officer

Availability of the services of the Ministry of Agriculture extension officers in this area are very minimal as those that indicated never was the majority (69.7%). This perhaps accounts for the lack of knowledge by farmers on the latest farming techniques and available credit facilities

Table 4.10: Visits by Extension Officers

Visits by Extension Officers	Frequency)f(	Percentage)%(
Monthly	21	6.2
Quarter yearly	52	15.3
Half yearly	30	8.8
Never visited	237	69.7
Total	**340**	**100**

Source: Researcher 2020

4.4 Profile of credit access by small-scale farmers in Busia County

Access to formal credit by small-scale farmers in Busia County is very marginal (4.11). The majority (81.2%) did not access credit. Given the fact credit is a pre-requisite in the effort to fully tap the agricultural potential of the area, a number of bottlenecks have made most farmers in this area to shy away from credit facilities.

4.4.1 Amount of credit applied by farmers

Majority of farmers applied for credit of more than Ksh.50,000. This is indicated by the majority (82%). This is a clear indication that most of the applicants would like to revolutionize their farming. This also indicates that farming has become a costly affair that needs a substantial investment.

Table 4.11: Amount of Credit Applied for by farmers

Amount of credit applied by farmers)Kshs(	Frequency)f(	Percentage)%(
Less than Ksh.1000	1	0.3
5000- 10000	11	3.2
10001–20000	21	6.2
20001–30000	14	4.1
30001–40000	7	2.1
40001–50000	4	1.2
Above50000	282	83
Total	**340**	**100**

Source: Researcher 2020

4.4.2. Profile of repayment period of applied credit

The highly noted repayment period was above five years. This was preferred by over 83.5% of the respondents. This is possibly because of large number of farmers who

applied for credit above Kshs.50,000 that attract a longer repayment period. This may be due to the fact that the returns are minimum and cannot be able to repay the credit in a relatively shorter period of time.

Table 4.12: Profile of repayment

Profile of repayment period of applied credit	Frequency)f(	Percentage)%(
Not Applicable	1	0.3
6months)half a year(	2	0.6
1year	39	11.5
2year	14	4.1
Above5 years	284	83.5
Total	**340**	**100**

Source: Researcher 2020

4.4.3 Knowledge of farmers about existing financial institutions

Most small-scale farmers in this area lack information regarding available financial institutions that can provide credit facility in order to meet their farming costs.

4.4.4 Culture of book keeping by small-scale farmers in the area

It was evident that majority of farmers in this area (84.4%), do not keep financial records of their farming activities. This impacts negatively on their application for credit facility. Records are a requirement to indicate the viability or not of a business. The policy implication is that the ministry of Agriculture should organize for short tailor made courses for farmers in record keeping and the importance of record keeping.

Table 4.13: Culture of Bookkeeping

Culture of book keeping	Frequency)f(	Percentage)%(
Yes)had records(	53	15.6
No)had no records(	287	84.4
Total	**340**	**100**

Source: Researcher 2020

4.4.5 Source of income of the sampled small-scale farmers

Majority of farmers in this area (34.7%) rely on business and sale of farm produce (31.7%) as the sole income generating activities. It is high time the farmers were trained to look at farming as a business in order to get better results. Given small size of land they own, poverty scale is high. Farmers need to be encouraged to have a variety of income generating activities apart from farming.

Table 4. 14: Source of Income

Source of income of the sampled small-scale farmers	Frequency)f(	Percentage)%(
Permanent/ Contract Employment	30	8.8
Casual employment	24	21.7
Business	118	34.7
Farm Produce	107	31.5
Support from relatives	12	3.5
Total	**340**	**100**

Source: Researcher 2020

4.4.6 Income generated from farming activities

Most small-scale farmers in this area (over 73.7 %), generate less than Ksh.150,000 in a year from farming activities. This is largely because of small land sizes and lack of capital. Those that got more than these amount were only 26.3%.

Table 4. 15: Income generated from farming

Income generated activities)Kshs(	Frequency)f(	Percentage)%(
10000- 50000	79	23.2
50001–100 ,000	119	35
100, 001–150 ,000	53	15.5
150, 001–200 ,000	55	16
Above200,000	35	10.2
Total	**340**	**100**

Source: Researcher 2020

4.4.7 Farming costs of small-scale farmers in Busia County

The farming costs were less than Kshs 50,000 (78.3). Majority of farmers in Busia County rely on family members as labour force, this in turn cuts down farming costs.

4.4.8 Member of farming or business association or group

The majority of the farmers (91.5%) indicated that they belonged to either a business of a group association. Membership of farmer based organization has a significantly positive effect on the amount of credit accessed by farmers from the formal sources. These farmers qualify to get credit.

Table 4.16: Farming Costs

Farming costs of small- scale farmers)Kshs(	Frequency)f(	Percentage)%(
Below5,000	12	3.5
5, 001–50 ,000	255	75
50,001- 100,000	69	20.3
Above100,000	4	1.2
Total	**340**	**100**

Source: Researcher 2020

4.5 Correlation and Regression Analysis.

4.5.1 Correlation between credit access and the assessed variables

Credit access by small-scale farmers was influenced differently by the assessed variables. Pearson correlation was used to determine the extent of correlation between each of the variables. The ability to pay the loan when due had a strong negative correlation (-0.818). This shows that most of the farmers were unable to pay the loan when due. This could be the explanation as to why most of them are unable to access credit. The rest of the variables had a weak positive correlation. These include gender (0.167), marital status (0.257), distance from the nearest town (0.246), the length of time each had been operating the farm (0.222), sales for the past two years (0.237). The length of time they had as farmers (0.322) and whether or not they kept financial records had a mild correlation of access to credit. Age, level of education, whether they had other sources of income had weak negative correlations of (- 0.205), (-0.170), (-0.161), (-.0234) and (-0.222) respectively. This agrees with a study on smallholder farmers in Kenya in the Western region (Bungoma and Siaya counties) and Eastern region (Embu, Meru and Tharaka Nithi) by (Kiplimo, Ngenoh, Koech, & Bett (2015) which indicated that education level (literacy) in years had significant positive effects on access to credit. This concurred with Hussein, (2007). This disagrees with Fatoki & Odeyemi, (2010) who discovered that education level is not important in determining SME's access to bank loans.

4.5.2 Relationship between land ownership tenure and credit access

Small-scale farmers with freehold and leasehold land easily accessed credit since they used title deeds and letters of allotment as collateral for credit granted. Access to credit requires collateral, acceptable options which are limited.

4.5.3 Effect of extension visits on credit access

Availability of the services of extension officers in this area was found to be very minimal. However, all those who accessed credit admitted to have received vital advice from extension officer. These farmers seem to take the advice from these officer as credible and worth putting to practice. Creditors seem to value the advice of the extension officers when giving credit.

4.5.4 Relationship between amount of credit applied and credit access.

Most of small-scale farmers who received credit had applied for amount within their repayment means (abilities). This is probably because the financing institutions made assessment of the capacity of the farmer to repay the credit. Majority of the farmers received credit amounts between Ksh.20000 to Ksh.50000.

4.5.5 Credit Access by farmers

In order to determine whether or not the respondents had accessed credit, they were requested to indicate whether or not they had obtained credit from the financial institutions. The majority (67.1%) indicated that they had not. Only 32.6% indicated that they had.

Table 4.17: Credit Access by Farmers

Have you obtained any credit from any financial institution?	Frequency	Percent	Cumulative %
No	228	67.1	67.1
Yes	112	32.9	100.00
Total	**340**	**100**	

Source: Researcher 2020

For those who said no, the researcher established that they had either applied for a loan and were denied or they had never applied, those who had applied but were denied cited

reasons ranging from lack of collateral, lack of guarantors, proximity from this institutions as they have to travel 16 miles to reach them while at the same the infrastructure is not good.

4.6 Regression Analysis

Relationship between credit access and the presumed variables that influence it was done using Regression analysis. The main hypotheses were that:-

H_{O1}: Farmer characteristics do not affect access to credit among small holder farmers.

H_{O2}: Farm characteristics do not affect access to credit among small holder farmers.

H_{O3}: Financial characteristics do not affect access to credit among small holder farmers.

These hypotheses were tested using a regression model. The results were as follows:-

4.6.1 Logistic Regression Results

The table below shows the results from regression analysis using logit model. The dependent variable was access to credit by the respondents. in the model, selected independent variables were marital status (mar), farm size (famsiz3), education level (edu4), distance to the nearest town (fc12), period of operation (fc13), whether sales increased (finc17), off-farm income (finc18), years as a farmer (famc19), membership association (famac20) and gender (gen2).

Table 4.18: Logistic Regression Results

cre21	Coef.	Std. Err	Z	P>|z|	[95% Conf. Interval]	
age1	-1.634032	0.3636007	-4.49	0.000	-2.34668	-0.92139
Mar	3.153469	1.457248	2.16	0.030	0.297315	6.009623
famsiz3	0.4087597	0.4214761	0.97	0.332	-0.41732	1.234838
edu4	-24.67151	2335.402	-0.01	0.992	-4601.98	4552.632
fc12	27.3443	2335.402	0.01	0.991	-4549.96	4604.648
fc13	0.1545877	0.302717	0.51	0.610	-0.43873	0.747902
finc17	-3.539833	1.009363	-3.51	0.000	-5.51815	-1.56152
finc18	-3.321274	0.7057126	-4.71	0.000	-4.70445	-1.9381
famac19	1.694387	0.6005558	2.82	0.005	0.517319	2.871454
famac20	-19.19088	2335.402	-0.01	0.993	-4596.49	4558.112
gen2	24.14184	2335.402	0.01	0.992	-4553.16	4601.446
_cons	13.21398	2335.404	0.01	0.995	-4564.09	4590.522

Source: Data Analysis 2020

From the regression results, Age, marital status, whether sales increased, Off-farm income and membership in an association were found to be statistically significant at 5 percent level of significance.

Age was found to be significant at 1 percent level of significance with a P value of 0.000 <0.01. The coefficient for age was -1.634032 which is negative. This implies that the relationship between access to credit and age is negative. This implies that a percentage increase in the age of the respondent leads to approximately 1.6 decrease in chances of accessing credit. Marital status was also found to be significant at 3 percent level of significance with a P value of 0.03<0.05. The coefficient for marital status was 3.153469 which was positive. This implies that as one moves from being married to being single, the likelihood of accessing credit increases. This can be attributed to the fact that married people need to be in agreement with their spouses on whether to take credit or not. Married people have higher chances of disagreeing on it.

As to whether sales increased was also found to be significant at 5 percent level of significance with a P-value of 0.000<0.05. The coefficient was approximately -3.54 which was highly significant. This means that a unit increase in the number of

respondents who had an increase in sales let to a decrease in the number of those who had access to credit by 3.54 units. This means that the amount of sales have a negative impact on credit access. This is probably because respondents with high sales get enough money from sales and therefore they do not need credit.

Off-farm income had a coefficient of -3.32 which was found to be significant at 5 percent level of significance with a P value of 0.000. The negative value implies that as more people have off-farm income, their level of credit uptake reduces, such that, a unit increase in those with off-farm income leads to a drop in those accessing credit by 3.32 units. This is due to the fact that an extra income eliminates the necessity to borrow credit.

Years as a farmer (famc19) was also significant with a P value of 0.005<0.05. The parameter coefficient was 1.69 which is positive. This implies that as a farmer spends more years in farming, they are more likely to take credit, such that a unit increase in years of farming leads to a 1.69 chances of accessing credit access. This is probably because more experienced farmers are aware of the benefits of credit.

4.6.2 Marginal Effects after Logit

Table 4.19: Marginal Effects after Logit

variable	dy/dx	Std.Err.	Z	P>|z|	[95% C.I.	]	x
age1	-0.000312	0.24208	-0.000	0.999	-0.47477	0.474149	4.11765
Mar	0.0006021	0.46718	0.000	0.999	-0.91505	0.91625	2.02353
famsiz3	0.000078	0.06056	0.000	0.999	-0.11861	0.118767	2.34118
edu4	-0.0047108	3.20908	-0.000	0.999	-6.2944	6.28497	2.46471
fc12	0.0052211	3.60505	0.000	0.999	-7.06054	7.07098	1.30294
fc13	0.0000295	0.0229	0.000	0.999	-0.04486	0.044916	2.91176
finc17*|	-0.0016144	1.25093	0.000	0.999	-2.45338	2.45016	0.611765
finc18*|	-0.0003235	0.25413	-0.000	0.999	-0.4984	0.497749	0.173529
famac19	0.0003235	0.25102	0.000	0.999	-0.49166	0.492309	2.75882
famac20*|	-0.9998383	0.20626	-4.85	0.000	-1.4041	-0.59557	0.914706
gen2*|	0.0842697	13.781	0.01	0.995	-26.9269	27.0955	0.744118

(*) dy/dx is for discrete change of dummy variables from 0 to 1

Source: Researcher 2020

From the table above, the marginal effects coefficient of, membership association (famac20) was the most significant with a p-value of 0.000 which is less than 0.05 at 5 percent level of significance. However, its coefficient was negative (-0.9998). Despite membership to an association being insignificant at logit level, it becomes significant at the marginal effects level.

Farmer characteristics and educational level are also highly significant at the marginal effects level , although their coefficients are showing a negative correlation by figures greater than 0.05.

4.7 Discussion

Access to credit facilities is key to improvement in agricultural activities. Extending credit to farming families can narrow the gap between the required capital and the capital that households possess for the improvement of agricultural technologies that would increase production and productivity (Ozowa, 1995). In Busia County, only 32.9% of the respondents accessed credit facilities. Majority of the respondents, that is, 67.1% did not have access to credit. This confirmed that lack of credit facilities remained a big challenge to small scale farmers. According to Nichter, Simeon, and Goldmark, (2009), there is a relationship between firm age and firm growth and these tend to influence credit assess.

Gender of respondents' show that 75.6 % male small scale farmers borrowed from formal credit market whereas 0% female counterpart borrowed from the formal credit market (fig. 4.34in the appendix ii). This could be as a result of various factors characteristic of the study area as Johnson (2006) report that gender at individual, household, and wider community and national context are affected by financial, economic, sociocultural, political and legal obstacles. Further, Doan, Gibson, and

Holmes (2010) explain that gender does not really matter in credit participation but plays a role in explaining loan size.

Factors influencing frequency of access to formal credit are summarized and presented in table 4.4 Nagelkerke R Square value is 0.916 which implies that all the explanatory variables included in the model were able to explain about 91.6% of frequency of small scale farmers' access to formal credit in the study area.

The co-efficient of land ownership, extension visits and credit amount applied (Wald value = 5.99, 5.137 and 3.968 respectively) were positive and significant at 5% for the formal credit borrower. This is consistent and desirable. The implication is that the frequency of access to credit by small-scale farmers in the study area has a direct relationship with type of land ownership, technical advice offered by extension officers and credit amount applied by the farmers. Enlightened farmers with title deeds and who had applied for credit within their means for repayment accessed funds. These findings were consistent with Wangai and Messh (2011) in Kenya.

The agricultural sector of Busia County was dominated by poor farmers, using very little inputs and producing for subsistence on highly fragmented lands. Despite the highly nutrient-depleted land portions, the use of fertilizer was very low and farmers relied mostly on mulch and manure for those who own livestock. The investment in agriculture was thus very poor. Notably also were the differences in the crop choice between farmers. In most cases, farm production decisions are linked to consumption decisions and farmers tended to choose for household security. The dominant farm objective was to preserve the family food preferences and self-reliance by growing a diverse range of crops. They preferred to plant crops for which they were certain to get production even if it were low.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of findings, conclusions, recommendations and suggestions for further research.

5.2 Summary of Findings

Credit access by small-scale farmers was influenced differently by the assessed variables. However, three of these variables, namely, land ownership structure, extension visits and credit amount significantly affected credit access. Land ownership specifically influenced access to credit because most lenders require a title deed as collateral when lending. Therefore those with title deeds under free hold or allotment letters are more likely to access credit than those on communal or rented land.

Availability of services of the ministry of Agriculture extension officers in this area was very minimal. This accounts for the lack of knowledge by farmers on the latest farming techniques and available credit facilities. However, a majority of those who were visited by Agricultural Extension officers also accessed credit. Meaning that Agricultural extension visits are very critical in enlightening the farmer on where and how to obtain credit facilities.

The amount of credit applied for was also quite significant in this study. This is probably because the financing institutions made assessment of the capacity of the farmer to repay the credit. If the amount of credit applied is within your repayment capacity then you are more likely to receive the credit facility.

5.3 Conclusion

This study investigated the factors affecting access to formal credit: a study of small scale farmers in Busia County. The study revealed that land ownership structure, extension visits and credit amount significantly affected credit access in the study area. Farmers need to be facilitated to acquire land title deeds, extension officers need to be available and training needs to be made on the determinants of amount of credit to be applied for so that one stands chances of accessing credit.

The farmer and firm characteristics influence credit access. These factors include; land ownership system, frequency of visits by Agricultural extension officers, and amount of credit applied for. Therefore all the three null hypotheses were rejected. As hypothesized, a majority of the respondents (90.7 %) were male while only 9.3% were female. This indicates males have more likely to access credit as compared to women since in most cases they are the land owners. A significant proportion of the respondents (30%) farm on communal or ancestral land whose title is held by their deceased fore fathers. This complicates access to credit especially when the land title is required as a collateral. Majority of the farmers in the County also did not keep financial records of their farming activities and this therefore impacted negatively on their application for credit facility.

The correlation analysis revealed that three of the variables; namely, land ownership structure, extension visits, and credit amount significantly affected credit access. The need for collateral probably explains why a few farmers particularly with ownership documents easily accessed credit. Majority of farmers who accessed credit admitted to have received vital advice from an extension officer .Therefore they seemed to take the advice from these officers as credible and worth putting to practice.

The effect of these independent variables on access to credit was analyzed using the Hosmer and Lemeshow test (test of the fitness of the model equation). The results concluded that land tenure system, extension visits and amount of credit applied had a significant positive influence while family size, repayment period, and farming cost had very minimal significance; hence the third null hypothesis was rejected. Provision of information on modern farming methods, record keeping and enlightenment on sources of agricultural credit should be made available to farmers by recruiting more frontline extension officers and facilitating the farmers more regularly.

5.4 Recommendations

Since Busia County has numerous small holder farmers, improvements in their living standards would increase the average welfare of the country as whole. Increasing agricultural production through credit access would also improve the living standards and per capital income. There is therefore need to increase access to credit in the sub-County.

The study recommends that government should improve service delivery in terms of extension services and where not possible should encourage public private partnerships in delivering extension services to the farmers. The government needs to ensure that as much as possible, farmers obtain land title deeds as on the things that are required to obtain credit. More extension officers and services need to be provided to the farmers. Awareness campaigns on the need to adopt new technologies and use of fertilizer should be encouraged. The government should create an enabling environment for group marketing of agricultural produce to increase the bargaining for better prices so that farmers can increase their productivity and enhance accessibility to credit. Financial institutions may need to reconsider their credit requirement if they have to enhance farmer access to credit.

Land reforms should be encouraged where communal land owners can be facilitated to do succession and acquire title deeds for their individual portions of land. This will facilitate them to acquire credit and be able to increase their working capital. Farmers still suffer poor yields and low income from their farms due to either unwillingness or difficulty to access credit. The government should therefore promote forums that can be used to educate the farmers on the need to borrow credit and link them to the lending institutions. At the same time functional marketing structures should be put in place so that the farmers can sell their produce with ease hence be in a position to repay the loans without any difficulty.

The findings of the study indicate that level of education was a significant factor in determining access to credit; the study therefore recommends that there is need to build farmers capacity so as to enhance their ability to utilize the credit facilities better. Policy-makers therefore need to develop effective training programs that would include; insurance to mitigate the risks in farming, financial literacy programs to familiarize smallholder farmers with the skills required to effectively understand, assess and utilize credit financial services to enhance their agricultural activity. Such programs can be incorporated into school curricula so as to help overcome the underlying barriers to accessing credit at an early age and put both gender at an equal footing. Smallholder farmers also need to be sensitized to adopt modern technologies such as M-Banking. Initiatives such as M-banking will help to address the distance to the market challenges that came out as a significant factor in the study findings. Designing of simple financial products by financial institutions for example; designing financial products brochures in local languages that the smallholder farmers can understand, documenting testimonies from local farmers who have benefited from the credit facilities will also ease communication barriers and encourage

the farmers to take up the credit facilities. Smallholder farmers can be brought into the global economy by connecting them to real time information and skills. Novogratz (2009) noted that "everyone needs a hand to get started and a way to walk so that eventually they can run and some of them will eventually fly".

The study further recommends the establishment of credit / loans offices close to farmers and operated by bank officials who would be familiar with farmers in the area to reduce lending procedures, risks and educate them on perceptions on loan repayment. The agent banking model should be used in this regard to achieve this objective. Yet another avenue could be through farmer groups that have become the most important method of providing rural credit to the poor who could not bring material collateral to other credit financial providers. Group membership was noted as a significant factor in determining access to credit financial services in the Eastern region. The government can also explore the possibility of developing local credit and distribution systems to address the problems of local farmers. This incorporates the private sector in a way that reaches poor farmers, create the right incentives for success, finding real business leaders and giving them the tools to serve the smallholder farmers.

Moreover, the government should find a way to help the market actually work for poor farmers so that the farmers can make their own investments in things like fertilizers and seeds and repay when the harvest comes in. In so doing, the farmers would not be waiting for an agency to give them things. The farmers are market-driven and deserve solutions that could help them sustain themselves for years. However, the only way that these institutions will work well for the farmers is if the farmers can see their own lives getting better because of their efforts and ability to control their own futures and not having to wait around for the government.

With respect to high fungibility problems, finance institutions should consider issuing production credit in form of farm inputs in order to improve the impact of credit on production. With this kind of approach there is a lower likelihood of the farmer's misappropriating the funds for other purposes other than farming. Addressing such a problem may also call for a multiplicity of small loans that address each particular sphere affecting smallholder lives, such as school fees, medical insurance loans, asset loans and consumption loans. In addition by empowering the local farmer groups and other local organizations and channeling the farm inputs through them, the farmers are able to repay their loans because of the social pressure as a result of proximity of everyone to each other and each member taking the responsibility of ensuring the loans are repaid. Therefore, more effort should be focused on how the credit input services can be enforced to lend in kind to reduce fungibility into consumption expenditures.

All the above recommendations may require review of existing policies and in some cases development of new ones. As the country strives to establish mechanisms of devolving governance and service provision through the County system, it would be necessary to invoke enabling policy mechanisms to realize equitable access to credit to small holder farmers, so as to realize food security, increased economic outcomes and reduce poverty.

5.5 Suggestions for Further Research

There is urgent need for further research on adoption studies to establish why farmers are not able to access credit facilities as they should. Therefore, further research should integrate institutions and production policies in a multi-agent based model to explore the agricultural policy options in the near future for optimizing the farming plans and household living standards in the area.

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APPENDICES

Appendix 1: Questionnaire

Hello, I'm conducting a research on *Factors Affecting Access to Credit among Small Holder Farmers in Busia County, Kenya*. I assure you that any information given to me is meant only for educational purpose and it is anonymous and confidential. Therefore, you are free to respond to this questionnaire honestly. In addition, feel free to ask if you have any doubt. I will appreciate your participation in answering the questions in advance. Thank you for your cooperation.

Demographic data of respondents

1. What is the gender of the respondent

   Male ☐ Female ☐

2. What is your age?
   i. Below 20years ☐
   ii. 21-30years ☐
   iii. 31-40years ☐
   iv. 41-50years ☐
   v. Above 50years ☐
3. What is the highest level education have you attained?
   i. University ☐
   ii. College ☐
   iii. Secondary ☐
   iv. Primary ☐
   v. No formal education ☐
4. What is your marital status?
   i. Married ☐
   ii. Single ☐
   iii. Windowed ☐
5. What is the size of your household (number of family members)?
   i. Less than5 members ☐
   ii. 6-10 members ☐
   iii. 11- 15 members ☐
   iv. More than 15 members ☐

II. Farm characteristics

1. What is the size of your family farm?
   i. Less than 1 acre ☐
   ii. 1-5 acres ☐

iii. 6 – 10 acres ☐

2. What size of your farm (acres) is under agriculture?

   i) Less than 1 acre ☐

   ii) 1-5 acres ☐

   iii) 6 – 10 acres ☐

3. Do you have title deed for your farm?
   i) Yes ☐
   ii) No ☐
   If no, what type of land ownership is your firm?

   a) Freehold (Ancestral ownership) ☐
   b) Leasehold (rented government land) ☐
   c) Rented land (rented from private land owner ☐
   d) Communal land ☐
   e) Others Specify…….

4. How far is the farm from the nearest market
   a) 0-20 km ☐
   b) 20-50 km ☐
5. Do you keep financial records for your farm?

   i) Yes ☐

   ii) No ☐

6. Do you sales show positive or negative sales for the last two years
   i. Negative
   ii. Positive
7. How long has your farm been in operation?

   i) Less than 5 year

   ii) 5-10 year

   iii) 11-15 years

   iv) 16-20 years

   v) Above 20 years

8. How many years do you have as a farmer

   i) Less than 5 year

   ii) 6-12 year

   iii) 13-20 years

   iv) Above 21 years

III. Financial Characteristics

1. What is your main source of income?
   i. Permanent/contract employment ☐
   ii. Casual employment ☐
   iii. Business ☐
   iv. Sale of farm produce ☐
   v. Support from relatives and friends ☐
   vi. Other (please explain/specify)

   ……

2. How much is your annual farm income?
   i. Not Applicable
   ii. Kshs 1000- 50000 ☐
   iii. Ksh. 5000 – Ksh.10000 ☐
   iv. Ksh.10001 – Ksh.20000 ☐
   v. Ksh.20001 – Ksh. 30000 ☐
   vi. Ksh.30001 – Ksh.40000 ☐
   vii. Ksh. 40001 – Ksh.50000 ☐
   viii. Above Ksh.50,000 ☐
3. What is the cost of farming on the family farm?

   i) Less than Ksh.1000 ☐

   ii) Ksh.10001 – Ksh.20000 ☐

   iii) More than Ksh.20000 ☐

4. Have you acquired any farm loan in the last three years

   Yes ☐ No ☐

   If yes, how much?

   i. Less than Ksh.1000 ☐
   ii. Ksh.1000-Ksh.5000 ☐
   iii. Ksh.5001 to Ksh.10000 ☐
   iv. Ksh.10001 to Ksh.15000 ☐
   v. Ksh.15001 to Ksh.20000 ☐
   vi. Over Ksh.20000 ☐
5. How long was the repayment period
   i. Less than 6months ☐
   ii. 1 year ☐
   iii. 2-5 years ☐
   iv. Above 5 years ☐

6. What was the interest rate charged by the credit institution charged?
   i. 0 – 5 percent per annum ☐
   ii. 6 – 10 percent per annum ☐
   iii. 11 – 15 percent per annum ☐
   iv. 16 – 20 percent per annum ☐
   v. Over 20 percent per annum ☐
7. From which financial institution did you get the loan?
   i. Agricultural Finance Corporation ☐
   ii. Commercial Bank ☐
   iii. Micro-finance institutions ☐
   iv. SACCO ☐
   v. Non-Governmental organization ☐
8. What was the source of information regarding available lending institution?
   i. Friends and colleagues ☐
   ii. Press and public agricultural forums ☐
   iii. Learning institutions ☐
   iv. Agriculture extension officers ☐
9. Why do you take credit facility ?
   i) Low interest ☐
   ii) Long repayment period ☐
   iii) Easier guarantees ☐
   iv) Others ☐
   v) N/A ☐

III. Farmer Characteristics

1. How long have the family been engaged in farming activities
   i. Less than 1 year ☐
   ii. 2-5years ☐
   iii. 6-10 years ☐
   iv. More than 10 years ☐
2. Are you a member of any agricultural SACCO?
   i. Yes ☐
   ii. No ☐
3. What type of farming activity(s) is the family engage in?
   i. Mixed farming ☐
   ii. Dairy farming ☐
   iii. Crop farming ☐
   iv. Cash crop farming ☐
   v. Aqua culture (fish farming) ☐

4. Where do you get technical information for your farming activities?
    i. Ministry of agriculture extension staff ☐
    ii. Tours and visits to other farms ☐
    iii. Agriculture Training Centres ☐
    iv. Agricultural shows and open days ☐
    v. None Governmental Organization ☐
    vi. Neighbours and friends ☐
5. How often do the Ministry Agriculture staff visit your farm?
    i. Weekly ☐
    ii. Monthly ☐
    iii. Quarter yearly ☐
    iv. Half yearly ☐
    v. Never visited ☐
6. Are you able to pay the loan on due time
    i. Yes
    ii. No
    iii. N/A

Appendix 2: Tests between Subjects

Tests of Between-Subjects Effects						
Dependent Variable: obtained any credit from any financial institution Have you?						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	74.469[a]	19	3.919	1969.004	.000	.992
Intercept	.000	0	.	.	.	.000
age1	.002	1	.002	.900	.343	.003
mar2	.000	1	.000	.126	.723	.000
famsiz3	.083	1	.083	41.737	.000	.115
edu4	.004	1	.004	1.870	.172	.006
fc9	.000	1	.000	.157	.692	.000
fc10	.001	1	.001	.339	.561	.001
fc11	.000	0	.	.	.	.000
fc12	.110	1	.110	55.271	.000	.147
fc13	.000	1	.000	.166	.684	.001
finc15	.040	1	.040	20.242	.000	.059
finc17	.000	1	.000	.178	.674	.001
finc18	.007	1	.007	3.599	.059	.011
famac19	.121	1	.121	60.936	.000	.160
famac20	.010	1	.010	5.190	.023	.016
cred23	.000	1	.000	.168	.682	.001
gen2	.010	1	.010	5.164	.024	.016
cre22	6.434	4	1.608	808.043	.000	.910
Error	.637	320	.002			
Total	112.000	340				
Corrected Total	75.106	339				
a. R Squared= . 992) Adjusted R Squared= .991(						

Source: Researcher 2020

Appendix 3: Case Processing

Case Processing Summary

		N	Marginal Percentage
Have you obtained any credit from any financial institution?	no	228	67.1%
	yes	112	32.9%
Age	>20 yrs	19	5.6%
	31- 40yrs	96	28.2%
	41- 50yrs	72	21.2%
	51- 60yrs	113	33.2%
	<60 yrs	40	11.8%
Marital status	unmarried	4	1.2%
	married	324	95.3%
	single	12	3.5%
family size	>5 members	17	5.0%
	6-10''	207	60.9%
	11- 15''	99	29.1%
	<15 ''	17	5.0%
education level	primary	199	58.5%
	secondary	124	36.5%
	Tertiary/college	17	5.0%
How much is the acreage of your farm?	>10 acres	323	95.0%
	11- 20acres	17	5.0%
How many employees do you have?	0-5	306	90.0%
	6-10	34	10.0%
What is the mode of ownership of farm?	Individual	340	100.0%
how far is the farm from the nearest town?	0- 20km	237	69.7%
	21-50km	103	30.3%
How long has your farm been in operation?	>5 yrs	65	19.1%
	6- 10yrs	99	29.1%

	11- 15yrs	34	10.0%
	16-20yrs	85	25.0%
	<20 yrs	57	16.8%
Do you keep financial records for your farm?	no	289	85.0%
	yes	51	15.0%
Do your sales show increase compared to the last2 years?	negative	132	38.8%
	positive	208	61.2%
Do you have other source of income other than farming?	no	281	82.6%
	yes	59	17.4%
How many years do you have as a farmer?	>5yrs	2	0.6%
	6-12yrs	169	49.7%
	13-20yrs	78	22.9%
	<21yrs	91	26.8%
Member of farming or business association or group?	no	29	8.5%
	yes	311	91.5%
What is the positive aspect of credit program?	low interest rate	28	8.2%
	long repayment period	75	22.1%
	easier guarantees	36	10.6%
	others	17	5.0%
	N/A	184	54.1%
Are you able to pay the loan on due time?	yes	103	30.3%
	N/A	237	69.7%
Gender	female	87	25.6%
	male	253	74.4%
Valid		340	100.0%
Missing		0	
Total		340	

Source: Researcher 2020

Appendix 4: Test for Significance

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations		
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part
1)Constant(	1.541	.146		10.540	.000	1.253	1.829			
Gender	.367	.026	.340	13.895	.000	.315	.419	.167	.612	.230
Age	.-061	.013	.-162	-4.717	.000	.-086	.-035	.-205	.-254	.-078
Marital status	.001	.037	.000	.024	.981	.-073	.075	.156	.001	.000
family size	.310	.019	.430	16.561	.000	.273	.347	.257	.678	.274
level education	.-310	.024	.-390	-12.846	.000	.-358	.-263	.-170	.-581	.-213
is How much the acreage of your farm?	.273	.055	.127	4.962	.000	.165	.381	.-161	.266	.082
How many employees do you have?	.-380	.039	.-243	-9.843	.000	.-456	.-304	.-234	.-480	.-163
how far is the farm from the nearest town?	.239	.037	.234	6.370	.000	.165	.313	.246	.334	.105
has How long your farm been in operation?	.184	.015	.549	12.335	.000	.155	.213	.222	.566	.204
Do you keep financial records for your farm?	.341	.044	.259	7.700	.000	.254	.429	.599	.394	.128
Do your sales show increase compared to the last2 years?	.-026	.033	.-026	.-779	.437	.-090	.039	.237	.-043	.-013
Do you have other source of income other than farming?	.-081	.026	.-065	-3.093	.002	.-132	.-029	.-222	.-170	.-051

How many years do you have as a farmer?	.-250	.027	.-455	-9.234	.000	.-304	.-197	.322	.-457	.-153
Member of farming or business association or group?	.-317	.044	.-188	-7.214	.000	.-403	.-231	.169	.-373	.-119
What is the positive aspect of credit program?	.-040	.009	.-139	-4.501	.000	.-057	.-022	.-577	.-243	.-075
Are you able to pay the loan on due time?	.-454	.044	.-444	-10.427	.000	.-539	.-368	.-818	.-502	.-173

a. Dependent Variable: Have you obtained any credit from any financial institution?

Source: Researcher 2020

Appendix 5: Relationship Between Credit and Various Variables

Have you obtained any credit from any financial institution? * Age

Crosstab

			Age					
			>20 yrs	31- 40 yrs	41- 50 yrs	51- 60 yrs	<60 yrs	Total
Have you obtained any credit from any financial institution?	no	Count	0_a	61_b	$55_{b,c}$	95_c	17_d	228
		%within Have you obtained any credit from any financial institution?	0.0%	26.8%	24.1%	41.7%	7.5%	100.0%
		%within Age	0.0%	63.5%	76.4%	84.1%	42.5%	67.1%
	yes	Count	19_a	35_b	$17_{b,c}$	18_c	23_d	112
		%within Have you obtained any credit from any financial institution?	17.0%	31.3%	15.2%	16.1%	20.5%	100.0%
		%within Age	100.0%	36.5%	23.6%	15.9%	57.5%	32.9%
Total		Count	19	96	72	113	40	340
		%within Have you obtained any credit from any financial institution?	5.6%	28.2%	21.2%	33.2%	11.8%	100.0%
		%within Age	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Age categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Appendix 6; Chi-Square Tests

Chi-Square Tests

	Value	df	Asymptotic Significance)2-sided(	Exact Sig.)2-sided(	Exact Sig.)1-sided(	Point Probability
Pearson Chi-Square	67.779[a]	4	.000	.000		
Likelihood Ratio	72.652	4	.000	.000		
Fisher's Exact Test	68.862			.000		
Linear-by-Linear Association	14.297[b]	1	.000	.000	.000	.000
N of Valid Cases	340					

a. 0cells)0.0 (%have expected count less than 5. The minimum expected count is6.26.

b. The standardized statistic is-3.781.

Source: Researcher 2020

any financial institution Have you obtained any credit from? *Marital status

Crosstab

			Marital status			
			unmarried	married	single	Total
Have you obtained any credit from any financial institution?	no	Count	4$_a$	220$_a$	4$_b$	228
		%within Have you obtained any credit from financial institution any?	1.8%	96.5%	1.8%	100.0%
		%within Marital status	100.0%	67.9%	33.3%	67.1%
	yes	Count	0$_a$	104$_a$	8$_b$	112
		%within Have you obtained any credit from any financial institution?	0.0%	92.9%	7.1%	100.0%
		%within Marital status	0.0%	32.1%	66.7%	32.9%
Total		Count	4	324	12	340
		%within Have you obtained any credit from any financial institution?	1.2%	95.3%	3.5%	100.0%
		%within Marital status	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Marital status categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? *family size

Crosstab

			family size				
			>5 years	6-10years	11- 15 years	<15 years	Total
Have you obtained any credit from any financial institution?	no	Count	17_a	143_b	68_b	0_c	228
		%within Have you obtained any credit from any financial institution?	7.5%	62.7%	29.8%	0.0%	100.0%
		%within family size	100.0%	69.1%	68.7%	0.0%	67.1%
	yes	Count	0_a	64_b	31_b	17_c	112
		%within Have you obtained any credit from any financial institution?	0.0%	57.1%	27.7%	15.2%	100.0%
		%within family size	0.0%	30.9%	31.3%	100.0%	32.9%
Total		Count	17	207	99	17	340
		%within Have you obtained any credit from any financial institution?	5.0%	60.9%	29.1%	5.0%	100.0%
		%within family size	100.0%	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of family size categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Chi-Square Tests

	Value	df	Asymptotic Significance)2-sided(	Exact Sig.)2-sided(	Exact Sig.)1-sided(	Point Probability
Pearson Chi-Square	43.460[a]	3	.000	.000		
Likelihood Ratio	51.849	3	.000	.000		
Fisher's Exact Test	45.474			.000		
Linear-by-Linear Association	22.427[b]	1	.000	.000	.000	.000
Cases N of Valid	340					

a. 0cells)0.0 (%have expected count less than 5. The minimum expected count is5.60.
b. The standardized statistic is4.736.

Source: Researcher 2020

Symmetric Measures

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance	Exact Significance
Interval by Interval	Pearson's R	.257	.050	4.893	.000[c]	.000
Ordinal by Ordinal	Spearman Correlation	.205	.053	3.854	.000[c]	.000
N of Valid Cases		340				

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: Researcher 2020

Have you obtained any credit from any financial institution? *education level

Crosstab

			education level			
			primary	secondary	Tertiary/college	Total
Have you obtained any credit from any financial institution?	no	Count	123$_a$	88$_a$	17$_b$	228
		%within Have you obtained any credit from any financial institution?	53.9%	38.6%	7.5%	100.0%
		within education level %	61.8%	71.0%	100.0%	67.1%
	yes	Count	76$_a$	36$_a$	0$_b$	112
		within Have you obtained % any credit from any financial institution?	67.9%	32.1%	0.0%	100.0%
		%within education level	38.2%	29.0%	0.0%	32.9%
Total		Count	199	124	17	340
		%within Have you obtained any credit from any financial institution?	58.5%	36.5%	5.0%	100.0%
		%within education level	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of education level categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

How much is the acreage of your farm?

Have you obtained any credit from any financial institution?

			How much is the acreage of your farm?		
			>10 acres	11- 20acres	Total
Have you obtained any credit from any financial institution?	no	Count	211$_a$	17$_b$	228
		%within Have you obtained any credit from any financial institution?	92.5%	7.5%	100.0%
		%within How much is the acreage of your farm?	65.3%	100.0%	67.1%
	yes	Count	112$_a$	0$_b$	112
		%within Have you obtained any credit from any financial institution?	100.0%	0.0%	100.0%
		%within How much is the acreage of your farm?	34.7%	0.0%	32.9%
Total		Count	323	17	340
		%within Have you obtained any credit from any financial institution?	95.0%	5.0%	100.0%
		%within How much is the acreage of your farm?	100.0%	100.0%	100.0%

letter denotes a subset of How much is the acreage of your farm Each subscript? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

*** How many employees do you have? Have you obtained any credit from any financial institution?**

			How many employees do you have?		
			0-5	6-10	Total
Have you obtained any credit from any financial institution?	no	Count	194[a]	34[b]	228
		%within Have you obtained any credit from any financial institution?	85.1%	14.9%	100.0%
		%within How many employees do you have?	63.4%	100.0%	67.1%
	yes	Count	112[a]	0[b]	112
		%within Have you obtained any credit from any financial institution?	100.0%	0.0%	100.0%
		%within How many employees do you have?	36.6%	0.0%	32.9%
Total		Count	306	34	340
		%within Have you obtained any credit from any financial institution?	90.0%	10.0%	100.0%
		%within How many employees do you have?	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of How many employees do you have? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? * What is the mode of ownership of farm?

Crosstab

			What is the mode of ownership of farm?	
			Individual	Total
Have you obtained any credit from any financial institution?	no	Count	228	228
		%within Have you obtained any credit from any financial institution?	100.0%	100.0%
		%within What is the mode of ownership of farm?	67.1%	67.1%
	yes	Count	112	112
		%within Have you obtained any credit from any financial institution?	100.0%	100.0%
		%within What is the mode of ownership of farm?	32.9%	32.9%
Total		Count	340	340
		%within Have you obtained any credit from any financial institution?	100.0%	100.0%
		%within What is the mode of ownership of farm?	100.0%	100.0%

Source: Researcher 2020

Have you obtained any credit from any financial institution? * how far is the farm from the nearest town?

Crosstab

			how far is the farm from the nearest town?		
			0- 20km	21-50km	Total
Have you obtained any credit from any financial institution?	no	Count	177_a	51_b	228
		%within Have you obtained any credit from any financial institution?	77.6%	22.4%	100.0%
		%within how far is the farm from the nearest town?	74.7%	49.5%	67.1%
	yes	Count	60_a	52_b	112
		%within Have you obtained any credit from any financial institution?	53.6%	46.4%	100.0%
		%within how far is the farm from the nearest town?	25.3%	50.5%	32.9%
Total		Count	237	103	340
		%within Have you obtained any credit from any financial institution?	69.7%	30.3%	100.0%
		%within how far is the farm from the nearest town?	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of how far is the farm from the nearest town? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? * How long has your farm been in operation?

Crosstab

			How long has your farm been in operation?					
			>5 yrs	6- 10yrs	11- 15 yrs	16- 20yrs	<20 yrs	Total
obtained Have you any credit from any financial institution?	no	Count	$46_{a, b}$	80_{b}	34_{c}	34_{d}	34_{a}	228
		%within Have you obtained any credit from any financial institution?	20.2%	35.1%	14.9%	14.9%	14.9%	100.0%
		%within How long has your farm been in operation?	70.8%	80.8%	100.0%	40.0%	59.6%	67.1%
	yes	Count	$19_{a, b}$	19_{b}	0_{c}	51_{d}	23_{a}	112
		%within Have you obtained any credit from any financial institution?	17.0%	17.0%	0.0%	45.5%	20.5%	100.0%
		%within How long has your farm been in operation?	29.2%	19.2%	0.0%	60.0%	40.4%	32.9%
Total		Count	65	99	34	85	57	340
		%within Have you obtained any credit from any financial institution?	19.1%	29.1%	10.0%	25.0%	16.8%	100.0%
		%within How long has your farm been in operation?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of How long has your farm been in operation? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? * Do you keep financial records for your farm?

Crosstab

			Do you keep financial records for your farm?		
			no	yes	Total
Have you obtained any credit from any financial institution?	no	Count	228[a]	0[b]	228
		%within Have you obtained any credit from any financial institution?	100.0%	0.0%	100.0%
		%within Do you keep financial records for your farm?	78.9%	0.0%	67.1%
	yes	Count	61[a]	51[b]	112
		%within Have you obtained any credit from any financial institution?	54.5%	45.5%	100.0%
		%within Do you keep financial records for your farm?	21.1%	100.0%	32.9%
Total		Count	289	51	340
		%within Have you obtained any credit from any financial institution?	85.0%	15.0%	100.0%
		%within Do you keep financial records for your farm?	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Do you keep financial records for your farm? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? *Do your sales show increase compared to the last 2years?

Crosstab

			Do your sales show increase compared to the last2 years?		
			negative	positive	Total
Have you obtained any credit from any financial institution?	no	Count	107[a]	121[b]	228
		%within Have you obtained any credit from any financial institution?	46.9%	53.1%	100.0%
		%within Do your sales show increase compared to the last 2years?	81.1%	58.2%	67.1%
	yes	Count	25[a]	87[b]	112
		%within Have you obtained any credit from any financial institution?	22.3%	77.7%	100.0%
		%within Do your sales show increase compared to the last 2years?	18.9%	41.8%	32.9%
Total		Count	132	208	340
		%within Have you obtained any credit from any financial institution?	38.8%	61.2%	100.0%
		%within Do your sales show increase compared to the last 2years?	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Do your sales show increase compared to the last2 years? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? *Do you have other source of income other than farming?

Crosstab

			Do you have other source of income other than farming?		
			no	yes	Total
Have you obtained any credit from any financial institution?	no	Count	175[a]	53[b]	228
		%within Have you obtained any credit from any financial institution?	76.8%	23.2%	100.0%
		%within Do you have other source of income other than farming?	62.3%	89.8%	67.1%
	yes	Count	106[a]	6[b]	112
		%within Have you obtained any credit from any financial institution?	94.6%	5.4%	100.0%
		%within Do you have other source of income other than farming?	37.7%	10.2%	32.9%
Total		Count	281	59	340
		%within Have you obtained any credit from any financial institution?	82.6%	17.4%	100.0%
		%within Do you have other source of income other than farming?	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Do you have other source of income other than farming? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? * How many years do you have as a farmer?

Crosstab

			How many years do you have as a farmer?				
			>5yrs	6-12yrs	13-20yrs	<21yrs	Total
Have you obtained any credit from any financial institution?	no	Count	0_a	133_b	61_b	34_a	228
		%within Have you obtained any credit from any financial institution?	0.0%	58.3%	26.8%	14.9%	100.0%
		%within How many years do you have as a farmer?	0.0%	78.7%	78.2%	37.4%	67.1%
	yes	Count	2_a	36_b	17_b	57_a	112
		%within Have you obtained any credit from any financial institution?	1.8%	32.1%	15.2%	50.9%	100.0%
		%within How many years do you have as a farmer?	100.0%	21.3%	21.8%	62.6%	32.9%
Total		Count	2	169	78	91	340
		%within Have you obtained any credit from any financial institution?	0.6%	49.7%	22.9%	26.8%	100.0%
		%within How many years do you have as a farmer?	100.0%	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of How many years do you have as a farmer? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? *Member of farming or business association or group?

Crosstab

			Member of farming or business association or group?		
			no	yes	Total
Have you obtained any credit from any financial institution?	no	Count	27_a	201_b	228
		%within Have you obtained any credit from any financial institution?	11.8%	88.2%	100.0%
		%within Member of farming or business association or group?	93.1%	64.6%	67.1%
	yes	Count	2_a	110_b	112
		%within Have you obtained any credit from any financial institution?	1.8%	98.2%	100.0%
		%within Member of farming or business association or group?	6.9%	35.4%	32.9%
Total		Count	29	311	340
		%within Have you obtained any credit from any financial institution?	8.5%	91.5%	100.0%
		%within Member of farming or business association or group?	100.0%	100.0%	100.0%

subscript letter denotes a subset of Member of farming or business association or group Each?
Categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? * What is the positive aspect of credit program?

Crosstab

			What is the positive aspect of credit program?					
			low interest rate	long repayment period	easier guarantees	others	N/A	Total
Have you obtained any credit from any financial institution?	no	Count	27_a	0_b	0_b	$17_{a,c}$	184_c	228
		%within Have you obtained any credit from any financial institution?	11.8%	0.0%	0.0%	7.5%	80.7%	100.0%
		%within What is the positive aspect of credit program?	96.4%	0.0%	0.0%	100.0%	100.0%	67.1%
	yes	Count	1_a	75_b	36_b	$0_{a,c}$	0_c	112
		%within Have you obtained any credit from any financial institution?	0.9%	67.0%	32.1%	0.0%	0.0%	100.0%
		%within What is the positive aspect of credit program?	3.6%	100.0%	100.0%	0.0%	0.0%	32.9%
Total		Count	28	75	36	17	184	340
		%within Have you obtained any credit from any financial institution?	8.2%	22.1%	10.6%	5.0%	54.1%	100.0%
		%within What is the positive aspect of credit program?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of What is the positive aspect of credit program? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? * Are you able to pay the loan on due time?

Crosstab

			Are you able to pay the loan on due time?		
			yes	N/A	Total
Have you obtained any credit from any financial institution?	no	Count	9_a	219_b	228
		%within Have you obtained any credit from any financial institution?	3.9%	96.1%	100.0%
		%within Are you able to pay the loan on due time?	8.7%	92.4%	67.1%
	yes	Count	94_a	18_b	112
		%within Have you obtained any credit from any financial institution?	83.9%	16.1%	100.0%
		%within Are you able to pay the loan on due time?	91.3%	7.6%	32.9%
Total		Count	103	237	340
		%within Have you obtained any credit from any financial institution?	30.3%	69.7%	100.0%
		%within Are you able to pay the loan on due time?	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Are you able to pay the loan on due time? categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Have you obtained any credit from any financial institution? *Gender

Crosstab

			Gender		
			female	male	Total
Have you obtained any credit from any financial institution?	no	Count	70[a]	158[b]	228
		%within Have you obtained any credit from any financial institution?	30.7%	69.3%	100.0%
		%within Gender	80.5%	62.5%	67.1%
	yes	Count	17[a]	95[b]	112
		%within Have you obtained any credit from any financial institution?	15.2%	84.8%	100.0%
		%within Gender	19.5%	37.5%	32.9%
Total		Count	87	253	340
		%within Have you obtained any credit from any financial institution?	25.6%	74.4%	100.0%
		%within Gender	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Gender categories whose column proportions do not differ significantly from each other at the. 05level.

Source: Researcher 2020

Chi-Square Tests

	Value	df	Asymptotic Significance)2-sided(	Exact Sig.)2-sided(	Exact Sig.)1-sided(	Point Probability
Pearson Chi-Square	9.505[a]	1	.002	.002	.001	
Continuity Correction	8.707	1	.003			
Likelihood Ratio	10.130	1	.001	.002	.001	
Fisher's Exact Test				.002	.001	
Linear-by-Linear Association	9.477[c]	1	.002	.002	.001	.001
N of Valid Cases	340					

a. 0cells)0.0 (%have expected count less than 5. The minimum expected count is28.66.
b. Computed only for a2x2 table
c. The standardized statistic is3.078.

Source: Researcher 2020

Symmetric Measures

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance	Exact Significance
Interval by Interval	Pearson's R	.167	.048	3.118	.002[c]	.002
Ordinal by Ordinal	Spearman Correlation	.167	.048	3.118	.002[c]	.002
N of Valid Cases		340				

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Source: Researcher 2020

Tests of Homogeneity of the Odds Ratio

	Chi-Squared	df	Asymptotic Significance)2-sided(
Breslow-Day	.000	0	.
Tarone's	.000	0	.

Tests of Conditional Independence

	Chi-Squared	df	Asymptotic Significance)2-sided(
Cochran's	9.505	1	.002
Mantel-Haenszel	8.682	1	.003

conditional independence assumption Under the, Cochran' s statistic is asymptotically distributed as a1 df chi-squared distribution, only if the number of strata is fixed, while the Mantel-Haenszel statistic is always asymptotically distributed as a1 df chi-distribution squared. Note that the continuity correction is removed from the Mantel-Haenszel statistic when the sum of the differences between the observed and the expected is0.

Source: Researcher 2020

Mantel-Haenszel Common Odds Ratio Estimate

Estimate			2.476
ln)Estimate(			.907
Standardized Error of ln)Estimate(			.300
Asymptotic Significance)2-sided(			.003
Asymptotic95 %Confidence Interval	Common Odds Ratio	Lower Bound	1.375
		Upper Bound	4.457
	ln)Common Odds Ratio(	Lower Bound	.319
		Bound Upper	1.494

The Mantel-Haenszel common odds ratio estimate is asymptotically normally distributed under the common odds ratio of1.000 assumption. So is the natural log of the estimate.

Source: Researcher 2020