AN ANALYSIS OF DETERMINANTS OF ACCESS TO AND USE OF CREDIT BY SMALLHOLDER FARMERS IN SUAKOKO DISTRICT, LIBERIA

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Declaration and Approval

Declaration

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

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Approval

This thesis has been submitted with our approval as University

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Dedication

I dedicate this work to my late father Mr. Kaiffa C. Roberts Sr. and my mom Mrs. Tetay D. Roberts. I have made it this far because of your love, discipline, moral and financial support. I cannot thank you enough. I hope I have made you proud.

To the loves of my life, my fiancé Dennie Omar Moore Sr. and our children Dennie Omar Moore Jr. and Ramona Elizabeth Moore, I owe it all to you. This journey would not have been possible without your love, support and encouragement. Thanks for all the sacrifices you made to enable me pursue higher education. I am forever grateful.

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Abbreviations and Acronyms

AGRI: Alliance for a Green Revolution in Africa

ATM: Automated Teller Machine

CAADP: Comprehensive African Agricultural Development Program

CARI: Central Agricultural Research Institute

CBL: Central Bank of Liberia

ETI: Ethical Trading Initiative

GDP: Gross Domestic Product

GOL: Government of Liberia

IMF: International Monetary Fund

MFDP : Ministry of Finance and Development Planning

MFIs: Microfinance Institutions

MOA: Ministry of Agriculture

SACCO: Savings and Credit Cooperative

SAPEC: Smallholder Agricultural Productivity Enhancement and Commercialization

USAID: United States Agency for International Development

Abstract

Rural credit is a temporary substitute for personal savings, which catalyzes the process of agricultural production and productivity. To accelerate agricultural productivity and their income, farmers have to use improved agricultural technologies, inputs and labor in wider scale that requires capital investments. Liberia like many other developing countries highly depends on agriculture for income generation and job creation for her citizens. Owing to the sector being highly dominated by smallholder farmers, lack of finance remains the leading obstacle and yet banks – the major supplier of finance are quoted to be the least suppliers of finance to farmers despite capital adequacy and ability to lend to smallholder farmers at lower interest rates compared to other suppliers. Furthermore the use of the loan funds by the few participant farmers is not precisely known. This study sought to identify and analyze the determinants of smallholder farmers' access to and use of credit in Suakoko district, Bong County, Liberia. This research is quantitative using structured survey questionnaire distributed to 105 smallholder farmers. Data were analyzed using descriptive statistics and casual analysis was performed using a binary Logit regression model. Results from the regression indicate that 39 percent of the farmers were credit users. The marginal effects of bank account and other sources of income show significant and positive effects on access to credit by smallholder farmers. That is, a unit increase in bank account and other sources of income is likely to increase access to credit by smallholder farmers. However, education, occupation and group membership are significant but have negative effects on access to credit by smallholder farmers. A unit increase in education, occupation and group membership is likely to decrease smallholder farmers sorting credit. The result also shows that 42 percent of credit users applied the funds received for agricultural activities, while the rest utilized them for non-agricultural activities. Therefore the study recommends that the government and other policy

makers need to ensure older farmers get adult literacy while younger farmers get formal education. Being educated will also help farmers to not only restrict themselves to farming but find other jobs as alternative sources of income which will enable them easily access credit. The government should also emphasize on policies aimed at increasing opportunities for off-farm activities. This can be enhanced through creation of jobs and motivating self-employment. It is also recommended that the government should promote development groups geared towards providing collateral for members. In Suakoko, banking institutions do not give out credit to farmers, therefore, government of Liberia especially SAPEC need to bridge that gap. Stakeholders, policy makers, farmers and even students will use this thesis to know exactly what influence smallholder farmers access to credit and to know more about smallholder farmers in Liberia.

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Agriculture is critical for global economic growth and it accounted for one third of the world's gross domestic product (GDP) in 2014. In 2016, analyses found that 65 percent of poor working adults relied on agriculture to live. Agricultural development is projected to feed 9.7 billion people by 2050. It is considered the most powerful poverty reduction tool (World Bank, 2017). In most developing countries, agriculture is the most important economic activity providing food, employment, foreign exchange and raw materials for industries (Tadesse, 2008).

In Africa, steady progress is being made towards agricultural transformation. Expenditures on agriculture have taken an upward trend and there is evidence of faster growth in agricultural productivity and improved nutrition. There is also increase investment by private sectors in agriculture evident by famers who have options in seeds planted, fertilizers used and produce markets (AGRI, 2016). However, factors such as war, lack of agricultural financing, climate change, floods, and global warming still pose major threats to Africa's agricultural productivity (World Bank, 2017).

Data from Central Bank of Liberia (2016) have shown that agriculture contributed 42 percent of Liberia's national Gross Domestic Product (GDP) in 2016. Rice is the main staple food grown by over 74 percent of the population on uplands (CFSNS, 2008). Cassava is the second most important food crop grown by about 62 percent of the population (CAAS-Lib, 2016). Paddy rice and cassava production and area harvested increased by more than 3 percent per annum during the period 2001-2016. Rice and cassava have contributed 22 percent and 23 percent of the agricultural GDP

respectively. Tree crops, especially rubber, cocoa and coffee make an important contribution to the economy, accounting for 34 percent of the agricultural GDP in 2016.

Kimuyu and Omiti (2011) propound that agricultural loans are a basic component for rural development in developing nations. It is an impermanent substitute for individual savings and it quickens innovation change to invigorate agrarian production by upgrading smallholder agriculturalists' profitability, resource arrangement, nutrition and in this manner, rural agricultural revenue. 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 because it has proven to be a powerful instrument against poverty reduction and rural development (World Bank, 2013). The accessibility of formal funds to the smallholder agriculturists is fundamental, in the event that they are to create an attractive surplus and in this way add to the advancement and growth of their country (World Bank, 2008).

Etonihu et al. (2013) consider agricultural credit as money or farm inputs advanced to farmers who pay back later with interest and it can be from formal or informal sources. The informal sources of credit to smallholder farmers can be from family or friends, money lenders, produce buyers and farmers' cooperatives, while the formal sources of credit are state parastatal banks and private commercial banks.

In Liberia, smallholder agriculturalists have developed into very significant drivers of the economy. The sector adds to the national target of making business openings, creating pay and giving a wellspring of work to the larger proportion of low-wage family units in the nation (CARI, 2015).

Liberia's smallholder farmers who have the potential to feed the nation are actually the poorest and most food insecure in the population. They are principally subsistence farmers with limited outlets to market surplus production or participation in the cash economy. As a group, they are geographically dispersed and therefore are often marginalized. Liberia's smallholder farmers lack access to value chain procedures, for example, processing machines, driers, storage and other post-harvest facilities (Hilson& Van Bockstael, 2012). The absence of post-harvest handling facilities impacts genuinely on the capacity of smallholder farmers to participate in business as their products decay after harvest. The production experience for rice and cassava in many parts of Liberia is a decent case of how the absence of credit access by smallholder farmers influences their profitability and enterprise. There are also no value chain facilities to process and package food crops for sale or storage, which affects progress to promote food security and farmers' entrepreneurship. Smallholder farmers experience difficulties taking their products to the market as many parts of Liberia has poor transportation network. The wider population who are the smallholder farmers experience formal credit challenge. In Liberia, smallholder farmers get other incentives and not loans from the government. Government loans and a large proportion of incentives go to large scale farmers who own plantations and those producing crops considered strategic by government especially for export such as rubber, cocoa and coffee (Dixon et al., 2001).

Notwithstanding, farming plays an integral part in Liberia's economic and social development as it contributes significantly to employment, food security, household income, poverty reduction and foreign exchange. However, resources allocated to the sector are limited. Low agriculture productivity result in the import of over 80 percent of Liberia's staple food making the country vulnerable to global food price instability (MOA, 2007). According to MFDP (2015), the government of Liberia spends just 1 percent of its national budget on agriculture despite pledging

to spend 10 percent of its Gross Domestic Product on agriculture under the African Union's Comprehensive African Agriculture Development Program (CAADP).

There is limited credit to support agricultural production. Farmers still face constrains in accessing financial help. As a result most of them are discouraged to continue ensuring the productivity of their farms as acknowledged by Liberian government through smallholder agricultural productivity enhancement commercialization (SAPEC) (CARI, 2015). In an effort to solve the problem of credit inaccessibility, farmers form loan groups or cooperatives, in which they contribute and lend funds to each other as loans. The amount of funds they collect is, however, low due to restrictions in terms of membership and geographical location. They therefore resort to seeking financial help from financial institutions. Microfinance institutions in Liberia have attempted to provide agricultural loans to smallholder farmers but their efforts are negligible given the existing need for agricultural credit (McNamara et al, 2011).

Although there are studies done on factors that determine access to credit in other countries like Bosnia and Herzegovina (Chivakul and Chen, 2008), Vietnam (Nguyen, 2007), Nigeria (Etonihu et al., 2013), Ethiopia (Auma and Mensah, 2014), Kenya (Kiplimo et al), and Uganda (Mpuga, 2010), their findings may not apply to Liberia. Unlike Liberia, these countries have agricultural credit programs supported by the government for smallholder/rural farmers to access credit; Kenya (Agricultural Finance Corporation), Nigeria (Agricultural credit guarantee scheme and Agricultural credit support scheme), Ghana (Agricultural Development Bank), Uganda (Bank of Uganda). The agricultural cooperative development bank (ACDB) in Liberia closed because of the Liberian civil war and is yet to reopen.

1.2 Statement of the Research Problem

This study is concerned with the overall aspects of credit in Liberia where the level of reach by financial services providers is lower than the normal for the sub-Saharan African (SSA) nations, developing economies and ECOWAS. The few financial services establishments are concentrated in Monrovia, where around one fourth of the populace lives leaving the rural areas where smallholder farmers operate from without financial services providers. Non-bank Financial establishments (FIs), for example, credit union and village saving and credit affiliations, has quickly developed in number and is currently around 74 for every 100,000 grown-ups. Each of the fifteen districts in Liberia now have some access to financial related services courtesy of these rural community monetary group establishments. Seventy percent (70%) of people depended on different wellsprings of fund (Microfinance establishments, informal sources) rather than banks for credit in 2013 despite the fact that banks represent 90 percent of budgetary resources. Despite the fact that there might be no adequate information, the normal interest charge by banks is around 14 percent while in contrast with upward of 25 percent for MFIs and 40 percent rate for credit unions.

1.3 Objectives of the Study

The purpose of this study was to identify and analyze the determinants of access to credit by the smallholder farmers in Suakoko District, Liberia. The specific objectives were to:

1. Characterize the level of use or non-use of agricultural credit in Suakoko District, Liberia.
2. Analyze underlying factors affecting smallholder farmers access to credit services in Suakoko District, Liberia
3. Assess use of credit among smallholder farmers in Suakoko District, Liberia.

1.4 Research Hypotheses

Three hypotheses were tested in this study.

Hypothesis 1: There is no difference in Socio-economic and institutional characteristics between users and non-users of credit in Suakoko District, Liberia

Hypothesis 2: Socio-economic and institutional factors do not affect smallholder farmers access to credit.

Hypothesis 3: Farmers in Suakoko District, Liberia do not use credit services for agricultural activities.

1.5 Justification of the Study

Access to credit has assumed a critical part in supporting smallholder agriculturists to enhance their production and expectations for everyday lives (Farats and Sao, 2015). Enhanced rural credit money related framework is in this manner vital in accomplishing pro-poor development strategy and lessening poverty among the rural people. This research aimed to contribute to the debate on determinants of access to credit finances. In addition, the study has also contributed to the pool of literature on the role of credit in increasing agricultural productivity as a path way out of chronic rural poverty and household food security in Liberia.

The lack of capital and the absence of attractive investment opportunities are considered to be important reasons behind inadequate economic development in many developing countries (Mpuga, 2010). This is why an attempt is made in most developing countries to encourage, through development policy measures, capital formation as well as the supply of financial means in the form of credit through official financial institutions.

1.6 Organization of the thesis

The rest of the thesis is organized as follows: Chapter 2 provides a review of past studies on definition and concept of rural Credit, concept of Smallholder Farmer, credit access for agricultural productivity, review of rural credit market mechanisms, financial inclusion in Liberia, as well as empirical review of possible determinants of demand for and access to credit. Chapter 3 presents the methodology which includes the conceptual framework, empirical methods, the study area, data collection procedure and research design. Chapter 4 describes the results and discussion, while chapter 5 reports on the summary, conclusion and recommendation of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Definition and concept of rural Credit

There are various viewpoints in literature on the meaning and components of agricultural credit. Khan et al. (2011) contend that agricultural credit is defined as financial support that a farmer can get in order to bridge the gap between his/her income and expenditure in the field and noted that it is a basic recipe in the development plan of agricultural segment.

According to Mohan (2006), agricultural credit is a loan advanced to farmers for purchase of enhanced seeds, compost, modern inputs and may likewise incorporate fluid capital for financing the reaping, transportation of products and other comparable farming activities. Dethier and Effenberger (2012) perceive agricultural credit as any other credit facility in the market but confined to agricultural development. Salami and Arawomo (2013) described agricultural credit as a facility that is extended from a lender to a borrower, which is repaid at maturity ranging from few days to several years.

According to Ellis (1992), credit policies tend to make assumptions that the less privileged are not able to save and their interest levels are highly sensitive to their demand for credit .Several experiments have, however, proven otherwise. On the other hand, their income levels are uneven thus the concern in interest levels as a result of the small amount they can manage in savings. In the case of peasants who are not in absolute poverty, their lack of saving is associated to lack of opportunity or lack of trust in the available options. Most households prefer to store their savings in the form of livestock as opposed to banks. It is often assumed that market rates discourage farmers from utilizing credit. This assumption is incorrect since a large number of farmers often seek financial help in terms of credit to sustain their commercial farming activities.

The most widely recognized types of credit market in emerging nations are basically from informal and formal sources. In formal sources of credit market, activities are controlled and subsidized by government with subsequently low interest rate. In informal sources of credit markets, cash is loaned by private people, professional moneylenders, brokers, commission operators, land lords, companions and relatives (Mohieldin and Write, 2000).

Formal and informal credit are not substitutes as they serve different categories of customers. Specifically, as formal credit access to farmers diminishes, farmers turn to informal credit. This shows the two types of credit satisfy diverse capacities. However, informal credit is mostly utilized maybe for consumption purposes, while formal credit is looked for and utilized for the most part in agriculture (Aliou Diagne, 1999).

The foundation of formal credit establishments in the agricultural based economies somewhere in the range of at least 40 years prior was, among different reasons connected to the conviction that informal loan providers, for example, vendors, proprietors and shop proprietors misuse smallholder farmers by charging them excessively high interest rate (Adams, 1984). The informal credit market is exceptionally heterogeneous and is dependably a segment of the predominant political, financial, and social relations network, including moderately low extra exchange costs for credit supply. The informal credit market was predominantly important just for areas that were not straightforwardly profitable and through which the use for social commitments was met (Manig, 1996).

The recognized banking institutions work in regions that such institutions envision low risks, where authorization and exchange expenses are slightest. On the other hand, informal credit institutions or related division works in zones and areas where formal credit failed (Manig, 1996; Aliou, 1999; Fengxia et al., 2010).

2.2 Concept of Smallholder Farmer

The expression "smallholders" is generally understood as smallholder farmers who cannot claim or solely manage the land they farm. There are various attributes of smallholders, regardless of whether they control the land they cultivate or the products they harvest; they harvest generally little produce on moderately little pieces of land. They can grow commodities for export as their main source of income or as portion of an investment of subsistence income generating activities. They are for the most part less all well-equipped than commercial farmers. They are typically thought to be a piece of the informal economy (may not be enlisted, have a tendency to be prohibited from parts of work law, need social security and have little records). They might be men or ladies. They may rely on upon family labor, however may employ additional workers (ETI, 2005). In reality, both urban and rural consumers rely heavily on the productivity of their smallholders to fulfill their food needs.

2.3 Credit Access for Agricultural Productivity

According to Auma and Mensah (2014), local credit is considered a viable source of poverty reduction as well as development in rural areas. Agricultural credit is used to provide farmers in developing countries the resources they need in cases where their income is not sufficient. Credit is viewed as more than just another resource such as labor, land, equipment and raw materials but can rather be considered from its ability to energize or motivate other factors of production (Rahji, 2000). Most often, credit determines access to most of the resources on which smallholder farmers depend for agricultural production because of lack of adequate capital to access these resources (Ololade and Olagunju, 2013).

The provision of credit is an important aspect of local development because it helps to achieve sustainable growth of agriculture. Local credit acts as a catalyst for agricultural production as it

covers for deficit in individual savings. Local credit enables farmers to afford expensive agricultural technologies which boost agricultural production. The financing of agricultural activities requires liquid cash which, in most cases small-scale farmers lack. As a result, the expansion of local credit amounts is efficient in increasing agricultural productivity (Briquette, 1999).

The availability of credit for the poor has been proven as a successful initiative that aims at reducing poverty rates as well as promoting entrepreneurship (in cases of adverse shocks such as poor rain, plant diseases, increased food price), starting or expanding businesses, coping with risk and increasing or diversifying household income. Having access to and acquiring financial services by the rural poor farmers is one way of improving productivity in the agricultural sector (Irz et al., 2002). Credit gives small-scale farmers the ability to invest in methods of improving their lands as well as exploit agricultural technologies to improve their farming (Zeller and Sharma, 2000). Poverty reduction and household food security is highly dependent on peasant's access to credit.

Some significant policies and research questions on the credit markets in developing countries are always framed with regards to how the availability of credit benefits a family's agricultural output, food security and other developmental aspects. The same questions are prevalent in both government and non-government programs for credit, since the financial benefits are critically compared to the financial cost of disbursing credit to these households. It is therefore important to clarify the meaning of access to credit in relation to the expected assessment of the outcome. Access to credit is where loans for farmers are available and farmers have taken the initiative to apply and utilize such loans. Credit can be available yet not accessible due to restrictions such as costs and strict qualification criteria.

Credit affects the performance of agriculture by providing resources for purchase of inputs and the adoption of new technology.

Park et al (2003) observed that absence of credit is an obstruction to ventures and livelihood of poor family units in emerging nations of the world. Access to credit can be used for alleviating poverty among country poor. Access to credit upgrades the appropriation of new and more advances that will enhance agriculturalists' levels of wage and thus, mitigate their poverty. Extra capital thus of access to credit upgrades the level of family's beneficial resources, and furthermore raise their use and it is that use that prompt change in utilization (nutritional and non-sustenance) of the country poor. The advancement of credit to agriculturists enhances proficiency and extends production. Credit is expected to extend the size of farm operation and for presenting supplementary ventures that could build work usage and advance consistent stream of livelihood. Loan institutions likewise go about as fill up to the procedure of commercialization of the rural economy. The research by Park et al (2003) contended that the degree of access to credit is measured by the most extreme sum that a family unit can acquire. A family is said to get credit on the off chance that it has acquired from any source of credit (formal or casual) and did not get credit on the off chance that it cannot obtain from any source. Park et al (2003) contended that a family unit has access to a specific source of credit on the off chance that it can obtain from that source, in spite of the fact that for an assortment of reasons it might pick not to get credit. Such reasons might be that the agriculturist does not require the credit at that time or may even be restricted in wording necessities by the loaning organizations.

2.4 Review of Rural Credit Market Mechanisms

There are six rural distinct ways or models through which the credit market operates (Kibaara, 2006). These models include: Community Owned Rural Finance Model, the Private Commercial

Bank Model, Government driven Rural Finance Model, Donor Guarantee – Input Supply Model, Managed SACCO system and the Informal Group Based Rural Financing Model.

Community Owned Rural Finance Model is available in Liberia, which is possessed and overseen by the provincial group with help from the contributor office and its goal is to decrease destitution level through giving simple access to monetary administrations in areas such as Suakoko District with high absolute poverty rates (Kiplimo, 2013). One advantage of this Community Owned Rural Finance Model is that it stretches much deeper to levels where financial intuitions have failed to consider as an important aspect of banking services. More so, members will not incur transport costs by travelling to nearby towns in order to get financial aid from financial institutions. This in turn saves time and resources. Distance from the rural communities to financial institutions is considerably one of the most common barriers for farmers to access credit.

Privately owned commercial bank model has steered the mainstream banks to close rural branches as a result of restructuring to cut down costs and increase profits (Kibaara, 2006). This has left a gap in the rural financial services (Kiplimo, 2013). In Liberia, Private Commercial Banks are concentrated in towns and urban centers as opposed to rural areas where smallholder farmers can access them.

Government led Rural Finance Model offers credit services mostly to large scale farmers in order to increase food production (Kiplimo, 2013). The main participants include a farmer, a non-financial organization, the government and most of the time the donor. In order for one to receive credit, they have to meet certain requirements, including collateral, and often, group based lending is not offered. Donor Guarantee - Input Supply Model promotes private segment loaning to reduce credit dangers, manufacturer loaning limit and address showcase defects (Kelly et al., 2013). This model can have two elements; the credit voucher system and the Stockists Credit guarantee system

(SCG). The credit voucher system provides agricultural inputs to farmers on credit, while the SCG model creates lending capacity between input stockists and manufactures of agricultural input. The credit voucher system involves the provision of input to farmers by combining cash and credit vouchers. It limits credit diversion since it is only dispersed during the periods of production. On the other hand, the SCG strengthens the commercial involvement between farm inputs and private distribution companies so as to increase the amount of available inputs. Donor Guarantee – Input Supply Model exists in Liberia but with a very low coverage. Only few smallholder farmers in the rural areas in Liberia have benefited from Donor Guarantee – Input Supply Model.

Managed SACCO system involves a micro finance that monitors the SACCO and a SACCO itself (Kiplimo, 2013). SACCOs are more popular in rural areas than in urban areas (Johnson and Zarazua, 2008). Members in the SACCO buy shares and they use them as collateral for leveraged loans. This model aims at increased participation in the credit market among farmers towards poverty alleviation. Managed SACCOs in Liberia are more for marketing smallholder products than providing credit. This is useful because not all cases of application for credit mean effective demand. When produce is sold and money made available then one may not apply for credit

The Informal Group Based Rural Financing Model forms an important source of rural financial services and occur in several forms like the Rotating saving and credit systems (ROSCAs) and the merry-go-round system (Kibaara, 2006). The most important factor in this model is the formation of groups. This model has become a major source of credit for many rural families because of its efficiency and the fact that it does not charge interest. In addition, it works as an alternative for emergency. Informal Group Based Rural Financing Model in Liberia is common and the groups provide small loans to their members. Since most of the members are poor their savings are also

meager hence these groups are not able to advance significant amounts to members for significant investments in agriculture.

A review of these models shows that farmers are more likely to access credit from community based models than private bank or government led models. The latter requires collateral which many smallholder farmers may not have. On the other hand, community based models are within reach and popular with smallholder farmers. This implies that any policy aimed at improving community based models would have a positive impact on smallholder farmers' access to credit.

2.5 Financial Inclusion in Liberia

Satisfactory incorporation in financial services can enhance the strength of families against life and monetary occasions through more credit choices and hazard sharing. Although IMF (2015) and World Bank (2014) have observed positive progress in regard to financial inclusion in Liberia, it is not adequate especially in rural areas where smallholder farmers require agricultural credit. The banks serve mostly the well to do organizations in Monrovia and a couple of primary towns by giving business loans for a short period. This leaves out the rural areas from coverage by commercial banks. The non-bank or informal organizations dealing in financial services have a significant part that they contribute in financial inclusion, especially in rural areas. These non-bank financial institutions include credit union and savings groups in the village and other organizations dealing in loans. They have quickly developed and their number is presently around 74 for each group of 100,000 grown-ups. On account of rural group money related organizations, every one of the 15 regions or counties now have at least bare minimum access to financial services. In this manner, in spite of the fact that non-bank establishments give just basic money related services, they give a conclusive commitment to the comprehensiveness of their financial services coverage of the smallholder farmers in the rural areas (IMF, 2016).

The limited physical presence of banks in rural Liberia is attributed to three major reasons. In the first place, the banks have been battling with low productivity. The second reason is poor foundation which expands cost of building and keeping up branches in the countryside. The third reason is that land enlistment process in Liberia makes it more troublesome for banks to open another branch as the procedure is tedious and expensive (IMF, 2016). Although there are two types of rural credit in Liberia based on source, formal and informal, smallholder farmers are more likely to access informal type of credit than formal credit. The advantage is that the non-bank financial institutions can ensure financial inclusion of smallholder farmers owing to their reach in rural areas. They however only offer simple financial services and their credit is expensive hence not affordable to many again limiting credit access.

2.6 Empirical Review of Possible Determinants of Demand for and Access to Credit

2.6.1 Demand for Credit

Access to education is one of the most significant factors that affect the need for families to seek credit as it increases the need to borrow from formal loan markets, and does not necessarily affect their demand for informal credit. (Tang et al. 2010).Education can have negative or no effect on demand for credit in circumstances where other factors such as cost of credit and access to credit are priority. The findings of Chen and Chiivakul (2008), show that primary and secondary education can have a positive effect while a four year degree at the university has negative effects on credit. They therefore concluded that education does not increase the probability of seeking credit. These findings contradict those of Tang et al. (2010) hence leaving an unclear conclusion on whether education influences small-scale farmers' access to credit or not. The research aimed at finding concrete factors that will draw a conclusion by finding the determinants of access to credit by farmers in Suakoko District, Liberia.

Bending et al. (2009), undertook a survey to determine the possibilities that are in play in affecting different types of households need for credit in Ghana. Their study showed that there is a positive impact on the size of a household to the demand for credit since big households are more prone to shocks (like illnesses) from higher number of household members. Their study however did not exclusively look at demand for credit to invest in an economic activity like agriculture which could be different from emergencies such as illnesses of household members.

Level of income is an important factor that would determine the need to seek credit. People with higher income tend to take higher credit amounts since they anticipate higher income in the future (Chen and Chiivakul, 2008). However, another explanation shows that, when an individual's income is very low, the marginal utility of consumption is very high, leading to high demand for credit. The study by Chen and Chiivakul (2008) looked into demand for credit with a focus on consumption and ability to repay the loan based on the level of income a household expects in the future. The study sought to emphasize on the level of income and purpose of credit. Smallholder farmers based on their level of income could have varying choices to borrow or not borrow hence influencing their access to credit.

Household assets are important elements households consider when borrowing decisions are being made. This is because in Liberia, most microfinance organizations peg their lending on physical assets as security. Duflo et al. (2008) showed there is less demand for credit in households that own livestock since the latter do not require extra capital. However, Mpuga (2010) argues that the value of assets is more important than the number of assets in this case as well as how easily these assets can be liquidated that strongly influence demand for credit. It is therefore not clear whether the number or value of assets influences demand for credit and access to credit by smallholder farmers.

In their study, Bending et al (2009), revealed that the ownership of assets and formal employment increase income hence decreasing the need and likelihood to seek credit. The poor families, on the other end are more likely denied credit by financial institutions because they do not meet the required policies in place (Nguyen, 2007). These studies focus on financial inclusion of households and do not show how access to credit is influenced by financial inclusion. Access to credit and financial inclusion are distinct. The former refers to a small holder farmer obtaining a loan from a financial institution while the latter refers to a small holder farmer having an active account in a financial institution where they transact. The study sought to interrogate how financial inclusion of smallholder farmers has influenced their access to credit.

2.6.2 Socio-economic Characteristics of smallholder farmers

Studies have shown that financial attributes of smallholder agriculturists are related with their interest for credit. Mpuga (2010) found that age of an individual is emphatically identified with the choice to apply for credit and the measure of credit applied. Mpuga adds that young farmers tend to save and seek credit as opposed to old farmers. Tang et al. (2010) opposed Mpuga (2010) stating that the opposite is quite true since older farmers have more social capital and networks compared to the young farmers. Nwaru (2011) disagreed with both stating that age of an individual does not affect demand on credit.

In developing societies like Liberia, men and women take part in various monetary exercises, which have distinctive ramifications on the interest for credit. Social parts and standards direct the isolation of exercises by sexual orientation where ladies for the most part focus on homestead exercises and family errands while men embrace salary acquiring exercises in light of the fact that those are to a great extent what society recommends for them. Women who do not abide by traditional norms of gender specifications and roles are often blamed for the contradictory roles in

society; as a result they do not seek credit in the fear of being perceived as unable to take care of their families regardless their potential profiles in market oriented segments (Fletschner and Carter, 2008). This is exacerbated by the differential power relations amongst men and ladies where ladies have practically no control of advantages, for example, land, creatures and structures that could be utilized as security. As a consequence the probability of demanding credit correlated negatively with female household leadership (Nwaru, 2011). Single parent families, on the other hand, are considered disadvantaged thus in dire need for credit to boost their survival.

2.6.3 Institutional Issues in Credit Access

Credit access is often determined by the kind of financial institution and its lending policies (Yehuala, 2008). In the case where access to credit requires provision of assets for collateral and unfriendly repayment regulations, a group that does not fit the profile will not seek credit from these institutions and even if they do, they will be denied. According to Bigsten et al. (2003), factors that contribute to varying sources of credit in developing countries are lack of collateral, small and frequent credit transactions, asymmetric information, high risks and lender-borrower distance.

Hussien (2007) stated that small scale farmers tend to prefer informal credit institutions because they are less demanding in terms of flexibility in repayment schedule and loan application requirements, hence come in handy during emergencies. While comparing both types of credit institutions, Hussien (2007) concluded that the informal sector had advantages that favored the poor rural farming communities since proximity, freedom of deployment, lower transaction costs, quick credit and a comfortable atmosphere characterize the informal sector. Distance from rural areas to the location of formal lending institutions is a limiting factor for local farmers. Farming families from rural areas are discouraged to seek financial aid in form of distance from these

institutions because of the cost they will have to incur in order to get to their locations, which are mainly in the urban centers (Hussien, 2007).

Meeme (2013) sought to establish the factors influencing access of formal credit by small scale women tea farmers from Nduti tea factory in Kiambu County, Kenya. The findings showed that the small scale women tea farmers preferred institutions of their choice on grounds that; they received better customer care services, they got less interest loan, they got time extensions on repayments, they were trained on the usage of the formal credits, they received bonuses on early repayments while others said that the institutions were always free to handle their budgets.

Nyikal (1990) observed that the role of institutional credit in agricultural production is questionable. It is not clear that institutional credit serves its purpose in most of the cases where it is applied. According to Nyikal (2000), financing agricultural improvement programmes through credit would only benefit some cases and not all. Nyikal (2000) therefore recommended an existence of certain preconditions for a successful smallholder agriculture and agricultural credit. These preconditions include profitable investments opportunities in agriculture, access to technology, favorable market prices and easy access to market, and presence of a strong institution and policy framework.

Group membership is important for checking those who apply for loan and making sure that contracts can be enforced (Aryeetey, 2005).The group based small credit programs helps local small-scale farmers who are limited by the strict policies and lending regulations in formal institutions because, unlike the formal sector, cases of failure to repay earlier are not taken to court but are instead held against the borrowing group’s guarantor (Al-Mamun et al., 2014).

Agricultural extension services equip farmers with modern farming methods. These methods may require more capital to implement hence leading to farmers seeking credit or save on costs that would require the farmer to seek credit hence lowering the likelihood of seeking credit.

Farmers with bank account are more likely to have more credit data of those that do not. Access to credit data expands odds of access to credit. Phillips (2003) observed that in South Africa, entrance to formal financial services have a tendency to be restricted to salaried laborers, in this way barring poor people, unemployed, independently employed and casually utilized. This is ascribed to the way that most banks request a compensation slip as a pre-condition for record opening. Vaessen (2001), in an investigation of rustic credit openness in Northern Nicaragua demonstrate that at the institutional level, the objective gathering, the determination criteria of customers, the land territory of operation, and the components of money related items to be given to address manageability concerns, all which impact credit accessibility are imperative elements which loan specialists construct their choices in offering credit.

In summary, other studies broadly covered socioeconomic and institutional characteristics of farmers that have access to some. Despite the efforts that have been put in place to enhance access to credit by smallholder farmers, most of them still do not access the credit. This show that there could be underlying factors for this lack of access that are not precisely known in Liberia. Moreover, it is not yet known if those farmers that have access to credit are using it for agricultural purposes or not. Moreover, every research study has outlined different results in regards to examined aspects that determine accessibility of agricultural loans in the study area. This might be because of the way that reviewed zones are diverse in populace, environmental factors and have different regulatory institution. No study of such a type has been conducted, in Liberia, as far as

the best knowledge of the researcher is concerned. Therefore, there is a need to fill in the dearth of knowledge.

CHAPTER THREE

METHODOLOGY

3.1 Conceptual Framework

According to Sisay (2008), access to and demand of credit is affected by socioeconomic, institutional and environmental factors. Based on that, this study conceptualizes that access to credit by smallholder farmers in the study area were affected by socio-economic and institutional factors. The socio-economic characteristics that are hypothesized to affect access to credit by farmers include other sources of income, size of the household, age of the farmer, level of education, marital status of household head, occupation of household head and gender. These socio-economic characteristics may determine whether a smallholder farmer accessed and used credit or not. Institutional factors are agricultural extension services, bank account, and group membership.

Farmers may demand credit if there are adequate financial institutions. Improved technology, enabling policies on land security, access to markets and extension services also create incentives for farmers to demand credit in order to increase farm productivity. Taking into consideration the fact that farming households are resource poor in the study area, limited access to credit is assumed to cause vulnerability to various stuns, for example, plant or livestock infection, absence of reception of new farming innovations and food insecurity.

Then again, it is assumed that farming households who are able to access credit have the potential to adopt new and improved technology, hire labor, increase farm productivity, and reduce food insecurity and poverty. The hypothesized interactions of the explanatory variables with the dependent variable are presented in Figure 1.

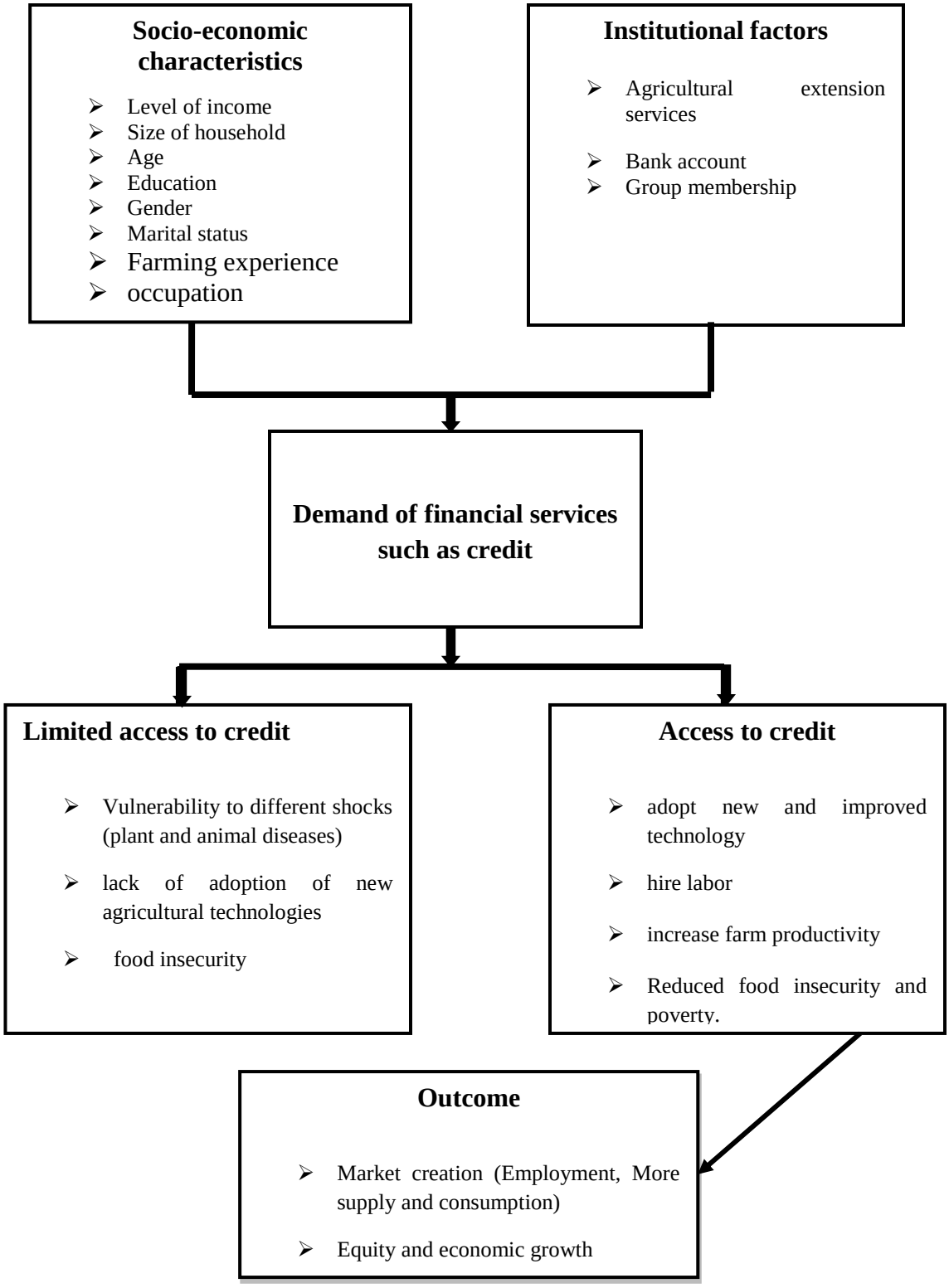

Figure 3.1: Adopted from New Institutional Economics Perspectives on African Agricultural Development (Dorward and Omamo, 2009)

3.2 Theoretical Framework

Households' decision making process can be explained by discrete choice models whose basis is rooted in random utility theory (McFadden, 1974). Random utility theory assumes that given a choice set *j* of access to credit for example, household *i* in decision making will choose a specific source that maximizes its utility after assigning to each alternative a perceived utility. If the household chooses one source over another, then the utility from the chosen source is greater than that from the unselected source. The utility that a household derives from a choice depends on its characteristics and those of the alternative choices (Rungie *et al.,* 2012). The random utility theory also postulates that utility is a latent construct that is in the mind of the household and cannot be observed directly or measured (McFadden, 1974). The utility assigned by the household *i* to alternative *j* is not known with certainty by an external observer. The random utility theory further assumes that this latent utility can be divided into two components: a systematic utility (V) and a random component (ε) (Vojacek and Pecakova, 2010). The random component (ε) arises both because of the randomness in the households' preferences and because the attributes do not cover all of their preferences.

The objective in discrete choice modelling is to analyze the households' choices. For instance in this study; the choice to access credit or not in relation to their socioeconomics and institutional characteristics. According to the random utility theory a household chooses among a set of *j* options. In this study there are two options that is to access credit or not. The dependent variable Y, a discrete variable represents the outcome of the decision. The goal of the analysis is to identify what variables and to what extent they influence the choice of one of the options above. The utility of the alternative *j* for a household *i* can be expressed as a linear combination of hypothesized factors represented by X_j with parameters β_j and the unobserved random factors ε_j (Vojacek and Pecakova, 2010).

The general utility model for a household *i* is expressed as follows according to Gujarati (2003):

$$U_{ij} = \beta_{ij} X_{ij} + \varepsilon_{ij} = V_{ij} + \varepsilon_{ij} \qquad (1)$$

j = alternative decisions. *j* takes the value of 1 when a household decides to access credit and 0 otherwise.

U_{ij} = utility that household *i* get from the choice of alternative *j* among the alternatives defined above

β_{ij} = unobserved parameters to be estimated

X_{ij} = socioeconomic and institutional characteristics

ε_{ij} = random error term

V_{ij} = systematic utility that household *i* gets from the choice of alternative *j* among the set defined above. The deterministic component of utility is a function of the unobservable attributes of the household choice and the specific characteristics of the household.

$$V_{ij} = \beta_{ij} X_{ij} \qquad (2)$$

According to Vojacek and Pecakova (2010) if the household chooses the alternative which brings the greatest utility then the probability (π_{ij}) of the choice of the alternative *j* over alternative *j'* is expressed as:

$$\pi_{ij} = P\left(V_{ij} + \varepsilon_{ij} > V_{ij'} + \varepsilon_{ij'}\right) = P\left(\varepsilon_{ij} - \varepsilon_{ij'} < V_{ij} - V_{ij'}\right) \qquad (3)$$

3.3 Empirical Model

'Access and use of credit' in this study, means receiving and spending credit received from a given loaning source. The reaction variable for this situation is dichotomous variable. The most utilized

way to deal with these assumed spurious variable relapse models are the Logit, Probit and Linear Probability (LPM) models (Gujarati, 2004). The LPM is basic however conflicting because of blemishes. A financial problem with the LPM is that it creates chances that lie between 0 and 1. This makes truncation of the chances at 0 or 1 necessary, hence creating very many observations for which the approximated chances are 0 or 1.

The Probit and the Logit are non-linear models both maximum likelihood method (ML), for estimations (Brooks, 2008). This is because both models overcome the limiting aspects of using LPM by transforming the regression model in a way that the outcome is minimized to (0, 1) interval. More so, Wooldridge (2002) observed that the latter models guarantee the logical limit to lie between 0 and 1. Because of these advantages, they are the models that are most frequently used (Liao, 1994; Maddala, 1989; Gujarati, 2004). The logit and probit models are very similar in various applicable ways, while the major difference between these models is the way they are distributed, as recorded in the Cumulative Distribution Function (CDF).Probit exhibits a standard distribution. Logit, on the other hand, shows a logistic distribution. The selection between the two types of regression is highly dependent on the assumptions taken in regards to the distribution. The logit model is generally preferred by researchers because of its comparative simplicity. According to Sirak and Rice (1994), the logit regression model is characterized by flexibility, convenience, and power, and is often preferred where the dependent variables are of a categorical nature or/and where it has a normal distribution. Various predictor variable in the objectives of the study are categorical, hence this study applied binary logit model to categorize the factors that affect credit services access among smallholder farmers in Suakoko District in Liberia.

3.4 Variables Hypothesized to influence access to credit in the study area

The table below describe the independent variables hypothesized to influence access to credit by smallholder farmers in Suakoko

Table 3.1: Variables hypothesized to influence credit access by smallholder farmers in Suakoko

Variables	Variables measurement unit	Expected sign
Dependent Variable		
Access to credit or not	1= access to credit, 0 = otherwise	
Independent Variables		
Age of the household head	Number of years	+or-
Education of the household head	Number of years spent at school	+or-
Marital status of the household head	1=yes; 0=otherwise	+
Occupation of Household head	1= employed, 0 = otherwise	+or-
Gender of household head	1 = male, 0 = otherwise	+ or –
Household size	total number in the household	+ or –
Bank account	1=yes; 0=otherwise	+
Agric Extension	1=yes; 0=otherwise	+ or –
Farming experience	Number of years as farmer	+ or –
Group membership	1=yes; 0=otherwise	+ or –
Other income of sources	1=yes; 0=otherwise	-

3.4.1 Dependent Variable

The dependent variable for the logit model is smallholder farmers' credit access. The example was partitioned into credit users and non-users in view of the question whether the family head access credit or not. Those who requested for credit and were not effective (rejected) and those who did not make any request were altogether considered non-users of credit while those respondents that requested and got credit were credit users. The dependent variable takes the value of "1" for users and "0" for non-users. The regression model was applied to process a few variables influencing access to credit by respondents.

3.4.2 Independent Variables used in the model

Age of Household Head (*AGE_HEAD)*: is a continuous variable as it is defined by the occurrence of continual aging by the heads of a family when measured in years. Farmers who are older have better social networks and associations to formal credit companies (Tang et al. 2010). An assumption is made that older farmers have more access to credit as well as more access to the use of credit from formal institutions.

Gender Household Head (***GEN_HEAD)***: is a dummy variable which takes up the value of "1" if the family head is a male and "0" if the family head is female. The women's lack of control over financial resources and the nature of their financial activities restrict their access to credit from formal institutions. For this information, an assumption that male family heads have more access to formal credit as compared to women due to factors they have like more exposure and mobility (Nwaru, 2011).

Household Head's Level of Education (*EDUC_HEAD)*: is grouped into literate and illiterate hence a dummy. Literate farmers tend to have more exposure hence are able to make an analysis of costs and benefits. When the household head is formally educated, there is a high probability of

obtaining credit. Therefore, farmers who can read and write have better chances at meeting lending policy requirements of formal credit institutions (Tang et al., 2010).

Household size (*HH_SIZ)*: This refers to the number of family members who are capable of working on the farms. The larger the size of the households, the more the size of the labor force hence no extra costs are incurred on labor creating less need to seek credit. The size of the households therefore impacts negatively on access to credit (Yehuala, 2008). If the household size is large then more credit may be needed to buy food besides investing in agriculture hence multiple outcomes is expected.

Other sources of income (*OTH_INC_SOUR)*: is an important determinant for the demand of credit. People with external sources of income rather than from solely farming, tend to take more credit since they have high income expectations in the future (Chen and Chiivakul, 2008).At low levels of salary, the family unit has constrained assets to spare and less interest for credit than at more elevated amount of wage. In some other situations, some low income people may borrow more to meet high expenditures while rich people may not be interested in borrowing a lot. Multiple outcomes are therefore expected.

Membership to a development group (*GROUP_MEM)*: Farmers in a development group can easily access credit as compared to those who are not. They are considered more organized and formal organizations can give them credit than when they are individual small holder farmers. A dummy variable takes a figure of '1' in case the farmer is participant in development groups and '0' if the farmer is not.

Number of years of farming experience (*FARM_EXP)*: A high farming experience means that the farmer is knowledgeable on what they are doing. This experience would inform farmer's

decision whether to take credit to expand his or her agricultural venture or not. This is a continuous variable.

Access to agricultural extension services (*AC_EXT_SER)*: Agricultural extension services equip farmers with modern farming methods. These methods may require more capital to implement hence leading to farmers seeking credit or save on costs that would require the farmer to seek credit hence lowering the likelihood of seeking credit. This is a dummy variable that assumes a value of '1' if the farmer has access to agricultural extension and '0' otherwise.

Possession of bank account (*BANK_ACCT)*: Farmers with bank account are more likely to have more credit information that those that do not. Access to credit information increases chances of access to credit. A dummy variable takes a figure of '1' in case the farmer has a bank account and '0' otherwise.

Marital status (MAR_STAT): Farmers who are married were more prone to have credit access because of respect than those who are not. A dummy variable takes a figure of '1' in case the farmer has a bank account and '0' otherwise.

Occupation Household Head (OCC_HEAD): having an off-farm income generating activities may negatively and positively affect access to credit. Trumbull (2010) asserts that farmers who have off-farm income are less likely to credit because they're able to support agriculture activities. On the other hand, Ololade R.A. &Olagunju F.I. (2013) found that farmers with off farm income are more likely to credit because they have means of repayment even if their productivity is low. A dummy variable takes a figure of '1' in case the farmer has a bank account and '0' otherwise.

3.5 Equation Estimation

The dependent variable takes the value of 1 or 0 depending on small scale farmers' use of credit or not. However the dependent variables were continuous and distinct. The Logit model was used for this study. The cumulative LPM was specified as shown below:

$$P_i = F(Z_i) = F(\alpha + \sum \beta_i X_i) = \frac{1}{1+e^{-z_i}} \quad \text{..... (4)}$$

Where, P_i is the probability of formal credit use by an individual or not;

e denotes the roots of original logarithms, which is an estimated equal to 2.718;

X_i stands for the i^{th}explanatory variables;

α and β_i are parameters to be approximated

The logistic model can be noted down with reference to the log of odds as well as the odd which makes one gets an understanding of the coefficients. The ratio of the odds show that the probability ratio (P_i) which a person could choose as an option to the probability ($1-P_i$) of which they would not choose

$(1–Pi)=Exp(-Zi)/ [1 + Exp(- Zi)]$ ..... (5)

Therefore,

$Pi/(1–Pi)=ExpZi$ ..... (6)

Taking the natural logarithm of equation (6)

$$Z_i = Ln\left(\frac{P_i}{1-P_i}\right) = \alpha + \beta_1 X_1 + \beta_2 X_1 + \ ... + \beta_m X_m \text{..... (7)}$$

Taking the disturbance term (u_i) into account, the logit model becomes

$Z_i = \alpha + \sum_{i=1}^{m} \beta_1 X_1 + u_i$ …… (8)

The dependent variable for access to credit or not is then stated as:

$$y = \begin{cases} 1 \; if \; household \; have \; access \; to \; credit \\ \\ 0 \; otherwise \end{cases}$$

In specific terms, the Logit model suggested is stated as:

Z_i (1/0) = β_0 + β_1*(AGE_HEAD),* + β_2*(EDUC_HEAD)* + β_3*(MARI_STAT)* + β_4*(OCC_HEAD)*+β_5*(GEN_HEAD)*+β_6*(HH_SIZ)*+β_7*(BANK_ACCT)*+β_8*(AC_EXT_SER)*+β_9*(FARM_EXP)*+β_{10}*(GROUP_MEM)*+β_{11}*(OTH_INC_SOUR)*+ε……*(9)*

3.6 Econometrics Model Diagnostic Test

Green (2008) observed that the information available for a researcher seldom adjust precisely to the hypothesis of a theoretical framework. In this way, before continuing with the estimation of the Logit regression, the utilization of economic theories, rationale of smallholder farmers and stress econometric acknowledgment in demonstrating has been basic for dissecting variables that influence access to credit. The procedure begun with testing the level of connection among descriptive factors (multicollinearity), their association with the arbitrary term (Heteroscedasticity) and the reasonability of determined model itself (wellness of the model).

3.6.1 Multicollinearity

At the point when there is an impeccable straight relationship among the indicators, the appraisals for a regression analysis cannot be exceptionally processed. The term collinearity suggests that two factors are close immaculate direct combinations of each other. At the point when more than

two factors are included it is frequently called Multicollinearity, in spite of the fact that the two terms are regularly utilized conversely. Multicollinearity is a test that assesses whether the independent variables are correlated. The essential concern is that as the level of Multicollinearity builds, the estimates of the regression analysis end up plainly shaky and the standard errors for the coefficients can get slightly bigger.

The Variance Inflation Factor (VIF) was utilized to assess the level of relationship among factors and to estimate how much the variability of a coefficient was expanded in light of direct reliance with different indicators. As a general guideline if any of the VIF are more noteworthy than 10 (more prominent than 5 when moderate) then there is a likelihood of an issue with Multicollinearity and is hurtful to the study (Newbert, 2008).

3.6.2 Hypothesis testing

Chi- square and t-test were used to test the first hypothesis. In addition, binary logit was used to measure the second hypothesis. These tests were always testing the null hypothesis, which stated that there was no significant difference between the expected and observed result. Testing of the null hypotheses was based on the fact that if the *p* value for the calculated Chi- square, t-test and Binary Logistic Regression was $p > 0.05$, then the null hypothesis was rejected.

3.7 Sampling and data collection

The sample size was determined using Yamane (1967) formula and following studies by:

$$n_0 = \frac{Z^2 pq}{d^2}$$

Where:

n_0 = the desired sample size when the population is more than 10 000

p = proportion in the target population

d = the level of statistical significance

q = 1 - p

Following Fisher *et al.,* (1983) p = 50 percent was used to calculate the sample size. It implies that the z-statistics is 1.96 and the desired level of statistical significance is 5 percent. The minimum sample size according to equation *(6)* was:

$$n_0 = \frac{1.96^2 * 0.5 * 0.5}{0.05^2} = 384$$

Because the population is less than 10 000, the sample size was reduced slightly. This is because a given sample size provides proportionately more information for a small population than for a large population. The sample size (no) can be adjusted using this equation:

$$n = \frac{\text{n°}}{1 + \frac{n°-1}{N}}$$

Where n is the sample size and N is the population. The sample size was:

$$\text{n} = \frac{384}{1 + 384\text{-}1/1000} = 278$$

Although the sample was 278, a sample of 105 was used because of bad roads, limited resources and time. The study identified the small holder farmers from agricultural extension officers in Suakoko District and respondents were selected using a simple random sampling. Questionnaires were used for primary data collection. The questionnaires were administered using a face-to-face interview approach because immediate follow up clarification is possible unlike the mail or telephone survey.

3.8 Study Area

Bong County is situated 200 kilometers (km) North East of Monrovia and its capital is Gbarnga City. Prior to the war, the County was growing economically but the civil war in Liberia destroyed the structures that supported its growth. Bong County is endowed with minerals, timber and arable land for agriculture. Bong County was important for this study because there is intensive smallholder farming, which tends to be the dominant economic activity, serving as a source of sustainable livelihood for the population. The Central Agricultural Research Institute (CARI) is also situated in Suakoko, Gbarnga in Bong County, creating an opportunity for farmers in this region to serve as the direct recipients of CARI research products. This therefore encourages farmers to undertake production and marketing of agricultural products in order to increase agricultural productivity and access to income for better living standards (GOL, 2008).

Figure 3.2: Map of the study area

Source: Google

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Test for Multicollinearity

As indicated in chapter 3, the Variance Inflation Factor (VIF) was used to test for multicollinearity between explanatory variables. The results are presented in table 4.1.

Table 4.1: Test for multicollinearity

Variables	Tolerance	VIF
Gender	.780	1.281
Education	.791	1.265
Marital status	.462	2.162
Occupation	.814	1.228
Other income sources	.671	1.489
Agricultural extension	.602	1.661
Group membership	.571	1.750
Bank account	.557	1.793
Age	.484	2.062
Household size	.789	1.267
Farming experience	.742	1.348

The findings in Table 4.1 show that there was no issue of multicollinearity. The variance inflation factors were below 5 inferring that the factors were not very connected. The total VIF divided by the number of VIFs is 1.632 which is also less than 5.

4.2 Descriptive Statistics

Results in table 4.1 show that majority of the respondents (55 percent) were male as compared to 45 percent who were female meaning that there were more male headed households than female. 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. This concept explains why majority of the respondents were male as well the rationale as to why the researcher was directed to male partners while initially approaching the female gender. The results also show that

29 percent of the respondents were aged 41-45 years while 24 percent were aged 46 years and above. Respondents aged 36-40 years and 31-35 years were 17 percent and 11 percent respectively. The results also show that respondents aged 26-30 years were 10 percent while only 9 percent of the respondents were aged 25 years and below. This illustrates that the older farmers in the study area are more than younger farmers. One of the reasons is that younger people migrate to the towns and cities leaving older people behind. In some cases, return migration of older adults from urban cities back to their rural homes is also a reality (Kinsella, 2001). The results show that 41 percent of the respondents had no education while 18 percent of the respondents had primary education, 31 percent had secondary education as their highest level of education while only 11 percent had higher education. The results shows that majority of the farmers had no or low level of education. Farmers' education is important because it would enable them to have up-to-date information on how to grow food efficiently and economically. Education would also improve their knowledge on new techniques and technology which can increase their level of productivity (Rosegrant & Cline, 2003). The results show that 43 percent of the respondents indicated that their households had 6-10 members while 27 percent indicated 11-15 members. Respondents who indicated that their households had 5 members and below were 19 percent while 6 percent indicated their households had 16-20 members. Results show that respondents who indicated that their households had 21-25 members, and above 26 members were 3 percent each.

Table 4. 1: Descriptive Statistics

Gender	Frequency	Percent
Male	55	55
Female	46	46
Total	101	100.0
Age		
≤25 years	9	9.0
26-30 years	10	10.0
31-35 years	11	11.0
'36-40 years'	17	17.0
'41-45 years'	29	29.0
≥46 years	24	24.0
Total	100	100.0
Education		
No education	41	40.6
Primary education	18	17.8
Secondary education	31	30.7
Higher education	11	10.9
Total	101	100.0
Household size		
5 and below	19	18.8
6-10	43	42.6
11-15	27	26.7
16-20	6	5.9
21-25	3	3.0
26 and above	3	3.0
Total	101	100.0

4.3 Access to Credit

The results in Figure 4.1 shows that 39 percent of farmers in the study area had credit access and 61 percent did not.

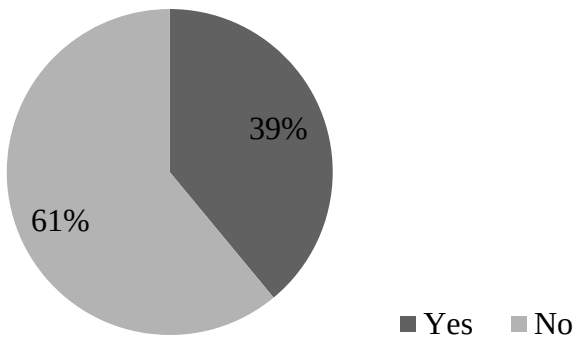

Figure 4.1: Percentage of respondents who accessed credit in Suakoko

4.3.1 Source of Credit

Results also show that all credit sources in Suakoko district were informal. It was revealed that 50 percent of the respondents borrowed from savings and credit cooperatives (SACCOs), while 14 percent received credit from farmers' society, 18 percent borrowed from friends and relatives and 18 percent from moneylenders as shown in Figure 4.2. The government does not give credit to smallholder farmers in Liberia. The only microfinance bank giving out credit to farmers in Suakoko has been closed since the war started and banks in Suakoko are yet to start giving out agricultural credit.

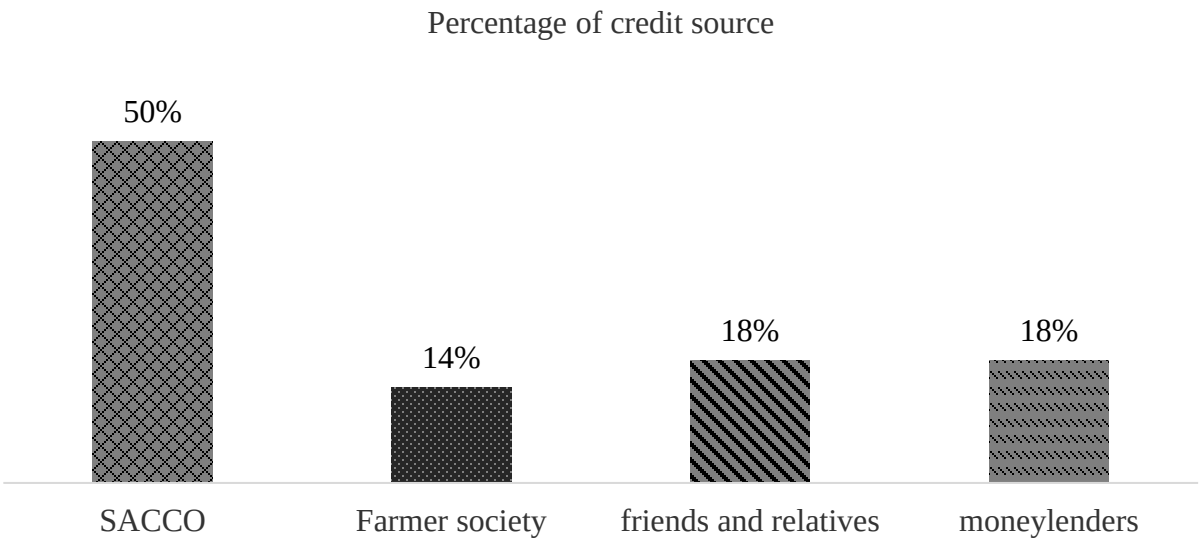

Figure 4.2: Percentage of credit sources in Suakoko

4.3.2 Type of Development Groups

Farmers indicated that they were members of development groups, the results in Figure 4.3 show that 16 percent were in women groups while 51 percent were in credit and savings groups. The results show that those in political group and land development groups were 6 percent and 25 percent respectively while those in water groups and merry go round were 2 percent. Majority of the farmers were in merry go round group because it is fun, they get to bond with other farmers and have high social security.

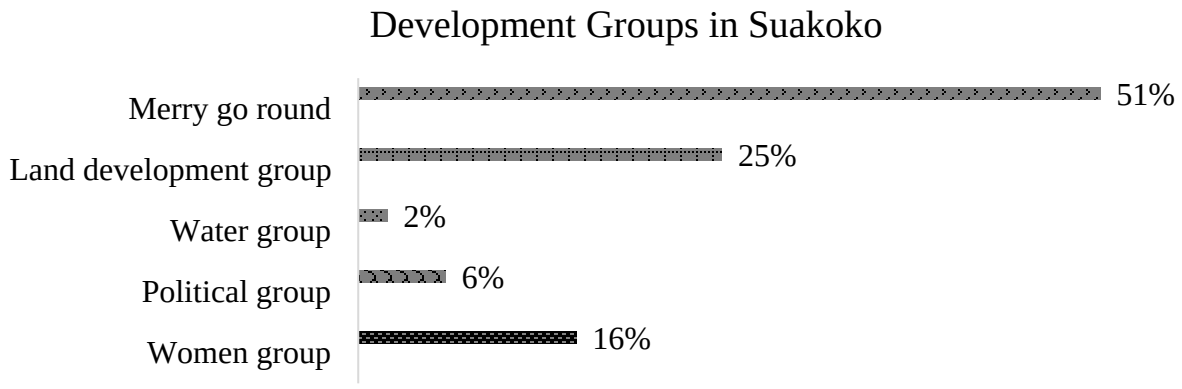

Figure 1.3: Types of Development Groups in Suakoko

4.3.3 Socio-economic and institutional characteristics of Small holder farmers

The characterization of socio-economic and institutional characteristics of users and non-users of credit in Suakoko District are shown below.

Table 4.1: Credit users and credit non-users based on categorical variables

Variables		Credit user		Non-users				Total	
		N	%	N	%	Chi Square	P-value	N	%
Gender	Male	27	66	39	61	0.257	.612	66	63
	Female	14	34	25	39			39	37
Education	No-education	18	44	48	75	10.37	.005	66	63
	primary	15	36	10	16			25	24
	Secondary	8	20	6	9			14	13
Marital status	Married	12	33	43	62	7.96	.004	55	55
	Not married	24	67	26	38			50	48
Occupation	Unemployed	16	40	56	86	24.52	.000	72	69
	Salaried-employed	14	35	5	8			19	18
	Self-employed	10	25	4	6			14	13
Other sources of income	No	13	32	48	75	19.2	.000	61	58
	Yes	28	68	16	25			44	42
Agricultural Extension	No	25	60	58	95	20.01	.000	83	81
	Yes	17	40	3	5			20	19
Group membership	No	6	15	31	48	12.51	.000	37	35
	Yes	35	85	33	52			68	65
Bank Account:	No	18	43	62	98	42.8	.000	80	76
	Yes	24	57	1	2			25	24

Table 4.2 show that out of small scale farmers who failed to access credit, 61 percent were male and 39 percent were female. Respondents who got access to credit comprised of 66 percent male and 34 percent female. The results further showed that there is a statistical indifference at 5 percent

in both categories of farming households with p-value of .612. This implies that there are more male headed households whether user or non-user of credit.

Out of the smallholder households who failed to get credit, the majority or 75 percent had no formal education while 16 percent had primary education and 9 percent had secondary education. Out of those who had access to credit, 44 percent had no formal education while 36 percent had primary education and 20 percent had secondary education. The results further show that there is a statistical difference at 5 percent in both categories of farming households with p-value of .005. This shows that farmers with higher level of education are more likely to access credit because they are likely to get salaried employment and also can use their skills to increase farm productivity. These results are in agreement with Tang et al. (2010) who found out that education is a factor that contributes to the increase in chances to seek credit from formal credit companies. The results also concur with Chen and Chivakul (2008) who found out that at primary and secondary levels, education has positive effect on access to credit. The findings however contradicts with those by Tien et al. (2010) who found out that many of the poor family providers worked in sector of the unskilled where educational qualifications does not influence demand for credit.

The results further show that there is a significant statistical difference in the marital status of farmers who had access to credit as shown by p-value of .004. Married farmers dominated non-users of credit by 62 percent while those who were not married were 38 percent. As of farmers who were able to access credit, 33 percent were married and 67 percent were not married. This could be attributed to decision making in the households where demand for credit has to be deliberated and agreed upon by married couples.

In terms of occupation, results show that most farmers who qualified for credit are those who have other employment hence receive salaries and constituted 35 percent while those in self-employment comprised of 25 percent. Farmers who were unemployed and qualified for credit were 40 percent. As for farmers who did not get credit, they constituted 8 percent of the salaried employed, 6 percent of those who were self-employed, and 86 percent of the farmers were unemployed. There is a statistically significant difference between the two categories at 5 percent with p-value of .000. The findings are similar to those by Kiplimo (2011) who found that smallholder farmers with steady occupation can easily repay loans even when their agricultural income is low since they get salaries.

Other sources of income for the household that had credit access and those that did not have access were statistically different as illustrated by p-value of .000. Among credit users 32 percent did not have other sources of income while 68 percent had other sources of income. On the other hand, among the non-users of credit, 75 percent did not have other sources of income while 25 percent had other sources of income. The results suggest that farmers who had other sources of income were more likely to access credit due to the fact that they are not depending on farm productivity alone to repay loan.

Out of the households who did not access credit, 5 percent managed to access extension services while 95 percent did not. For households who accessed credit, 40 percent accessed agricultural extension services while 60 percent did not. This demonstrates that users and non-users of credit were statistically different in terms of extension services as shown by a P-value of .000 at 5 percent significant level. This means that farmers who accessed extension services were more likely to access credit.

The results further show, out of the smallholder farmers who failed to access credit, 52 percent were members of various groups while 48 percent were not members of any group. On the other hand, 85 percent of farmers who had access to credit have group membership while those who were non-group members constituted a total of 15 percent. Results on group membership for farmers show that there is a statistical difference between those who had access to credit and those who did not as shown by p-value of .000 at 5 percent significant level.

Furthermore, farmers who failed to access credit were distributed as: 98 percent did not have a bank account and 2 percent had a bank account. While, farmers who were able to access credit, 43 percent did not have a bank account and 57 percent had a bank account. Moreover, results indicate that those who had bank accounts were more likely to access credit because having a bank account serves as guarantee to lenders.

Table 4.2: Summary statistics of continuous variables

Variable	Credit user				Non-user				p-value
	Min	Max	Mean	Std	Min	Max	Mean	Std	
Average HH size	5	19	10.25	3.67	5	17	9.70	3.054	.0130
Average Age	28	76	44.56	8.62	24	64	38.82	8.485	.009**
Land size	0.5	6	2.04	1.46	0.25	4	1.56	1.122	.019
Annual farm income	12,200	47,000	26,000	11623	10,800	35,500	21,000	7595.76	.005**
Years of Extension	1	3	1.55	.688	1	1	1.00	.000	.017
Years of farm exp	5	30	15.82	6.406	1	26	13.33	6.532	.030

According to the findings in Table 4.3 the households that had access to credit have an average of 10.25 persons and those who did not have credit had an average of 9.7 people. There was an insignificant mean difference for both categories. The findings of the study are not aligned to those of Marge (2000) who concluded that larger households are prone are more likely credit.

In terms of age, there was a slight difference between the two categories of those who had access to credit and those who did not since their age difference was 44.56 and 38.82 years respectively. The mean on the other hand, was different at 5 percent. In those households that accessed credit, the oldest farmer was 76 years old while the youngest was 28 years old. For those who did not access credit, the age range was 24 to 64 years. These findings are in agreement with those by Tang et al. (2010), who concluded that the likelihood of old farmers to seek credit was higher as opposed to younger farmers due to their expanded social networks and social capital. Nwaru (2010) however argued that the difference in age was insignificant for access of credit.

The findings show that the land size difference ranged from 0.5 acres to 6 acres for farmers who accessed credit and 0.25 to 4 acres for those who did not. The mean difference for the land size was insignificant, as the average size of land for farmers who accessed credit was 2.04 acres and 1.56 acres for those who did not. All farm land in the study area was customarily owned. This study contradicts Diagne's (2006) study on determinants of household access to and participation in formal and informal credit markets. Diagne (2006) found a significant difference in land size and also found that those who used credit were able to cultivate large land as opposed to those who did not. This implies as size of cultivated land increase the operational expense for labour, input and technology use increase, which require cash capital, it leads to high demand for credit.

All the farmers who participated in this study had access to a certain amount of income which was different in both categories of farmers. The mean yearly farm income level was Ld (Liberian

Dollar) 26,000 with the minimum of Ld 12, 000 and a maximum of Ld 47,000. On the other hand, families who could not access credit had an average yearly income of Ld 21, 000 with a minimum of Ld10,800 and a maximum of Ld35, 500.

As for the years of receiving agricultural extension services, the results show that smallholder farming households who accessed credit had a mean of 1.55 years of extension services. Smallholder households who did not get credit had a minimum and a maximum of 1 year each of extension services. This has the meaning that an agricultural extension service is significantly low.

In terms of years of farming experience, farming households who accessed credit had a mean of 15.82 years. Those who failed to access credit had a mean of 13.33 years farming experience. This implies that smallholder farmers who accessed credit had more years of farming experience.

Hypothesis 1: Results from discrete and continuous variables (education, marital status, occupation, other sources of income, bank account, age, and annual farm income) allow rejection of the null hypothesis that there is no noteworthy distinction in financial and institutional attributes of users and non-users of credit in Suakoko District, Liberia. This is indicated by significant P-values of education, marital status, occupation, other sources of income, bank account, age, and annual farm income.

4.4 Factors affecting Small-holder farmers access to Credit

A logit regression was performed to ascertain the influence of marital status, occupation, gender, age, education, household size, bank account, agricultural extension services, farming experience, group membership, and other sources of income on the likelihood that participants have access to credit. The results show that logit regression model was statistically significant, $\chi 2\ (11) = 34.603$,

p< .001. The Nagelkerke R square was .557 which indicates 55 percent of the explanatory variables are explained by the model. Table 4.4 summarizes the results.

Table 4.3: Binary Logit Regression of Variables

Variable description	Marginal effect	Std. Error	P. Value
Household head age (years)	-.159	.307	.606
Household head education (years)	-5.093	5.067	.010**
Marital status of household head (1= yes, 0=otherwise)	-1.733	3.977	.190
Occupation (1=employed, 0=otherwise)	-19.005	8.140	.000**
Gender (1=male, 0=otherwise)	4.962	7.305	.461
Household size (number)	-679	.976	.404
Bank account (1=yes, 0=otherwise)	2.846	1.253	.023**
Agricultural extension (1=yes, 0=otherwise)	4.763	6.396	.554
Farming experience (years)	.123	.251	.239
Group membership (1=yes, 0=otherwise)	-.499	4.379	.012**
Other income sources (1=yes, 0=otherwise)	2.471	1.217	.042**
Constant	-6.087	2.804	.030

The results in Table 4.4 indicate that, the marginal affects for bank accounts and other sources of income highlight an important positive impact on access to credit in Suakoko district. However, education, occupation and group membership are important yet have negative effect on access to credit.

For a unit increase in education level of household head, the probability of accessing credit reduces by 5 percent. This shows that lower level of education increased the likelihood of accessing credit while a high level of education lessened the likelihood of accessing credit. The study conform to that of Chen and Chivakul (2008) which found that education have a positive effect on credit access at lower levels of education but negative effect at higher level of education. Tang et al. (2010) and Kiplimo (2013) all found education to be significant but these studies also found that education have a positive impact on access to credit unlike the current study. The findings of this study contradicts those of Tien et al. (2010) who found that most of the poor household heads in Vietnam work in unskilled sectors, where education does not influence demand for credit.

While occupation was quite significant at 5 percent in explaining access to credit in the study area, it had a negative effect. An increase in a unit of occupation of the smallholder farmer reduces the chance of accessing credit by 19 percent. This implies that the more farmers are salaried or employed or self-employed, the less they will demand credit in the study area. This is because they will use their salaries or other sources of income to purchase farm equipment and hire labor for increased farm productivity. This study conforms to the findings of Laffont and N'Guessian, (2000) who opined that most credit sources require generally shorter advance reimbursement periods. Hence, smallholder farmers with salaries from employment or a business tend to profit more from lenders.

For a unit increase in ownership of bank accounts and having other sources of income increase the chances of accessing credit from several credit sources in the study area by 2 percent. These findings concur with those of Marge (2003) who stated that a flexible change on income is good for consumption hence makes a positive impact on the access to credit. According to Kumar (2005), income is an important determinant of accessing credit although there is a declining

relationship between family income and taking credit since families that generate income often do not take credit. On the other hand, Leavy and Poulton (2007) concluded that most of the small scale farmers generate income from other sources which are unrelated to their farms. The outcome reveals that what increased the chances of access to credit was the farmers' availability of other sources of income rather than farming. This is because those households that would get more income from other sources are able to possess assets that would act as collateral when seeking loans. These results were aligned to those by Ojo (2003) who had drawn the conclusion that farmers ought to increase the sources of their income so as to increase their chances of qualifying for credit uptake.

Farmers who are members of groups are more likely to access credit. This might be due to the fact that these groups offered security in terms of collateral, high social capital and even give out credit to its members. However, group membership was found to negatively affect access to credit in the study area. Being part of a group in the study area may cause a farmer not to sort credit from other sources.

Hypothesis 2: Results from the binary logit regression allow for rejection of the null hypothesis that socio-economic characteristics and institutional factors do not significantly influence smallholder farmers' access to credit in Suakoko District, Liberia. This is indicated by p-values of less than 0.05 of education, occupation, other sources of income, bank account and group membership.

4.5 Use of Credit

The farmers were asked to indicate how they used the credit they received. Majority of the farmers (58 percent) indicated that they used their credit for non-agricultural purposes while 42 percent indicated that they used it for agricultural purposes. These results are shown in figure 4.4.

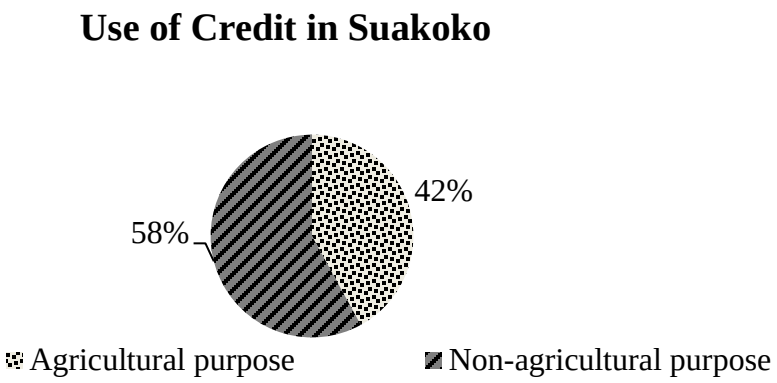

Figure 4.4: Use of Credit

The results in figure 4.4 show that most of smallholder farmers who accessed credit did not use it for agricultural purposes. This negates and diminishes the efforts to enhance agricultural credit especially in rural areas. The diversion of agricultural credit could be attributed to high levels of poverty and lack of social security making smallholder farmers spend loan meant for agriculture on other needs such as household needs, health and school fees.

4.4.1 Agricultural Use

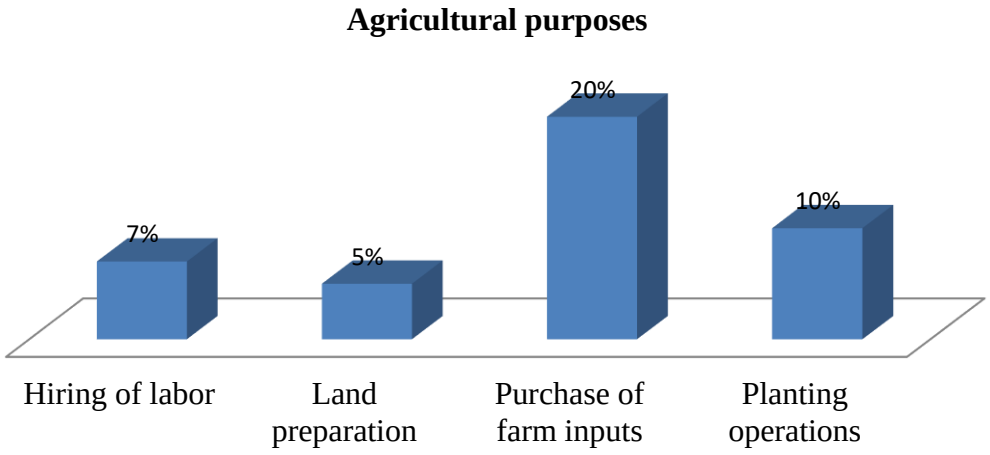

Figure 4.5: Agricultural use of Credit

The results show that 20 percent of smallholder farmers who use credit for agricultural purposes use it to purchase farm inputs while 10 percent indicated that they used it for planting operations, 7 percent to hire labor and 5 percent for land preparation. The findings show that bulk of the credit used for agricultural purposes is spent on farm inputs and farm operations. When such credit is diverted, smallholder farmers are likely to use poor farm inputs and fail to prepare their land properly hence affecting their agricultural production.

4.4.2 Non-agricultural use

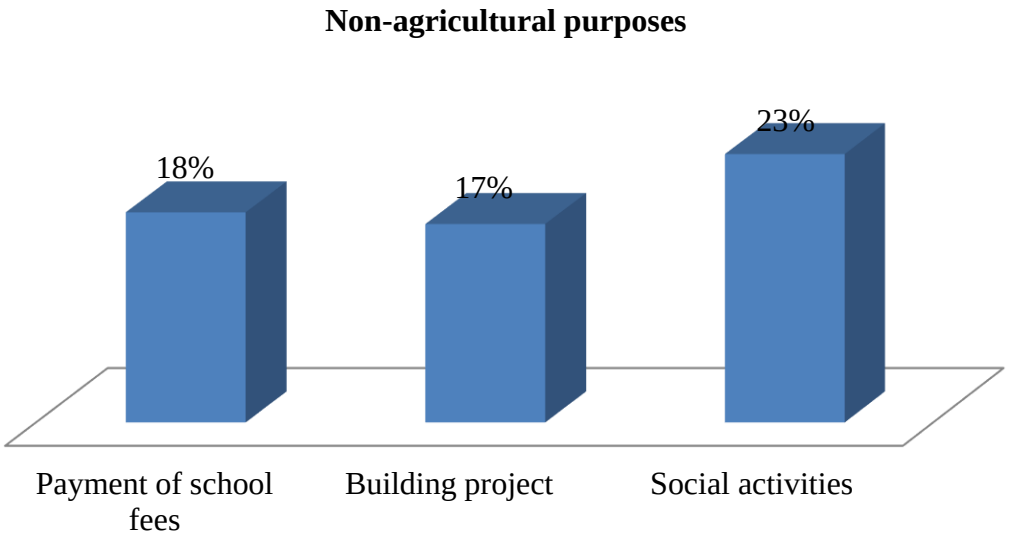

Figure 4.6: Non-agricultural use of Credit

Findings from the study show that of those smallholder farmers who did not use credit for agricultural purposes, 23 percent used it for social activities like marriage ceremony and child naming, while 18 percent used for payment of school fees and 17 percent used for building projects. These results could mean that many smallholder farmers have not taken agriculture as a business and in terms of priorities it is ranked lower than social activities to warrant diversion of credit to cater for social activities.

Hypothesis 3: Results from the analysis allows rejection of hypothesis 3 that Farmers in Suakoko District, Liberia do not use credit services for agricultural activities.

4.6 Summary of Findings

This study established that there is low agricultural credit access in Suakoko District, Liberia (39 percent). Half of credit is provided by SACCOs while friends and relatives, farmers' societies and informal money lenders also play a part. Many farmers were found to have formed merry-go-round and land development groups. Socio-economic characteristics found to determine access to agricultural credit in Suakoko District, Liberia were education, marital status, and other sources of income, agricultural extension, occupation and having a bank account. There was a high diversion rate (58 percent) of agricultural credit among the few farmers who accessed credit in Suakoko District, Liberia.

CHAPTER 5: SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

5.1 Summary

Small holder farmers in Liberia who have the potential to feed the nation are actually the poorest and most food insecure in the population. They are principally subsistence farmers with limited outlets to market surplus production or to participate in the cash economy. As a group, they are geographically dispersed and therefore are often marginalized. The smallholder farmers in Liberia do not have access to value chain processes such as processing machines, driers, storage and other post-harvest facilities. Liberia's agricultural sector is presently almost entirely made up of traditional smallholder farms and household gardens, and consumers in the country have long been accustomed to depending on imported rice and other staples, in spite of the fact that these crops can be readily grown in Liberia.

The government of Liberia and other stakeholders has attributed the decline in agricultural productivity to the cost of local financing services and poor credit access. In an effort to solve the problem of credit inaccessibility, farmers form loan groups, in which they contribute and lend funds to each other as loans. The amount of funds they collect is, however, low due to restrictions in terms of membership and geographical location. They therefore resort to seeking financial help from financial institutions. The overall objective of this study was to identify and analyze the determinants of smallholder farmers' access to and use of credit in Suakoko District, Bong County, Liberia. The specific objectives were to characterize socio-economic characteristics of smallholder farmers, analyze factors affecting smallholder farmers' access to credit services and to assess the determinants of how smallholder farmers decide to use credit.

To achieve these objectives, simple random sampling was applied to select 105 respondents. Primary data were collected using questionnaires. Quantitative data were analyzed using descriptive statistics such as mean, percentages, and frequency distribution. The t-test and Chi-square were applied to determine the percentage and mean difference between those who used credit and those who did not. A binary logit model was applied to analyze determinants of smallholder farmers' access to and use of credit.

5.2 Conclusion

Results of the study indicate that 39 percent of farmers in the review zone had admittance to credit and 61 percent did not have entry to credit. This shows smallholder farmers in the study area may not be adequately financed or have adequate collateral given the low level of credit access. The study result shows that all credit sources in the study area were semi-formal. Results also established that 50 percent of the respondents borrowed from savings and credit cooperation (SACCO) while 14 percent received credit from farmers' society, 18 percent borrowed from friends and relatives and 18 percent from moneylenders. According to information gathered, Government does not give credit to smallholder farmers in Liberia. The only microfinance bank giving out credit to farmers in Suakoko has been closed since the war and banks in Suakoko have not started giving out agricultural credit.

The level of education, age, marital status, land size, gender, occupation, family size, total farm income, farming experience, extension service, bank account and other sources of income are variables which were presumed to have an impact on access to credit. The binary logit estimates indicated that education level, occupation, other sources of income, bank account and group membership significantly influence credit access in area of study.

Unlike previous studies, this study went further into knowing if credit received were being used for agricultural purposes or not. Results indicated that 42 percent of credit received were used for non-agricultural purposes like payment of school fees, building projects and social activities like child naming and marriage ceremony. For those farmers that used credit for agricultural purposes, it included hiring of labor, land preparation, purchase of farm inputs and planting operations.

5.2 Recommendations

It is necessary for policy makers to improve education systems so that the poor are equipped with the skill and knowledge to effectively access credit at less cost and use them wisely in order to generate more income. The more educated the household head, the more they will tend to use modern technologies and also credit which will bring about increase productivity which is really needed in Liberia. SAPEC and other policy makers need to ensure older farmers get adult literacy while younger farmers get formal education. Being educated will also help farmers to not only restrict themselves to farming but find other jobs to get other income which will enable them easily access credit.

Other source of income and occupation were found to have influence on access to credit by smallholder farmers in Suakoko. Farmers who engage in off-farm activities earn more income and are able to get credit. Hence, other than focusing on increasing agricultural production only, the government should also emphasize on policies aimed at increasing opportunities for off-farm activities. This can be enhanced through creation of jobs and motivating self-employment.

Farmers who are members of development groups were found to be more likely to access credit. This might be because of the fact that those farmers have group security in terms of collateral and high social capital that would increase access to credit use. In other words, encouraging farmers to

form part of development groups would improve the availability of credit to the farmers. Hence, the government should promote development groups geared towards providing collateral for members in Suakoko district.

In Suakoko, banking institutions don't give out credit to farmers. The government of Liberia especially SAPEC need to bridge that gap. Having bank account has a significant influence on credit access in area of study. To build the quantity of farmers that access credit, there should be policies put into place to help farmers get credit from these banking institutions. Government should serve as guarantor for farmers. When farmers in the study area are able to access formal credit, it will help greatly in increasing productivity. Credits received from informal sources are not sufficient to buy farming tools and fertilizers.

The government and other stakeholders need to conduct awareness among farmers on the importance of using agricultural credit for its intended purpose. Extension officers need to be efficient in making sure these farmers are using credit for agricultural activities so as to increase productivity.

5.3 Suggestion for Further Research

The research did not take into account risk attributes of smallholder farmers. A farmer who is risk adverse may decide not to get credit because of fear. The researcher will like other research to focus on risk attributes of farmers and also credit institutions that lend to smallholder farmers.

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APPENDICES

Appendix I: Survey Questionnaire

Introduction

This survey is being conducted by Lorbah C. Roberts, a student from the Department of Agricultural Economics at the University of Nairobi in Kenya. The purpose of the survey is to understand factors that affect smallholder farmers' access to credit in order to give recommendations to the Ministry of Agriculture to improve access to credit in Suakoko. Respondents for this survey shall be smallholder farmers in Suakoko and will involve 150 respondents who will be randomly interviewed.

Your responses and opinions will be treated with utmost confidentiality and will only be used for policy making. If you have any question please contact Miss Lorbah C. Roberts at 0888619517
The survey interview will require about 45 minutes to complete.
I now request your permission to begin the interview.

Kindly answer the questions as appropriate by ticking in the spaces provided.

Section A: Socio-Economic Characteristics

1. Gender of respondent.

   Male [ ] Female [ ]

2. What is your age bracket?
   1 = ≤25 years
   2 = 26-30 years
   3 = 31-35 years
   4 = 36-40 years
   5 = 41-45 years
   6 = ≥46 years

   Exact age in years …….
3. What is your highest level of education completed?

   1 = No formal education, 2 = Primary education, 3 = Secondary education, 4 = Higher education

4. Marital status: 1 = Single, 2 = Married, 3 = Divorced, 4 = Widowed

5. Kindly indicate the number of members of your households based on gender?

Category	**Male**	**Female**
Adults (15 years and above)		
Children (below 14 years)		

6. Please register land holding of the household in the last 12 months

No.	Type of Crop grown	Size in Acres	Tenure Status	Income from Sale
1.	Rice			
2.	Cassava			
3.	Rubber			
4.	Vegetables			
5.	Plantain			
6.	Oil Palm			

Note: Land tenure status can be, 1 = Freehold, 2 = Customary, 3 = Leasehold

7. Livestock holding of the household during the last 12 months

No.	Species of Livestock	Number Owned	Number Sold during the year	Income from Sale	Purpose used from Income
1.	Ducks				
2.	Cow				
3.	Calf				
4.	Guinea Fowls				
5.	Goats				
6.	Sheep				

7.	Chicken				
8.	Pigs				
9.	Others(Specify)				

Note: purpose of the income from sold animals can be,

1. Purchase of farm inputs 2. Hiring labor 3.Household expenses in food, clothing and other supplies 4.For loan repayment 5. Purchase of live animals 6. Others specify

8. What is your Main occupation and Income received monthly(Ld)

	Occupation	Proportion of Income
1	Salaried Employment	
2	Business man/woman	
3	Self-employed off farm	
4	Farmer	

Note: Proportion of income can be, 1 = Less than 10,000Ld, 2 = 11,000-20,000Ld, 3 = 20,000-30,000Ld, 4 = above 30,000

9. Other than farming, do you have other sources of income?

   Yes [ ] No [ ]

10. If yes, what are the other income sources?

    1 = Teacher, 2 = Security, 3 = Driver 4 = Social worker, 5 = Construction worker, 6 = Mechanic

11. How many years of farming experience do you have?

    _____

Section B: Institutional Factors

12. Do you get agricultural extension services?

    Yes [ ] No [ ]

13. If yes, how long have you been getting the service?
    1 = less than one year, 2 = 2-4 years 3 = 5-7 years 4= more than 7 years

14. Who provides the extension service?
    1 = Government, 2 = Development Agents, 3 = NGOs

15. Did you participate in agricultural extension package program in the last 12 months?
    Yes [ ] No [ ]

16. If yes, what was the type of the package you used?
    1= Crop production 2 = Animal rearing 3 = Animal fattening 4 = small-scale irrigation 5 = others specify_____

17. How did they provide you the technology? 1 = In cash 2 = On credit

18. If on credit, who was the source?

    1 = Government/ Parastatal Bank 2= Commercial Bank 3=Microfinance Institution 4 = Savings and Credit Cooperatives 5 = Farmers Society 6= Friends and Relatives,7=MoneyLender8=Others(Specify)_____

19. Do you have a bank account?

    Yes [ ] No [ ]

20. Are you a member of a development group in this area?
    Yes [ ] No [ ]

21. If yes, what type of development group are you in?

Development Group	**Please Tick**

Women group	
Political group	
Water group	
Land development group	
Merry go round (Susu)	

22. Which type of farming are you engaged in?

    1 = Subsistence 2 = commercial 3= Both

23. If commercial, where do you market your produce?

    1 = farmers' cooperative 2 = weekly market 3 = monthly market

24. How far is your farm to the market in km?

    1= below 2km 2 = 3-5km 3 = 6-10km 4 = above 10km

25. Do you get market information?

    Yes [ ] No [ ]

26. If yes, from which source?

    1 = Radio, 2 = Internet, 3 = Farmers cooperatives, 4 = Extension Agents, 5 = other farmers, 6 = phone, 7 = others (Specify) _____

27. In your view, is borrowing from credit sources risky?
    Yes [ ] No [ ]

28. Did you give-up to take loans from credit sources due to fear of risk in the last 12 months? Yes [ ] No [ ]

Section C: Access to Credit

29. Have you applied for credit in the last 12 months?

Yes [ ] No [ ]

30. If yes, was the credit received?

Yes [ ] No [ ]

31. Please specify source.

1 = Government/ Parastatal Bank

2 = Commercial Bank

3 = Microfinance Institution

4 = Savings and Credit Cooperatives

5 = Farmers Society

6 = Friends and Relatives

7 = Money Lender

8 = Others (Specify) _____

32. In what form was the loan received in?

1 = Cash

2 = Farm inputs

3 = Voucher

4 = any other (specify) ……

33. Did you receive the same amount of credit applied for?

Yes [ ] No [ ]

34. If No, what percent did you receive?

Quarter (25%) [ ]

Half (50%) [ ]

Three quarters (75%) [ ]

35. Why did you not receive the full amount?

1 = lack of adequate collateral

2 = small farm size

3 = poor credit record

4 = other (specify) _____

36. Have you started repaying the credit?

Yes [ ] No [ ]

37. If No, why?

_____

_____

38. If yes, proportion of credit repaid.

1 = None

2 = Less than 25 percent

3 = 25 to 50 percent

4 = 50 to 75 percent

5= More than 75 percent

39. What is the repayment period and Interest rate for each source of credit?

		Repayment Period					**Interest Rate**			
	Credit Sources	**1**= Less than 3	**2** = 4 to 8	**3** = 9 month	**4** = 1-5	**5** =More than	**1**=Less than 5%	**2**= 6%-	**3**=11% -15%	**4** =Mor

		month s	month s	s to 1 year	year s	5 years		10 %		e than 15%
i	Government/ Parastatal Bank									
ii	Commercial Bank									
iii	Microfinance Institution									
iv	Savings and credit cooperatives									
v	Farmers Society									
vi	Friends/Relatives									
vii	Money Lenders									

40. Do you have access to information on who is giving out credit?

    Yes [ ] No [ ]

41. If yes, please tick which source?

    1 = Radio

    2 = Internet

    3 = Phone

    4 = Extension Agents

    5 = other farmers

    6 = farmers cooperative

    6 = Others (Specify) _____

42. When seeking credit, do you consider whether credit amount on offer match with the agricultural activities you intend to undertake?

    Yes [ ] No [ ]

43. If you were to go for an agricultural loan, what type of loan would you go for?

Long term loan (more than 10 years) [ ]

Intermediate term loan (18 months-10years) [ ]

Short term loan (less than 18 months) [ ]

44. Please indicate by ticking which credit source require collateral for credit.

	Credit Sources	**1=Require Collateral**	**0=Doesn't require collateral**
i	Government/ Parastatal Bank		
ii	Commercial Bank		
iii	Microfinance Institution		
iv	Savings and credit cooperatives		
v	Farmers Society		
vi	Friends/Relatives		
vii	Money Lenders		

45. What type of collateral

	Credit Sources	**1=Household Assets**	**2=Machinery**	**3=Crop/livestock**	**4=Land**	**5=Promissory Note**	**6=Others (Specify)**
i	Government/ Parastatal Bank						
ii	Commercial Bank						
iii	Microfinance Institution						
iv	Savings and credit cooperatives						
v	Farmers Society						
vi	Friends/Relatives						
vii	Money Lenders						

Section D: Use of Credit

46. Please indicate which agricultural and non-agricultural activity you used credit for and proportion of credit use for each activity in percentage.

Agricultural Activities	**Proportion of Credit use in percentage**	**Non-Agricultural Activities**	**Proportion of credit use in percentage**
Purchasing of Inputs		Marriage ceremony	
Hiring of Labor		Child Naming	
Acquisition of Equipment		Burial Ceremony	
Acquisition of Land		Payment of school fees	
Transporting produce to market		Medical Bills	
		Graduation Fees	
		Building Project	
		Purchasing of Food	
		Business purposes	
		Traditional ceremony	

Note: Proportion of credit use can be, 1 = Less than 10%, 2 = 10%-25%, 3 = 25%-50%, 4 = 50%-75%, 5 = more than 75%.