DETERMINANTS OF MICROCREDIT ACCESS AND F FARMERS' INVESTMENT IN SMALL SCALE PERI-URBAN AGRICULTURE: A CASE STUDY OF DZORWULU VEGETABLE FARMERS

BY

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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF AGRICULTURAL ADMINISTRATION

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DECLARATION

I, Daniel Adams, the author of this thesis, hereby solemnly declares that apart from the references made to other research reports in which I have duly acknowledged, the work presented in this thesis "**DETERMINANTS OF MICROCREDIT ACCESS AND FARMERS' INVESTMENT IN SMALL SCALE PERI-URBAN AGRICULTURE: A CASE STUDY OF DZORWULU VEGETABLE FARMERS**" was entirely done with my effort and work undertaken in the Department of Agricultural Economics and Agribusiness, University of Ghana, (Legon), under the supervision of Dr. Akwasi Mensah-Bonsu and Dr. Edward Ebo Onumah. I hereby declare that this work has never been presented either in whole or in part for another degree in this University or elsewhere.

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DEDICATION

I am able to complete this thesis successfully through the abundant grace, mercies, favor and the protection of God the Father, God the Son and God the Holy Spirit unto whom I sincerely dedicate this thesis.

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ABSTRACT

Farmers in West Africa, especially Ghana, consider different variables prior to investment as far as farming systems are concerned. The study recognizes the vital role played by Microfinance Institutions operating in the Greater Accra Region and for that matter, the Accra Metropolitan Assembly (AMA) in the improvement of farmers' livelihoods through microcredit availability and accessibility. The purpose of this research is to examine Dzorwulu vegetable farmers' level of access to microcredit and its influence on farmers' investments decisions. A random sampling technique was used to select 152 vegetable farmers of North and South Dzorwulu. Descriptive statistics was used to describe the level of microcredit access. A probit model was used to estimate the factors influencing access to microcredit by vegetable farmers. The OLS model was employed to estimate the effect of microcredit on farmers' farm investment amount. Kendall's ranking technique was used to rank the constraints faced by vegetable farmers in microcredit accessibility. Tables, percentages and frequencies were employed to describe the socio-economic characteristics of the respondents. The probit model regression results showed that gender, source of credit, awareness and land ownership had significant influence on access to credit. The ordinary least squares regression findings also showed that awareness, access to credit and savings had a significant influence on farmers' farm investment. The Kendall's ranking technique showed that collateral requirement, late disbursement and association membership were the three most pressing constraints militating against the vegetable farmers to access to credit.

It was also found out that, access to credit was not gender-biased. The study revealed that out of 152 respondents, 122 of them constituting 80% were aware of microcredit availability to farmers. Out of 122 farmers' credit application, 80 farmers constituting 65% had access. 68 farmers constituting 85% of total credit access, invested part of their credits in their farming activities. The study recommends early and timely disbursement of collateral free microcredit loans by microfinance institutions to farmers so that they can use it effectively and efficiently during the farming seasons to bring favorable results.

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AMA	Accra Metropolitan Assembly
AsCAs	Accumulating Savings and Credit associations
BOG	Bank of Ghana
CAD	Centre for Action and Development
CBs	Commercial Banks
CIDA	Canadian International Development Agency
CIMMYT	International Maize and Wheat Improvement Centre
CLIP	Community Life Improvement Programme
CRS	Catholic Relief Services
CUAs	Credit Union Association
DANIDA	Danish International Development Agency
ENOWID	Enhancing Opportunities for Women in Development
FAO	Food and Agriculture Organization
GCs	Government Credits
GDP	Gross Domestic Product
GIZ	German International Zusammenarbeit
GOG	Government of Ghana
GSS	Ghana Statistical Service
IFAD	International Funds for Agriculture Development
ILO	International Labour Organization
IMF	International Monetary Fund
ISSER	Institute of Statistical, Social and Economic Research
JICA	Japan International Cooperation Agency
MASLOC	Microfinance and Small Loans Centre
MCGF	Microcredit Guarantee Facility

MDG	Millennium Development Goal
MFIs	Microfinance Institutions
MOFA	Ministry of Food and Agriculture
NBFIs	Non-Banking Financial Institutions
NGOs	Non-governmental Organizations
OLS	Ordinary Least Square
PAMSCAD	Programme of Action to Mitigate the Social Costs of Adjustment
PNDC	Provisional National Defense Council
RCBs	Rural and Community Banks
RoSCAs	Rotational Savings and Credit Associations
S&Ls	Savings and Loans Companies
SCIMP	Small Credit Input supply Market Project
SGER	State of the Ghanaian Economy
SMEs	Small and Medium-scaled Enterprises
SPAs	Social Performance Assessments
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WDR	World Development Report

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Agriculture accounts for a lot of land use in most of the developing countries; hence it is probably the single most powerful influence on environmental quality. Agriculture remains the principal livelihood of the rural poor (Malik, 1999).

Agriculture has been the backbone of the Ghanaian economy. Agriculture is very vital to society. It helps to alleviate poverty, provide food security and economic growth. It is the backbone of many African economies especially Ghana (World Development Report, 2008). It is estimated that about 86% of the poor and the rural folks depend on agriculture for their livelihoods and also provide jobs close to` 1.3 billion smallholder farmers (Tita, 2009). According to World Bank Report (2008), agriculture in developing countries contribute an average of 29% to Gross Domestic Product (GDP) and also employs about 65% of the economically active labour force of the population, from production to marketing of various agricultural produce (World Bank, 2008).

According to Ogundeji (1998), agricultural business like any other business activity can be financed through microcredit personal savings, hire purchase and cooperatives societies, private placements, partnership and friends or family assistance. Awotodunbo (2008) also stated that microcredit serves as an important source of funds to farmers which can be used in the production process. The success or otherwise of every farming system to a large extent, depends on getting a good farmland, workforce, capital, managerial acumen and dexterity.

In Ghana, more than 80 percent of all agricultural production is done on land holdings of less than one hectare (Brown et al., 2000). The sector also contributed 22 percent of the country's total GDP from the periods of 1996 – 2002, contributed 30.4 percent to GDP in 2006, 29.1 percent in 2007, 31.0 percent in 2008, 31.8 percent in 2009 and 29.9 percent in 2010. This makes the agricultural sector very essential and dominant in Ghana's economy, accounting for over 50 percent of foreign exchange earnings. In Ghana the agricultural sector is made up of 5 sub-sectors such as Livestock (5 percent), Fisheries (7 percent), Forestry (11 percent), Cocoa (14 percent) and Crops other than Cocoa (63 percent of agricultural GDP). The Ministry of Food and Agriculture, (MOFA) is responsible for the management of crops, fisheries and the livestock subsectors which accounts for about 75 percent of the total GDP from Agriculture whilst smallholder farmers who apply basic technological knowledge in production account for about 80 percent of the total agricultural production (Ennin, 2001). In spite of improvements made in the agricultural sector over the years, the sector's performance has been dwindling due to the lack of funds. Much remains to be done to raise credit access which is a vital component in the modernization of agricultural activities and increase in productivity.

Microcredit is a widespread and celebrated tool of contemporary international economic capital, and training with which to establish their own small businesses on the condition however of repaying the initial investment to be recycled in new investment to poor people. Microcredit consists in lending funds to the poor in order that they use them to start or improve their businesses. Since most agricultural lands in Ghana are subject to severe droughts and degradation which frequently leads to food deficits, it is appropriate to examine the needs of the rural and urban poor farmers to ameliorate their lives. Out of

a total land of 23,853,900 hectares, 13,628,179 hectares representing about 57.13 percent of the total land area in Ghana is suitable for agricultural production. The total area under cultivation in 1994 was 5,300,000 hectares representing 38.89 percent whiles the total area under irrigation was 10,000 hectares but 1,100,000 hectares are for areas under inland waters (Annan, 2011). In view of this fertilizer application is one of the most methods farmers usually used to improve crop yields during drought and unfavorable conditions. For example, farm yard with various crops require an average of 6-7 kg of fertilizer per hectare. There is the need therefore to rapidly transform the agricultural sector in Ghana since Ghana's population is expected to increase from 24million in 2008 to about 36 million by 2020. This growth will automatically have an effect on the availability of lands for the purposes of agricultural production. As such, some attempts have been made to shift the focus from the agricultural sector to non-farming ones in the hope of providing innovative solutions to farmers who have exhausted environmental resources. Although much attention has been paid to the physical causes of food shortages, it is appropriate nonetheless to examine the root cause of the decreasing trend in soil fertility in the context of its availability and sustainability to ensure that there is an effective and efficient remedy in place. The success of an improved agricultural practice in increasing productivity and revenue is dependent on the usage of modern technological methods and implements adopted by a farmer. Farmers in Ghana and for that matter, West Africa consider many different variables prior to investing in the farming system.

It is pertinent to note that the study depends largely on the availability and the accessibility of microcredit to invest in farming and non-farming activities thereby ensuring favorable results. This may serve as an alternate solution to combatting low

agricultural production and to assist in raising farmers' incomes. Such an improvement may help to procure agricultural inputs and sometimes, in very poor agricultural seasons, to purchase food as well. Hailu (1991) and Garba (1991) identified capital constraints as an additional major reason for low implementation of improved farming practices in Niger. Njeru and Njoka (1998) stated that due to patriarchal social authority structures, women even though receive substantial family support to start their businesses but these supports become very limited due to family responsibilities. It must be noted that when capital is lacking, investment in agricultural inputs will also be minimal since farmers will not like to risk the implementation of a new technology. Mohsin (2015) emphasized the fact that a Microcredit Guarantee Facility (MCGF) should be established and fully adopted and operated by various countries in the developing world in order to sustain the poor and the vulnerable in the society.

The Former UN Secretary General, Hon. Kofi Annan, also emphasized during the launch of the International Year of Microcredit (2005), that "Sustainable access to microcredit help to alleviate poverty by generating income, creating jobs, allowing children to go to school, enabling families to obtain healthcare and empowering people to make the choices that best serve their needs" (United Nations, 2005; Asiama, 2007). Constraints in capital attainment have been alleviated in other parts of sub-Saharan Africa through the implementation and introduction of micro-finance programmes for non-farming enterprises. In recent years, most countries across the globe are promoting MFIs not only for rural development intervention but also as a rural development remedy. Reardon *et al*. (1995) posits that credit programmes assisting non-farming enterprises can contribute indirectly to investment in the farming system. Microfinance is the attempt to improve

access to small deposits and small loans for poor households left unattended by various banks. Ghana's agriculture remains predominantly small-scaled with majority of the farmers in food crop production, in mainly for domestic consumption (MOFA, 2007). Urban agriculture requires financial and political legitimacy to increase its contribution to the feeding of cities. Although there is increased political support for urban agriculture in many parts of the world, financial support for urban growers remains quite limited. Most urban growers lack access to credit to develop their activities using limited resources (UAM, 2011). Credit is one of the components of financial inputs considered fundamental to all production units (Dicken, 2007).

Micro-credit was first initiated in Bangladesh by Professor Mohammed Yunus in the late 1970's and has since gained significant developments over the past thirty years especially in developing countries. Microcredit is a provision of small collateral-free loans to poor people in order to foster income generation and poverty reduction through self-employment (Chowdhury, 2009). According to Zeller (2010), microfinance institutions' (MFI) database form eighty-five developing countries in 2010 identifies that there are 688 institutions from Indonesia and 790 institutions worldwide are supported by international organizations which constitute about 54 million members, 44 million voluntary and compulsory savings, and 23 million borrowers.

Microcredit is generally a term which refers to the provision of a broad range of services including deposits, loans, payment services, money transfer and insurance to the poor and low-income households and their micro-enterprises (Khawari, 2004). Microcredit schemes extend small loans and other financial services to people who are considered traditionally not bankable to enable them generate income and spur entrepreneurship.

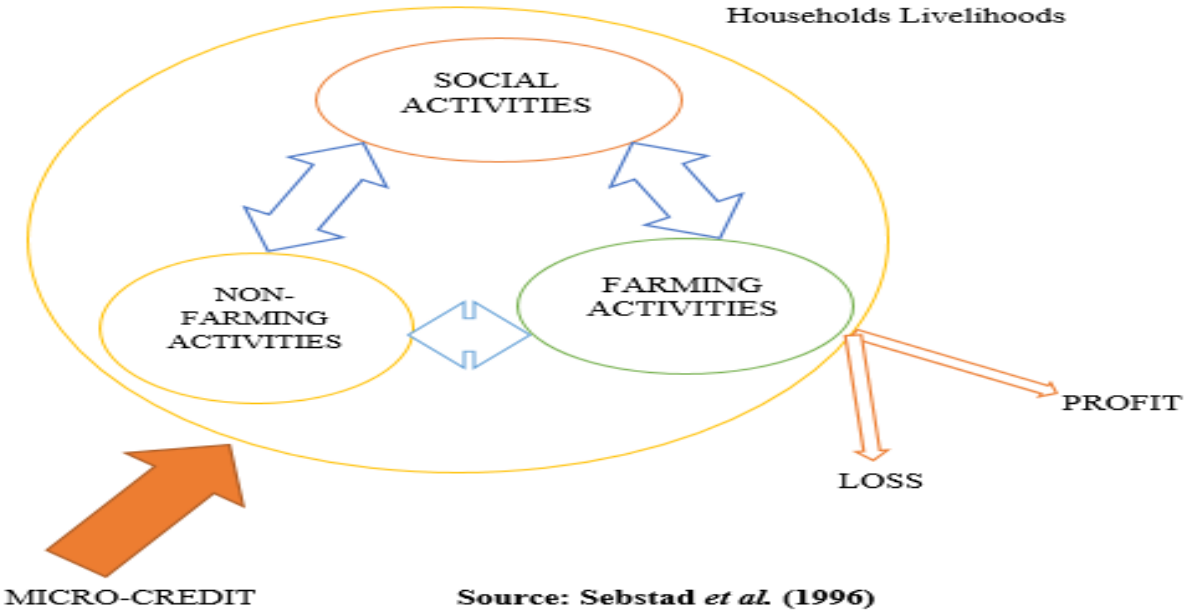
Since access to credit depends largely on the willingness and ability to repay at a price which covers the total loan by a lender, it has become very difficult for these small scale farmers to access credit due to the fact that, most of them do not have the required collaterals to signal their guarantee credit worthiness of repaying the loans. Credit sustainability and other financial services to farmers and the rural inhabitants in the developing countries has resulted to be a tedious task which has become a major development challenge in most of the African countries (Onumah and De-Graft Acquah, 2011). Klein *et al*. (1999) emphasized that since there are about 1.2 billion poor people living in the rural areas, there is the likelihood of a high incidence of rural poverty which can be reduced with an improvement in the services of rural financial institutions. Even though, several reforms and new financial institutions have emerged, there is still a substantial gap persisting in many financial markets (Onumah and De-Graft Acquah, 2011). Since microcredit forms the bedrock of farms' success, it is worthwhile that a comprehensive study is undertaken to unearth the bottlenecks involved in the process and to suggest antidotes to stem the weakness.

The United Nations, recognizing the role Microcredit can play in achieving the Millennium Development Goals (MDG), declared 2005 as the year of microcredit, whose primary aim was to help reduce global poverty by the year 2015 (United Nations, 2005). The UN Resolution that established the year also called on various countries to "highlight and give enhanced recognition to the role of microcredit in the eradication of poverty, its contribution to social development and its positive impact on the lives of living in poverty" (United Nations Resolution, 2000).

In spite of the significant contribution of agriculture to the Ghanaian economy, credit facilities available are very meager. The total volume of microcredit available to farmers in various banking institutions keeps on declining as compared to that of the non-agricultural sector (Anang *et al.,* 2015). The level of credit availability and accessibility in the sub-region is not sufficient considering many potential farmers who are producing on a large scale and are financed by informal lenders and small microfinance entities (Furness, 1980). Even though some non-governmental organizations (NGO's) have undertaken innovations and various experiments to ensure increased productivity in the sector, there are a lot of inefficiencies existing in their operations.

In order to examine investment in the farming system effectively, it is essential to take into account all the social components as well as economic factors. In doing so, the amount of resource recycling taking place within farming system becomes apparent. On the other hand, credit may also bring about a significant change in the farming system by providing scarce working capital for important non-farm or farm investment. Additionally, credit may disrupt the delicate balance of resources which exists in a farmer's household by causing the household to incur debt which they may struggle to repay even when their assets are sold.

Figure 1.1 Effects of Microcredit on Farmers' Livelihood Activities



According to Sebstad *et al*. (1996), there exists a complex interaction within a poor Peri-urban farming system, between the farm and non-farm income and the social obligations. Credit plays a crucial role within this system. Although microcredit programs may target a non-farm income, a farmer may diversify the utility of that credit in order to maximize the potential profits. Micro-credit programmes both formal and informal, have sometimes contributed to rural incomes by providing working capital for small, non-farm enterprises (Ashe *et. al*., 1992). There have been many successes and failures in microcredit programs. This research investigates how the Peri-urban farmer uses microcredit and how it directly or indirectly impacts on the farming systems. It is therefore clear that the success of every agricultural production unit and for that matter vegetable production, hinges immensely on its access to microcredit hence a study on this topic is imperative.

1.2 Problem Statement

There exit a complex convergence of endemic political, social and economic policies which contributes to lack of incentives for farmers to undertake various experiments in new technologies. The willingness and the ability to take risk of undertaken an effective experiments with new technologies depend largely on the farmers' assurance of sufficient amount of food and income for their livelihoods. In view of this many farmers often diversify their income in order to achieve food security and income assurance. Microcredit has been proven to provide a wedge, in that it assists in the facilitation of income diversification by financing a non-farm enterprise (Reardon *et al*., 1994). Microcredit has been considered over the years to be one of the most effective and efficient strategy in reducing global poverty. Microcredit promotes economic growth since the loans given are supposed to be used to undertake various investments in farming and non-farming activities which yield additional profits. According to Simanowitz and Brody (2004), "Microcredit is a key strategy in reaching the MDGs; eliminating extreme poverty and hunger; and in building global financial systems that meet the needs of the poorest people". Additionally, "Littlefield, Morduch and Hashemi (2003), also suggest that microcredit is a critical contextual factor with strong impact on the achievements of the MDGs. Resource poor farmers are only capable of making agricultural farming investment if their household's livelihood is secured. Credit can play that role of securing a household's livelihood and increasing productivity and agricultural investments. Poor management of natural land resources have been shown to stem from the persistence of poverty. Lack of credit facilities for farming activities such as, fishing, livestock, ancillary services and infrastructure have been a drag on productivity, growth and income

in the agricultural sector (GoG Budget statement, 2008). The lack of secure titles to land has prevented Peri-urban farmers from switching from one investment type to others that have better returns (FAO, 2012). The field of agriculture has programmes that make it necessary for all farmers to use the various inputs including improved seeds and cuttings, fertilizer, herbicides, fungicides and the required farm tools. The outcome of the level of input available and accessed determines the total output. In a poor region, the use of modern inputs would depend upon the availability of credit (Sarap, 1986). Credit availability and accessibility to farmers will enable them purchase the needed farm inputs to ensure increased productivity. It is however argued that farmers applying for microcredit are mostly discouraged by complex procedures and high interest rates (FAO, 2012). Since most of the small scale vegetable farmers are poor and cannot provide any collateral in order to receive large amounts of loan facilities from the banks, saving enough so as to enhance their productivity becomes unrealistic. In this regard, it must be noted that microcredit cannot be avoided if the aim is to improve investment alternatives and increase productivity by farmers. Thus, the effect of microcredit on small scale Peri-urban agriculture is a key issue which needs to be properly addressed and needs more enforcement. The importance of investment to the economic growth of Ghana cannot be overemphasized. Investment contributes to employment creation, growth of the economy, poverty alleviation etc. The constraints envisaged in accessing microcredit include, collateral requirement, late disbursement, association member, distant collection points, high interest rate, guarantor requirement, inadequate credit size and the repayment period of the loans. The main challenging factor is the inability of most farmers to source microcredit from MFIs due to lack of collaterals and late loans disbursement. The

problem then is to investigate the determinants of microcredit access and farmers' investment amount in small scale Peri-urban agriculture being organized in Dzorwulu in the Ayawaso-West Sub-Metro of the Accra Metropolitan Assembly in the Greater-Accra Region. This research attempts to evaluate investment behaviors of the resource poor farmers in the Peri-urban vegetable growing areas in North and South Dzorwulu of the Accra Metropolitan Assembly. This research seeks to examine farmers who have access to microcredit through the MFIs and those who have not and determine the investment amount between these farmers and the constraints associated with credit accessibility in the sub-metro. In Ghana, low productivity associated with inadequate financial services, inadequate use of recommended technologies and poor distribution of agricultural inputs (NDPC, 2005 and ISSER, 2010) have been revealed as having had a greater positive impact on gardeners' earnings than age, years of schooling, gender, house-hold size or number of agricultural extension visits (FAO, 2012). These therefore lead to the following relevant research questions:

1) What factors influence farmers' access to microcredit?
2) What are the effects of microcredit access on farmers' investment decisions?
3) What are the major constraints in accessing microcredit by farmers?

1.3 Objective of the Study

The main objective of the study is to assess the role microcredit play in Peri-urban vegetable farmers' investment decisions in the Greater Accra Region. The specific objectives are therefore;

1. To analyze the factors that influence farmers' access to credit.
2. To estimate the effects of microcredit access on farmers' investments.

3. To identify and rank constraints to microcredit by small scale vegetable farmers in Dzorwulu.

1.4 Relevance of the Study

Many approaches have been used to encourage farmers' implementation of new farming technologies, but very few have been successful. If the Government of Ghana and NGO's want to ensure adequate vegetable production in the Peri-urban areas of the country, farmers may have to be encouraged and assisted to implement various improved farming technologies, microcredit may therefore be an indirect answer to this end.

This research focuses on the effects of microcredit access on investment which is relevant for various stakeholders to understand when examining the role played by microcredit in farmers' investments on farming and non-farming activities. If for example, there is a significant difference between farmers who receive microcredit and adoption of improved farming practices and farmers who do not receive microcredit, we can hypothesize that microcredit has a significant role to play in lowering a farmer's aversion to risk and raising their willingness to adopt an improved farming technology. Microcredit is undeniably an important source of ensuring increase in agricultural production. This study therefore seeks to determine the extent to which microcredits have improved the vegetable production of Peri-urban farming in Accra and to ascertain some of the challenges associated with accessing microcredit which are relevant for policy changes. The study will unveil lapses and inadequacies in accessing microcredit loans and provide corrective measures to ensure favorable results.

Finally, the study will add to existing literature concerning microcredits accessibility and farmers' investment behavior in small scale Peri-urban agriculture in Ghana.

1.5 Organization of the Thesis

This study is organized into five chapters including the introduction which consists of the background of the study, statement of problem, objective of the study, research questions, and relevance of the study. Chapter two reviews pertinent literature relevant to the present study. Chapter three presents the methodology of the study. Chapter four presents the results and discussion of the study. Chapter five covers the conclusion and the recommendations of this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of existing literature in relation to microcredit and farmers' decision making processes. The chapter begins with a description of the structure of agricultural credit system in Ghana, microcredit needs of various farmers, types of agricultural loans, history of MFIs in Ghana, benefits and importance of microcredit loans to farmers, sources of microcredit loans, the relationship between microcredit and investment, approaches of microcredit schemes, a discussion of empirical studies on factors that affect access to microcredit and finally concludes with investments in recommended or improved agricultural technologies.

In conclusion, the random sampling technique as used by Khalid (2003) and Wagar (2008) in their studies was used in sampling the community to select the respondents. The binary probit regression model was used to assess the factors influencing credit access by the vegetable farmers. The OLS model was employed to access the effects of microcredit on farmers' investment amount whiles the Kendall's coefficient of concordance was used to calculate the agreement level among the farmer's ranking of constraints.

2.2 Microcredit and Microfinance

In literature, the terms microcredit and microfinance are often used interchangeably. As such, it is vital to outline the difference between them to alleviate the confusing between them.

According to Sinha (1998), microcredit refers to the provision of small loans, whiles microfinance become appropriate where the Micro Finance Institutions (MFIs) and NGOs supplement the loans with other financial services such as savings insurance. According to Okiocredit (2005), microcredit is a component of microfinance which involves the provision of credit to the poor whereas microfinance deals with the additional non-credit financial service including savings, insurance, pensions and payment services. According to Reed (2011), microcredit is the extension of small loans and other financial services to poor households whiles Murdoch (2000) stated that Microfinance is a type of financial service (in the form of credit) which is provided to poor people which is to be repaid in small installment against the total amount loaned to them. But Otero (1999) defined microfinance as a financial service provided to low income groups. Furness (1975), defined microcredit as a means by which a commodity is acquired with the promise of paying later. But Homby (1974) defined credit as the sum of money advanced or loaned by a bank. Besides Ennin (2001), also regarded credit as the actual exercise of the power to borrow which is represented by an actual loan. Micro-credit fills the gap in credit delivery that are not addressed by other credit providers, and in its most ambitious form, it attempts to speed up economic development that is aimed at reducing rural poverty (Hulme and Mosley, 1996). One of the most important contributing factors in farmers' production is credit in combination with labour, technology and land. Formal and informal microcredit made available and accessible to farmers by Agricultural Development Banks, Microfinance Institutions (MFIs) and Rural Financial Institutions (RFI's) can improve the adoption of required modern agricultural

technologies, productivity patterns, and make it possible for farmers to undertake various farm and non-farm investment activities to ensure favorable results (UNCDF, 2004).

In Ghana, microcredit provision and where the financial institution is situated normally work together. It is very efficient and effective if the financial institution providing the credit is situated close to the locality of the farmers than a place far away. This normally ensures easier transaction of business, of which farmers are the target. Rehman (2009) concluded that due to the lack of proximity of MFIs to customers, the sector is facing credit constraints. This credit constraints lead to limited access to credit facilities which hinder farmers' productivity and growth (Odoemenem and Obinne, 2010). But several empirical studies have shown that microcredit have benefited small scale farmers in many ways in the past (Okojie *et al.,* 2010). Research conducted by ZHU *et al*. (2007) came out with the conclusion that both formal and informal credit facilities contribute to the farmers' incomes which are partly used to increase his/her farm productivity as well as other investment decisions.

2.3 Microcredit Needs by Various Farmers

Farmers have unlimited needs for microcredit. Majority of farmers in the Peri-urban areas in Accra need microcredit to invest in their farming and non-farming activities in order to generate enough revenues to enable them expand their farming operations, improve their standards, pay for labour employed, improved and increase their farm produce and to purchases modern farm input or technology. Mushtag, (2008), emphasized in her study on the role of microcredit in poverty alleviation that farmers need microcredit loans when they find themselves in the following under listed situations; when there is

1. No employment opportunities,
2. Inadequate food supply,
3. No education for their children,
4. Poor housing conditions,
5. No medicine for disease treatment,
6. No clear water and hygienic environment,
7. No savings for future use.

2.4 Structure of Agricultural Credit System in Ghana

The structure of Agriculture credit in Ghana is undertaken by numerous formal or informal financial institutions as shown in appendix 2.

The Bank of Ghana, taking the lead role and controls the movements of money within the economy and serves as a lender of last resort to all the financial and non-financial institutions.

The Commercial Banks, Investment Banks, the non-financial institution and non-governmental organizations also provide the necessary credit requirements to Agricultural Development Bank, Apex Bank, Rural Financial Institutions, Input suppliers, Microfinance institutions, credit unions and farmer cooperative societies for which they in turn strengthen the formal, semiformal and informal institutions who deal directly with the farmers by providing loan facilities upon request. According to Arthur *et al*. (2003), the financial system is a system that allows the transfer of money between savers, investors and borrowers. This is to enable them expand their operations effectively and efficiently and to also ensure increased profit margins.

2.5 Types of Agricultural Loans

Available loans to farmers can be provided for purposes and lending terms. The most

There are 5 common types of Agricultural loans according to Heney (2005), training manual on loans. These include:

1) Short-term loans (2) Intermediate Term Loan (3) Seasonal Loans for Working Capital (4) Harvest Loans and (5) Long-term loans

1. **Short Term Loan**: The short term loan has a maturity period that usually matches the length of the agricultural production cycle (e.g. 3 to 18 months). It is also known as line-of –credit financing. It is a revolving line of credit.
2. **Intermediate Term Loan**: This is used in financing depreciable assets like, machinery, equipment, breeding livestock etc. It is also used for the recapitalization of the farm business. Maturity is usually 18 months to 10 years
3. **Seasonal Loans for Working Capital**: These loans are used to purchase agricultural production inputs such as seeds, fertilizer and tools, as well as financing operating costs such as wages for hired farm labor. It is very necessary that these loans fit in with the seasonal nature of agricultural production.
4. **Harvest Loans**: These are short-term loans used to hire labour or machinery at harvest periods. They may also be used to finance other marketing costs.
5. **Long-Term Loan (Real Estate Mortgages or Contract Financing):** This is used to acquire, construct and develop land and buildings. The period of amortization is over 10 years.

2.6 History of Microfinance Institutions in Ghana

Officially, the genesis of microcredit was indicated in Ghana in the 1930s, where the colonial government enacted legislation for the formation of cooperative societies among rural farmer to serve as a source of credit to peasant farmers in the rural areas where poverty was prevalent. During that period, subsidized rural credit programs was the main provision being undertaken by the microfinance institutions supported by government as well as donors in Ghana (Robinson, 2001).

In Ghana, microcredit and microfinance became prominence in the 1970s Robinson (2001). The first rural bank was established in the 1970's. The history of microfinance became a turning point in the 1980s when it was generally accepted that Microfinance Institutions could provide small loans and saving services on a large scale to borrowers targeting the poor. Hence the term microcredit was established in development practice. Micro credit was first initiated in Bangladesh by Professor Mohammed Yunus in the late 1970's and has since gained significant development over the past 30 years especially in developing countries.

It is a proven fact that the first credit union in Ghana was established by the Catholic Missionaries in Northern Ghana in 1955 (IFAD, 2000). Here Credit Unions (CUs) were formed in all the Parishes in Ghana where the White Fathers stayed. The effectiveness of the CUs in solving poverty problems in the parishes of the white fathers resulted to the establishment of about 400 CUs by the churches in the villages and towns spread over the country. There were about 132 rural banks established in Ghana in 1998 but most of them have been closed down for various reasons. (IFAD, 2000). The credit unions operated by

encouraging its customers to save more in order to qualify for microcredit access with a minimum interest rates.

Currently, Credit Unions make available provision of microcredit facility for investment in the SMEs to address poverty. Additionally, there are some informal credit institutions which also support SMEs such as "Susu" Clubs, Rotational Savings and Credit Associations (RosCAs), Accumulating Savings and Credit Associations (AsCAs) as well as money lenders.

Recently, in addressing poverty in rural areas of the country, government has introduced legislative instruments supporting microfinance. This law was introduced in 1991, Act 328 that introduced Non-Banking Financial Institutions(NBFIs) as well as Savings and Loans companies, Mutual Fund Companies Venture Capital etc. Some donors and non-profit organizations which provided in 2003 funds for microcredit to SMEs and low income households. The donors which supported the effort include ILO, IFAD, DANIDA, CIDA, FAO, USAID, GIZ, UNDP, JICA, ENOWID, CAD, CLIP, "SINAPI ABA" Trust Care International, CRS, SASAKAWA Global 2000 and others. However, Meyer (2011), microfinance has benefited immensely from external support and contributions from international agencies to further develop the agricultural sector. The provision of financial services by various stakeholders to benefit farmers was mainly executed by way of subsidized rural credit programmes. These often resulted in high loan defaults, high losses and the inability to reach poor rural households. According to Claessens (2005), high costs being incurred transactions and outreach expansion by the Microfinance Institutions (MFIs) make it unprofitable in serving the rural poor. But it must be noted that this microfinance concept is not a new thing in Ghana.

According to Asiama (2007), microfinance scheme such as "Susu" which is normally practiced in Ghana originated from Nigeria. This spread across various communities in Ghana in the early 20th century. The microfinance sector has thrived and evolved into its current effective state through the efforts of various financial policies and programmes undertaken by various governments since independence. These include the following:

a) Provision of subsidized credits in the 1950s;

b) Esta0blishment of Agricultural Development Bank in 1965 to provide financial aid to various sub sectors of agriculture;

c) Establishment of Rural and Community Banks (RCBs) and the introduction of regulations such as Commercial Banks (CBs) being required to set aside 20% of the total portfolio to promote lending to agriculture and small scale industries in the 1970s and the early 1980s;

d) Shifting from a restrictive financial sector regime to a liberalized regime in 1986;

e) Promulgation of PNDC Law 328 in 1991 to allow the establishment of different categories of non-bank financial institution as well as savings and loans companies and credit unions.

According to Robinson (2001), the 1980's represented an improvement with regards to microfinance's effective operations which provided small loans and saving services on a large scale especially by Gramean Bank. Since microcredit experienced an accelerated growth in the number of microfinance institutions created and operated, Robinson (2001) considered the 1990's as "the microfinance decade" and since then, microfinance has turned into a big industry. In the early 1990's, there has been a significant drive by some microfinance activists to transform many of the more successful microfinance NGO's

into regulated for-profit investor-owned firms (Morduch, 2000). This was justified by the fact that, MFIs have the ability to tap into commercial capital markets, reduce dependency on donor capital and subsidies and serve to bring market discipline and improve the efficiency of businesses to reduce cost of production. In the light of this, it became very important to recognize the impact of microcredit and credit in the field of development, and this led to the launch of the micro credit summit in 1997. This was aimed at reaching 175 million poorest families in the world, more especially women with varied business endeavors to improve their livelihood by the end of 2015 (Microcredit Summit, 2005). Consequently, the UN declared 2005 as the International Year of Microcredit. Steel *et al*. (2003) categorized Ghana's financial system into three main categories namely;

(a) Formal Financial Institutions

(b) Semi- Formal Institutions

(c) Informal Financial Institutions

A) Formal Financial Institutions: These are financial institutions being incorporated under the companies' code of 1963 (Act 179), which enables them to operate as limited liability companies. They are also licensed by the Bank of Ghana (BOG) under the Banking law 1989 (PNDCL, 225) or Non-Banking Law of 1993 (PNDCL 328), (Steel and Andah, 2004), to provide financial services under the regulation of the Bank of Ghana. The financial institutions in Ghana accounts for about 75 percent of the total net asset of the financial system (Yartey, 2006). This includes the BOG as the Central Bank, Commercial Banks, Merchant Banks, Development Banks, Investment Banks, Rural Banks, Discount Houses, Credit Unions and Social Security Trust (Author's Survey,

2014). Many banks targeted urban middle income and high net worth clients. Rural and Community Banks (RCBs) operate as commercial banks under the Banking Law, only that they cannot transact business on foreign exchange operations; their clientele is drawn from their local catchment area with a minimum capital requirement significantly lower than that of those under the company's code of 1963 (Act 179). They are normally owned by members of the rural community through the purchase of shares and are licensed to provide financial intermediation (Yartey, 2006). Some also collaborate with NGO's using microfinance operations. The Savings and Loans Companies (S&Ls) are restricted to a limited range of services and are most active in micro and small-scale finance intermediation using microfinance methodologies. Government Credits (GCs) was also lunched in 1989, usually at a subsidized rate, reaching very few people and with extremely poor recovery rate; such as ENOWID (enhancing opportunities for women in development) and PAMSCAD (Programme of action to mitigate the social costs of Adjustment (Quainoo, 1997).

B) Semi-formal Financial Institutions: These include the non-governmental organizations (NGO's), the various credit unions and traders. These financial institutions are legally registered under the companies code of 1963 (Act 179) but they are not licensed by the Bank of Ghana. They are registered as companies limited by guarantee (not for profit) under the company's code. They are mainly focused on poverty alleviation programs since they are not licensed by the Bank of Ghana; they are not allowed to take deposits from the general public. As such they can only do that by using external institutions such as credit unions which are registered by the Department of Cooperatives to accept deposit from the public and dispense loans to their respective

members only. They provide multiple services to poor clients including microcredit through monthly on limited scale.

The N.G.Os both local and foreign are broadly categorized as microfinance institutions which are defined as all those semi-financial institutions that provide suitable financial services to meet the financial needs of the poor and the vulnerable in society (Staschen, 1999).

The Credit Unions are registered by the Department of cooperative as cooperative thrift societies that can accept deposits from and give loans to their members. Bank of Ghana allows the Apex Body (Ghana Cooperative) Credit Union Association (CUA) to continue to regulate the societies pending the introduction of a new credit union law.

Traders make up a major component of rural finance in Ghana. They operate between producers in rural areas and urban markets providing credit in the form of inputs on the supplier's credit or advance against future purchases of a crop. They usually use collaterals in their operations for the farmer to sell their crops to them after being harvested. Their interest is to mate more profits by buying form the farmers and selling at a higher price. It must be noted that if prices of crops fall, farmers tend to gain but if prices rather rises, the traders tend to gain massively.

C) Informal Financial Institutions: These covers a range of activities of "susu" collectors, money lenders, rotational savings, individual savings collectors, savings and credit clubs and credit associations. They also include trade creditors' self-help groups and personal loans from relatives and friends (Bank of Ghana, 2007). The money lenders

ordinance in 1957 makes it possible for all money lenders in the country to be licensed by the Ghana police.

2.7 Benefits and Importance of Microcredit Loans to Farmers

The importance of microfinance in the field of development was reinforced with the launch of the microcredit summit in 1992. The summit was aimed at reaching about 175 million of the world's poorest families especially the women of those families, with credit for their businesses by the end of 2015. Microfinance is very vital to the farmer to experience increased and enhanced productivity. Importance of microfinance is quite enormous. Microcredit will be needed to a farmer right from land preparation to harvesting, as well as the marketing of the produce. According to Ledgerwood (1999) the introduction of microfinance serves as an alternative economic tool which targets low income sector through the provision of flexible and affordable financial services with goals of reducing poverty. Fernando (2005) also stated that microfinance has become one of the crucial driving mechanisms of achieving the Millennium Development Goals (MDG's), most especially with respect to the target of halving extreme poverty and hunger by 2015. Atieno (2001) asserted that the provision of credit is an important tool for raising the incomes of rural populations, mainly by mobilizing resources to more productive uses. Meyer (2002), in a study conducted on the Bangladesh Bank found that one of the arguments given for expanding the microfinance industry is to help the poor to escape the clutches of moneylenders who lend money at a very high rates of interest. It has also been argued that increased productive credit is vital for the generation of adequate growth of production and for changing the composition and distribution of production in favour of deficit producers (Lipton, 1976). Hence, Sulaiman (2010), stated

that the rapid emergence of microfinance businesses and institutions resulting to serious competitions among them in the form of high customer demands and product diversification which lead to high transactions costs, low margins and low profits. Additionally, lack of institutional capacity, requisite technical skills, high illiteracy rate and demand-driven products for the target customers often lead to increase credit constraints to these microfinance institutions. Moreover, Yunus (2011) concluded that, a continuous accessibility of subsidized credits by the MFIs to the poor will render these MFIs totally weak to operate in full strength financially. But Nikhil (2011) concluded that unsubsidized microcredit facilities can be provided to poor people if these MFIs are effectively regulated. Rehman (2009) concluded that due to lack of proximity of MFIs to customers, the sector is facing credit constraints.

Agricultural credit is essential for higher productivity and increase yield. Remenyi (1991) and Rogally (1996), lamented that, it is an identifiable fact in several previous studies that, micro credit contributes to income generating activity of the borrower by providing the farmer with a working capital in order to increase farm investments. Some of the benefits of microcredit loans to farmers may include the following:

1) It fills the gap in credit delivery that are not addressed by other credit providers and attempt to speed up economic development and reducing poverty and food insecurity in the country,
2) It helps numerous farmers to undertake various investment decisions to expand their farming operations to realized profit in order to improve their standards of living,
3) It provides a ‘blue print’ to solve poverty in most of the developing world today,

4) Microcredit seeks to foster principal local markets for goods and services produced by the poor. (Sometimes, microcredit seeks to create genuinely trans-border markets for those goods).

Michael ZHU, president of the leading microcredit organization, ACCION International (2005), stated that "The vanguard of microcredit has proven that this activity of enormous social impact can be managed to achieve economic viability" this indicate that microcredit organizations would be self-sustainable and the poor would be relieved out poverty through cycles of capital accumulation and reinvestment.

Ahmed (2004) outlined the main benefits of microcredit as follows:

a) It increases family income and provide better standard of living,
b) It promote savings habit among poor farmers,
c) It raises awareness and contribute to various socio-economic activities and
d) It motivates farmers to take active role in politics.

According to Mayoux and Hartl (2009), availability and accessibility of microcredit loans will enable farmers to undertake long term investments and economic activities.

One solution to impending poverty and food insecurity is making credit accessible to Peri-urban farm households (Mead *et al*., 1990). Actually, it is difficult to assess the role of credit for Peri-urban, non-farm enterprises in many developing countries. There are two different viewpoints on the impact of credit in the Peri-urban farm household. The other prevailing viewpoint of the impact of microcredit in other studies is that, perhaps credit is not the panacea for solving poverty issues and securing household livelihoods (Rogaly, 1996). Indeed, it has been demonstrated in some studies that people are made worse off as a result of credit. It was argued by Rogaly (1996) that "performance of

microcredit varies; the less poor the borrower, the greater the increase in income from a micro-enterprise loan. Some of the poorest borrowers interviewed became worse off as a result of microcredit". Reardon (1994) claim that "Non-farm activities can be a vital source of cash income, which can potentially improve farm productivity if it is used to finance farm input purchase or longer-term capital investment". Moreover, Sebstad *et al*. (1996) also stated that microcredit can play a significant role in a non-farm activity by either increasing or decreasing income. If there is an increased income from a non-farm activity, there may be an eventual investment into the farming system. Whiles Reardon *et al.* (1995) stated that "credit programs that aid non-farm enterprises may be as or more helpful to farm investment than credit targeted to farming per se", what then becomes the role of microfinance in the Peri-urban farm household? Credit, as a matter of fact, has in the recent past been basically valuable in bad agricultural years by providing another source of income to subsistent farming families who are food deficient. According to Reardon (1997), microcredit can be used to smooth income and food consumption patterns in bad years. On the other hand, credit must be used as the sole blueprint to solve poverty in most parts of the developing world. Most Ghanaian farmers diversify their farming strategies to manage their farm household, one of which is non-farm income generating activities to meet their basic needs. Dichter (1995) argues that the role of NGO's in financial intermediation is short lived. He reported that, the role of the NGO's as a direct lender of credit may be best thought of as temporary. In Ghana, there is an acquisition of capital-intensive improved technologies which include fertilizers and insecticides which are often difficult to use due to the lack of market and capital for the technologies.

2.8 Sources of Microcredit Loans

According to Kessey (2014), sources of funds for microcredit include:

1) The private Non-Profit Making Micro,
2) Credit Institutions,
3) Private Microfinance Companies,
4) Government of Ghana Agency and
5) Donor Support Programmes.

Various researchers have classified sources of microcredit into three forms, the formal, informal and semi-formal sources. The Formal Source comprises of various financial intermediaries which operate with banking laws and provide conventional retail services to its customers. The Semi-Formal Source comprises of various microfinance institutions which are usually registered as NGO's or cooperatives and sometimes as banks with a special chatter for example Grameen Banks. The Informal Source include rotational savings and credit associations (RoSCAs), money lenders, traders, Pawn-brokers as well as accumulating savings and credit associations (AsCAs), deposit takers. Hence there is the need for a holistic national policy on the formal and informal sectors of microcredit to address the needs of poor farmers through the provision of credit to enable them interface their farming activities effectively and efficiently to realize profit to better their standards of living. However, according to several studies, microfinance is the only significant means of reaching a fraction of the estimated demand of the poor in society for the required financial aid (Littlefield *et al.*, (2003).

2.9 The Relationship between Microcredit and Investment

Microcredit is a provision of small collateral-free loans to poor people in order to foster income generation and poverty reduction through the enhancement of self-employment (Chowdhury, 2009). Investment is defined as capital expenditures for the construction and the acquisition of physical assets (property, plant and equipment). Investment decisions refer to the foregoing of present consumption of resources in order to increase the total amount of resources which can be consumed in future. According to Pandey (2004), an investment decision is defined as a firm's decision in investing its current funds most efficiently in long term assets in anticipation of an expected flow of benefits over a series of years. Investment involves outflows of cash to cause an inflow of cash. Selecting an investment opportunity to undertake is very vital to micro and small business enterprises because individual projects often involve relatively large and irreversible commitments of finance and they involve this commitment often for a very long period of time. According to Dean (1951), only the investment opportunities whose internal rates of return exceed market determined costs of capital should be undertaken. The mechanism of transforming subsistence agriculture to a more modernized one depends largely on the agricultural sector leading to effective and efficient growth rate (Todaro and Smith, 2009). The investment decisions of a small-scale Peri-urban farmer in developing countries are determined by their financial environment. An investment input normally maximizes the present discounted value of the profits generated by those investments. Investment is determined by profit maximization, which depends largely on the probabilities of rainfall outcomes and the production functions characteristics. Investment involves an active redirection of resources by an economic entity (an

individual or a firm) from being consumed today, to creating benefits in the future. Investment at the level of the firm or the individual can play an important role facilitating long-run growth. Accesses to microcredit enable farmers to go in for loans which can strengthen their productive assets. This enable farmers to invest in their farming and non-farming activities or productivity-enhancing new technologies which include new and better tools, equipment, fertilizers, education and health, and thus facilitating greater capital accumulation and growth(DFID, 2004). According to Hulme and Mosley (1996), the proposition that investments constitute a key determinant of economic growth and income enhancement continues to drive development efforts as well as microcredit. Besides, Meyer (2002), argue that microcredit leads to increased production and incomes which give rise to further investment.

Microcredit and investment relate to each other. An increase in microcredit accessibility complement with low cost of production has a positive impact on investment in farm and non-farm activities leading to an increased farm production and investment (Benu, 2001). Provision of microcredit to generate investments and production at good and affordable terms in Nepal had great positive impact on both soil conservation, investment and productivity (Debela, 2001). Changes in investment asset as a result of microcredit availability will impact positively or negatively on the community's production, consumption and management opportunities as well as decision making processes. Moreover, if an investment activity is successful, it can enhance, smoothen and diversify the borrower's income and increase farm ownership. As the farmers' accessibility for microcredit increase, it is expected that the quantity, composition and the timing of investment activities of the farmer will likely improve considerably. Eswaran and Kotwal

(1990) argue that microcredit accessibility may reduce household vulnerability to negative shocks by increasing their ability to have stable consumption even in difficult periods of time and that household's accessibility of available microcredit may enable them to undertake riskier investments. Ghosh *et al*. (1999), also argues that credit is an essential component which allows capital investments among various producers most especially farmers who are unable to save. It also offers households the ability of obtaining money in an emergent manner. Availability and the accessibility of microcredit also increases the risk of adopting a new technology or productivity enhancing investments for poorer households or producers, hence helping to contributing favorable production and income increases. Accessibility of microcredit can also impact positively on growth through its influence on human capital accumulation which is affected by initial wealth distribution (Galor and Zeira, 1993); families who are rich stand a better chance to invest in human capital accumulation leading to an increased growth. While De-Gregorio (1996), argue that microcredit accessibility promotes human capital accumulation, Dehejia and Gatti (2002), Begie *et al.* (2003) and Jacoby (1994), also establish that access to risk reduction services in finance increases investment in education. Moreover, another channel through which access to financial services more especially access to microcredit, may affect the economic growth of a country through the facilitation of the entry of new firms (Klapper *et al*., 2004).

The investment decision paradigm emphasizes on the farmers' income-earning activities whereas the microcredit accessibility paradigm emphasizes on the effects on the farmers' expenditure and particularly the use of the loan for investment purposes. Microcredit constraints affect farmers' investment decision (Fafchamps and Pender, 1997), whiles

investment constraints also affect productivity. Ellis *et al*. (2010), argues that urban inhabitants are more likely to access microcredit and save for most investment purposes than the rural inhabitants except for the purchase of livestock. It must be noted that farmers sometimes do not invest the entire microcredit amount obtained from the MFIs in their farming and non-farming activities as being proposed by most credit schemes. The percentage of loan being allocated to the farming activity by the farmer is the measure of farm investment. While investment accessibility is driven by having a positive attitude in taking risk in borrowing and engaging in various farming and non-farming activities but microcredit accessibility is driven by factors which make it convenient to the farmer such as low interest rate, proximity of MFIs, early loan disbursement, collateral-free requirement, belonging to a farming association, no guarantor requirement, adequate credit size and long repayment period of the loan. Microcredit availability and accessibility lead to investment enhancement adoption. This is because;

1) Microcredit provides working capital to various farmers to enable them improve their farming and non-farming activities and also undertake various investments (Mead *et al.,* 1990).
2) Microcredit availability and accessibility enable farmers to diversify their farming operations through the use of improved technologies to realize profits in order to cater for their families' food, clothing and shelter there by improving their standards of living.
3) Microcredit could turn an international developmental process into a virtuous circle of investments in new enterprises by the poor followed by the repayment of investment and then reinvestment in additional new enterprises. According to

Sebstad *et al.* (1994), microcredit can play a significant role in a non-farm activity by increasing the farmers' income. Additionally, Reardon (1994) also argue that non-farm activities can be an important source of cash income which have the potential of improving farm productivity if it is being used to finance farm input purchase or long-term capital investments.

4) Microcredit aims at democratizing global financial markets through new contracts, organization and technological investments.
5) Recently, microcredit has become the leading example of a broader advancement for "Social Investments", in the health, education and the energy sectors (Morgan. 2010).
6) Microcredit accessibility can equip farmers to diversify their incomes into more lucrative non-farm ventures to realize increased profits.

In conclusion, microcredit loans allow various Peri-urban vegetable farmers to undertake farming and non-farming investments whiles investments in financial institutions also ensures the availability of microcredit loans to farmers. This confirms the earlier findings of Njeri (2014) that microcredit access has an inverse relationship with investment. This is to say that, availability and accessibility of microcredit leads to investments into farming and non-farming activities due to the availability of working capital and vice versa.

2.10 Approaches of Microcredit Schemes

Microcredit schemes may be of three different forms or compositions namely: The Capacity Building Approach, the Channeling Approach and the Institutional Approach.

The Capacity Building Approach: This approach focuses on the very poor and vulnerable in society. It aims at raising the awareness, organize the clients and build their confidence to help them believe in their own ability to transform their lives and to develop a culture of savings and investments.

The Channeling Approach: This approach may be used by rural banks, MFIs and NGOs to assist households who are not too poor in society. These groups of households may have the courage to undertake some minor risks but may lack financial support due to lack of collateral security.

The Institutional Approach: This approach is more embracing and may be used in places where there are none existence of financial institutions. This approach uses institutions to aid the poor farmer to mobilize their own savings through associations or groups and link them to the financial institutions. Actually, a combination of these three microcredit scheme approaches being adopted will be more efficient and effective to empower the target group or association since disempowerment is characterized by high illiteracy, low economic status, lack of access to credit, low decision-making power, lack of income, a culture of dependence and lack of collective action a according to Buvinic (1989).

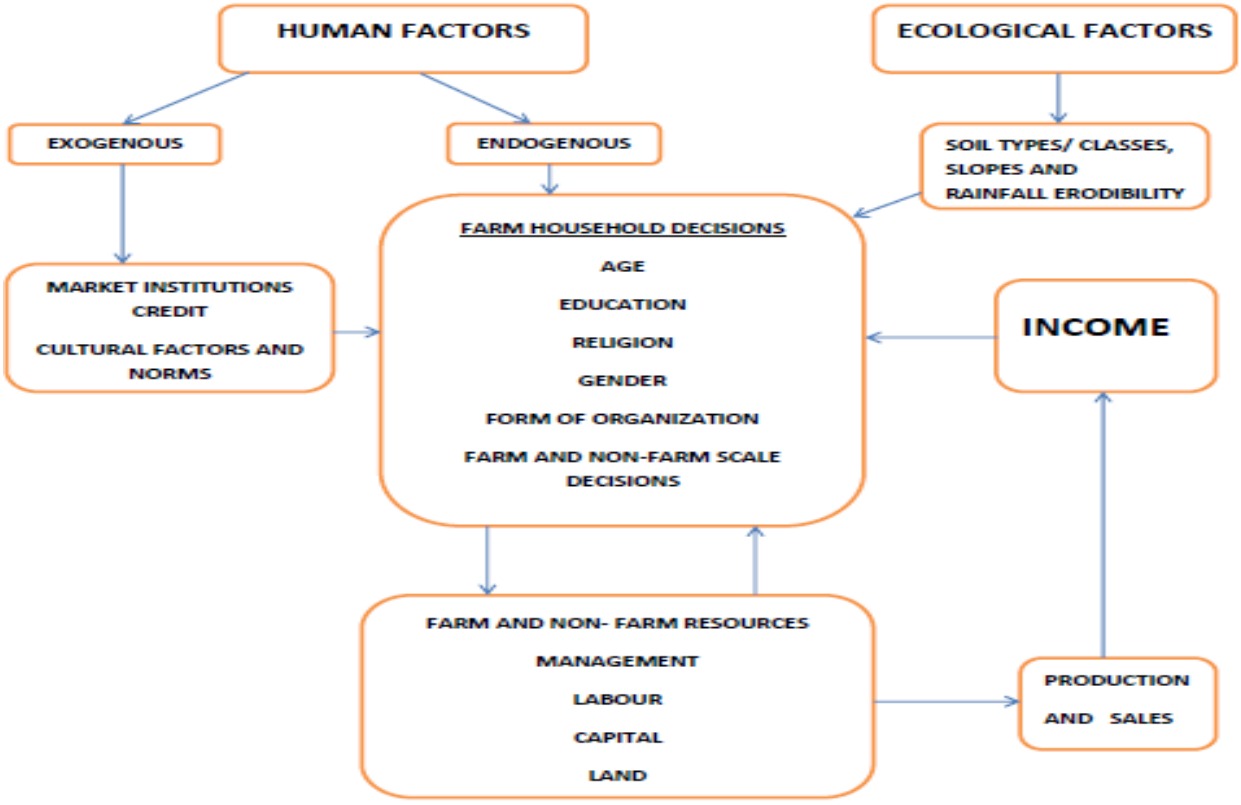
2.11 Factors Affecting Decision-making process on Household's Investment

Microfinance plays an important role by increasing access to social services to improve the well-being of very poor people. Otero (1999) emphasized the fact that the provision of capital to poor people tends to strengthen their dignity and empower them to actively participate in the economy and the society to ensure effective development. A farmer

must therefore consider several factors before deciding to invest in a particular technological advancement. Investment decision process is represented below in an adapted model from Anosike and Coughenour (1990).

The figure 2.1 below illustrates the complexity of household decision making processes when it comes to investments in their farming systems.

Figure 2.1 Factors affecting Households Investment Decisions in Farming Systems



Source: Anosike and Coughenour (1990)

Farm and non-farm activity, microcredit and household investment amount are the three main components examined in this research. The means by which these aspects are

examined are described in the following chapter on methodology and data analysis procedures. Some of the constraints encountered by the farmers in the demand of credit include;

1). Lack of collateral to access credit facilities due to limited land ownership and other factors of production (IFAD, 2001).

2). Lack of monetization of the various activities of farmers makes it difficult to access and demand for credit since the farmer will not be economically vibrant to even undertake the formal legal processes.

3). Most food farmers dwell on subsistent levels of farming which is coupled with a lack of education, high illiteracy levels, susceptibility to the vagaries of the weather and other national disasters resulting in high poverty incidences and diseases (Akuapumwza, 2007).

4) Unwillingness to repay the credit received even if the farmer experienced a good harvest and the difficulty of the credit givers (financial institution) to get their money back due to lack of sufficient information on the part of the farmers. In spite of these challenges experienced by the food crop farmers, some microfinance institutions and NGO's have been supporting them with various credits in cash and in kind aimed at increasing productivity.

Adams and Delbert (1992) emphasized that as the agricultural industry matures, however, practitioners are increasingly turning to the vast and largely underserved rural frontier and to the thorny challenges of financing small-scale agriculture. Besides, given microcredits to farmers in less populated areas where the distance between the

institutions and their targeted clients is very wide, transportation problems become a cause for undertaken little financial transactions. As such Steel *et al*. (2004) lamented that most rural citizens depend at least on part of agriculture for their livelihoods, these conditions make the prospect of operating a self-sustaining, rural microfinance institution (Rural Microfinance Institution), even more daunting. Zeller (1994) also reported that Agricultural finance is very risky because of natural disasters, a decline in market prices, unexpectedly low yields, unsold products and losses due to poor storage facilities are some of the factors which can lead to lower revenues from production and this may result in a failure in repaying agricultural loans as observed by Hoff *et al*. (1990).

2.12 Investing in Farming Activities

Studies have shown that farm capital investment is a key driver of farm productivity and production. (Bierken and Featherstone, 1998); (Benjamin and Philmister, 2002); (Hubbard and Kashyap, 1990). Previous researches have proven that farm enterprises tend to smooth their respective investments over time. (Boumtje *et al*., 2001). As such, in situations when farm outputs are low resulting to less profit realization, farmers use their wealth and equity to finance their capital expenditures instead of using current profits to finance their investments since lenders are more willing to lend to farming operations with high levels of equity that can be used as collateral for microcredit. According to Davis and Palumbos (2001), farming enterprises are assumed to allocate profit between current investments and retained equity. Farm investment depends on the total resources of the Peri-urban farmer. Farm investment can be considered to be a function of farm profits and wealth.

Thus $It = f(Yt, Wt)$ 2.1

Where It=investment, Y=farm profit and W=farm income. All measured in real terms.

$It = (Yt, Wt, it, t,)$ 2.2

Where i=the real rate *and* t=*time trend.* The model controls for interest rates because they contribute to investment decision by altering the cost of investment. Low interest rate on microcredit will cause farmers to go in for more microcredit to enable them invests into their farming activities which will in turn enhance production and productivity to ensure that their targets set are achieved.

2.13 Investment in Recommended or Improved Agricultural Technologies

Several studies have identified the determinants of adopting recommended or improved agricultural technologies to ensure high productivity growth. Households' accesses to credit, age, gender, extension services, farmer association or group etc. are some of the determinants. According to report of Mugisha *et al.* (2012), access to credit has a significant and a positive effect on the rate of technology being adopted and in some situations it provides a favourable condition to adopt a particular kind of technology. Productivity in agriculture is actually measured by dividing outputs by inputs. High agricultural productivity can only be possible with the production and diffusion of high yielding improved technology (Asfaw *et al.*, (2011), but Feder *et al.* (1985), argue to the fact that, adopting a recommended or an improved agricultural technology is very vital since majority of the poor in the society derive their livelihoods from agriculture. It must be noted that diffusion starts at the in which the new technology is ready to use after that technology is made available to potential users and this have the capability of spreading

innovative ideas to the entire populace of that area. But adoption considers the attitudes of various individuals with regards to the use of a particular technology at a particular point in time. The ability of farmers to adopt new agricultural technologies largely depends on the farmers' access to credit, farm size, education, sex, extension visits age, experience, household's labour size, belonging to a group or an association among others. As such improved technologies have some socio-economic factors that influence farmers' investment amounts. This is consistent to the adoption of improved maize varieties among farmers in Nigeria which showed that household size, level of education, contacts with extension agents, access to credit and yield of the improved maize varieties were the factors that influence their investment amounts (Kudi *et al.*, 2011).

Actually, education and farmers' experience tend to increase the famers' confidence, reduce uncertainties, remove doubts and allow for the acquisition of new skills and knowledge which leads to the adoption and implementation of new agricultural technologies to realize a high productivity growth. According to Uaiene *et al*. (2009); Matuschke *et al.* (2007), households with higher educational levels are most likely to adopt improved agricultural technologies in their farming activities than their colleagues who are not educated.

Availability and accessibility of microcredit of credit enable farmers to have enough capital to enable them adopt new agricultural technologies in farming and non-farming activities.

Supply of labour affect farmers' decision to adopt a new agricultural technology since new technologies sometimes increase the demand of labour seasonally. This was evident

in the report of Doss and Morris (1998) that the number of adult males in a household affects the use of improved maize seed in Ghana significantly. Farmers with larger farms normally have more assets and credit facilities than farmers with small farms. This was consistent to the report of Kherallah *et al.* (2001) which indicates that large farm size has positive effects on adoption since it is associated with economies of scale, income and average profits to the farmers who adopt it.

Njoku (1990) and Saito *et al.* (1994) agree that cooperative membership significantly and positively influences the adoption of a new agricultural technology. As such, farmers who belong to an effective cooperative group enable them to have access to the information on a given technology.

Exposure of information given by extension officers to various farmers. This was consistent to the report of Feder *et al*. (1985) which argues that more exposure of appropriate information on farming technologies through various communication channels aids to reduce the level of uncertainty in adopting a new agricultural technology.

Adoption of Improved technologies is a recipe to ensuring an increased production and income which give most of the small-scale producers hope and the necessary chance to earn better standards of living. But the extent at which a particular technology is adopted depends largely on the nature and the available information of that technology. Moris *et al.* (1999), posits that some characteristics of the technology which may influence the adoption rate include; the profitability, complexity, riskiness, divisibility of the technology as well as its compatibility with other practices. Additionally, women technological adoption studies organized in Kenya by Sulo *et al.* (2012), reports that

factors including annual income, primary occupation, farmer association or group and household size generated a significant relationship with their women counterparts who invest in improved agricultural technologies. Besides, the adoption of irrigation technologies for safer vegetable production was influenced by education, extension agents, belonging to farmer groups or associations as well as cropping patterns (Abdulai *et al*., 2011). Some of the improved technologies being adopted by Dzorwulu vegetable farmers include; high quality or improved seeds and seedlings, better controlling of the quantity of irrigation water, fertilizer application, spraying against disease pest, etc. According to Adesina and Zinnah (1993) and CIMMYT (1988), factors that determine the adoption of new technologies can be classified into three main groups namely:

1) **Farm and producer's attributes:** These include the producer's age, gender, level of education, household size and farm size.
2) **Technological attributes:** This depends on the kind of technology the producer appreciate in adoption in other to attain an enhanced objective.
3) **Farming objective:** This aids in the assessment of the different strategies being adopted by the producer in order to know which of them is more profitable.

Report from Banabana-Wabbi (2002) summarizes these factors which influence adoption as economic, social and institutional factors. Besides, Rogers (1983) posits that the characteristics of improved technology such as relative advantage compatibility, complexity, divisibility and observability determine the intensity of technological adoption. Improved agricultural technologies open various opportunities to improve crop production and reduce crop vulnerability in many developing countries. But the key challenge in most developing countries is to meet the food security needs for the growing

population and to reduce malnutrition and poverty (Sintowe *et al*., 2012). It must be noted that an improved technology to be adopted by a farmer depends on their microcredit size they have received from the MFIs and the available information they have and the convenience of selecting that improved technology in order to undertake that investment. Finding from various literature attest to the fact that factors which influence farmers' adoption of improved agricultural technology reported farm-specific factors, farmers-specific factors, economic and non-economic factors and innovative-specific factors (Alarima *et al.,* 2013).

According to Palanisami *et al.* (2011), the best kind of growth is achieved when productivity grows with a is constant or a reduced inputs rather than achieving growth of output by increasing inputs, since these inputs are subjected to the law of diminishing marginal returns. Brynjolfsson and Hitt (2003) report that productivity growth in most developed economies are influenced by both organizational changes and technological innovations. In developing countries, factors that influence agricultural productivity according to Odhiambo and Nyangito (2003) and Brynjolfsson and Hitt (2003) include the following; technology, relative input and output prices, agricultural research and extension, inputs prices, level of education of the producer, access to market, availability and accessibility of credit, weather, agricultural policies, land tenure system, insecurity and the legal and regulatory environmental issues, inadequate involvement of beneficiaries in decision-making as well as factors of land, labour, tractors, livestock, fertilizer and mechanization.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

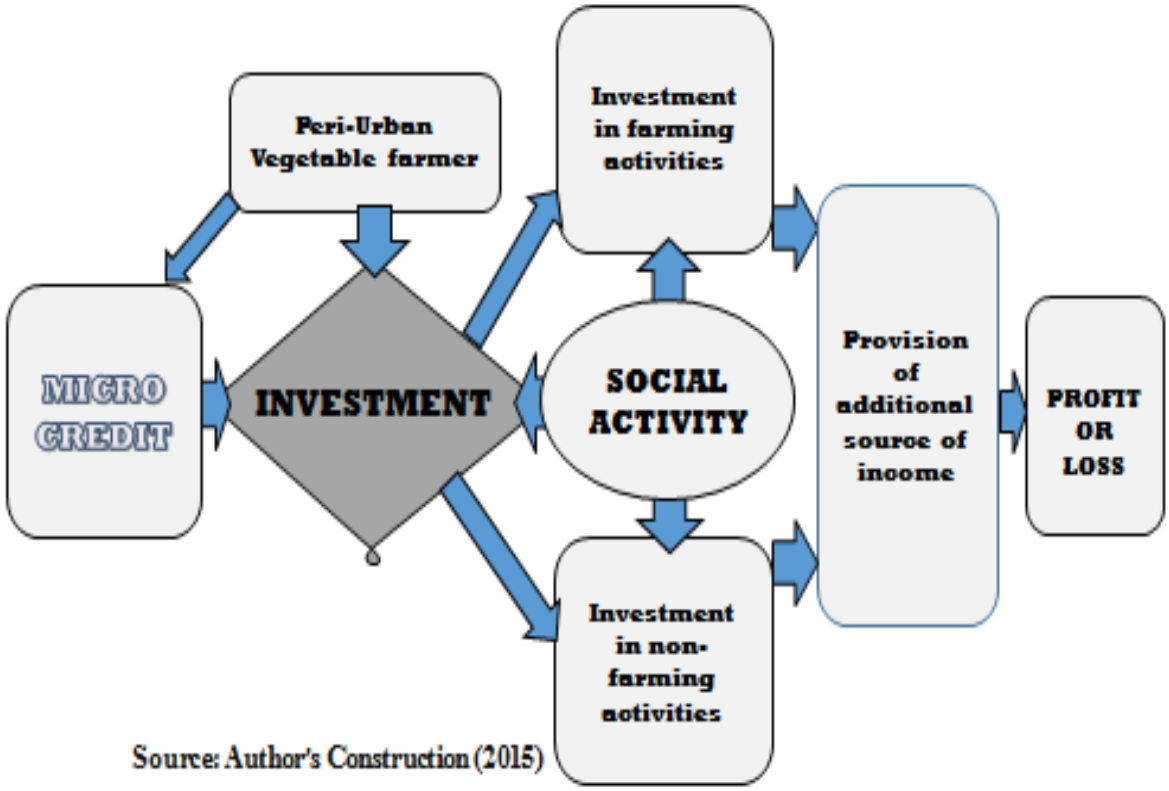
This chapter presents the methodology adopted for the study. It includes the conceptual framework as well as the various statistical methods used in addressing the objectives of the study. It also describes the method of data analysis for each specific objective, the tools used and the techniques adopted in data collection as well as the description of the study area. The last section presents the limitations of the study.

3.2 Conceptual Framework

The study's framework revolves around the concept of Peri-urban vegetable farmers' ability to access microcredit loans to enable them undertake investments into their farming and non-farming activities to generate additional source of income which may lead to the realization of either profit or loss.

Figure 3.1 identifies that farmers need microcredit purposely to make investment decisions in their farming and non-farming activities. Besides, the nature of microcredit accessibility largely depends on its utilization. The type of microcredit being accessed, the value of microcredit received and the purpose of its acquisition have some effects on the investment amount to be allocated to the farmers' farming and non-farming activities to generate additional source of benefit socially, economically and financially.

Figure 3.1 Conceptual Framework analyses



3.3 Methods of Data Analysis

STATA version 13 was used to analyze the data collected in order to address the major and specific objectives being raised in this research.

3.3.1 Analyzing Factors Influencing Farmers' Access to Microcredit

The binary probit model was ascertained to estimate the factors influencing access to micro-credit by vegetable farmers. Several studies on microcredit accessibility have

shown that there is heterogeneity between microcredit users and non-users when they deal with credit demand and procedures (Feder *et al.*, 1990; Fengxia *et al*., 2010).

Available literature identify that access to microcredit is influenced by several factors which include education family size, age, farmer group or association, gender etc. According to Ayamga *et al*. (2006) observed that women in groups are more likely to have microcredit access than their counterpart who do not belong to any group. Besides, the study by Thaicharoen *et al*. (2004); and Crook (2001), noticed in empirical literature that individuals and households having low income more especially in developing countries, experience many difficulties in accessing credit. Thaicharoen *et al*. (2004); and Crook (2001), argue to the fact that age is a significant constraint of microcredit. But Ayamga *et al.* (2006) and Thaicharoen *et al.* (2004) in their separate studies noticed that formal education have significant effects in microcredit scheme assessments.

According to Feder *et al.* (1985) many models used in measuring the access of credit fails to meet the statistical assumptions necessary to validate the conclusions based on the hypothesis tested. To overcome this problem with regards to the use of linear probability model, the logit and probit models have been recommended (Gujarati, 2004). Hence the model may use Maximum Likelihood Estimation (MLE) method. Over here, it is advantageous since the probabilities are between 0 and 1. The disparity between the probit and the logit model is that, the probit is a cumulative density distribution of the normal distribution whilst the logit is a logistic density distribution of the normal distribution. The logit model is employed over the probit model when the zeros which are termed as failure is more than the ones which is also termed as success, the probit model are used otherwise. Since the number of farmers that received microcredit (success) is

more than those that did not receive, the probit model is therefore recommended for this study.

Generalized probit model with a latent dependent variable is specified as;

$$\Pr(Y=1/X)=\Phi(X'\beta) \quad 3.1$$

$\Pr$, represents the probability of that a farmer will get access to credit or not, Φalso represents the cumulative density distribution of the normal distribution.

$$Y^{*}=X'\beta+\varepsilon \quad 3.2$$

Where $Y^{*}$the latent dependent is variable, X' is the explanatory variable of the regression $\beta$is the parameter to be estimated, and $\varepsilon$is the error term which is independently, identically distributed with zero mean and constant variance.

These variables represent farmers' characteristics and all other factors, which are likely to affect farmers' chances of securing access to micro credit. These attributive factor variables include Gender, Age of farmer, level of education, farm size, land ownership status, relationship of farmer Association, Farming experience, bank account, household size, access to credit and asset owned.

In this analysis, the outcome of the response, having access to credit or not having access to credit is the major interest or probability of the outcome. The binary response in this study is whether or not the respondent has access to credit from microfinance institutions and if so, what are their investment decisions, or on whether respondents did not have any access to credit.

If Y_1 is the random variable (dichotomous), it can be assumed that Y_1 takes on the value 0 or 1, where 0 denotes the non-occurrence of the events in question and 1 denotes the occurrence.

Binary probit model specification

$$\Pr(Y^* = 1/X) = \Phi(X'\beta) = Y^* = \beta_0 + X_i\beta + \mu_i \quad 3.3$$

Pr = probability

(1 = when farmer accessed microcredit loan for vegetable production in the last production season, 0 = otherwise),

ϕ = Cumulative density function,

β = Coefficient to be estimated

Y^* = Dependent variable

X = Explanatory variable

1 = Access

0 = otherwise,

μ = Random disturbance term

$$Creditaccess_i = \beta_0 + \beta_1 ACE_i + \beta_2 GEN_i + \beta_3 EDU_i + \beta_4 LANO_i + \beta_5 CRAW_i + \beta_6 SAV_i + \beta_7 FBO_i + \beta_8 FARS_i + \beta_9 FAREX_i + \beta_{10} ASOW_i + \beta_{11} HSIZ_i + \beta_{12} SOLA_i + \beta_{13} DIST_i + \beta_{14} REA_i + \mu_i \quad 3.4$$

Table 3.1: Description of Variables for the Binary Probit Regression

Variable	Interpretation	Measurement	Apriori Expectation
Dependent	Credit Access	(1 = Yes, 0 = No)	n/a
AGE	Age	Years	+/-
GEN	Gender	(1 = Male, 0 = Female)	+
HSIZ	Household size	Number	+/-
LANO	Land Ownership	(1 = Self, 0 = Otherwise)	+
CRAW	Credit awareness	(1 = Yes, 0 = No)	+
FBO	Member of Farmer Based Organization	(1 = Yes, 0 = No)	+
FARS	Farm size	Hectares (Ha)	+
ASOW	Physical asset	GHS	+
EDU	Educational level	(1 = educated, 0 = Otherwise)	+
SOLA	Source of loan	(1 = Formal, 0 = Otherwise)	-
FAREX	Farm experience	Years	+
SAV	Savings	(1 = Yes, 0 = No)	+
DIST	Distance to collection point	(1 = Near, 0 = Far)	+
REA	Rearing animal	(1 = Yes, 0 = No)	+/-

Source: Author's computation from field survey (2015)

Hypothesis testing

H_o: Being a member of FBO (Xi) has no effect on farmers' access to credit

H_A: Being a member of FBO (Xi) has positive effect on farmers' access to credit

This is expected for all the other explanatory variables

Validation of hypothesis

$$Zcal = \frac{\beta_i}{SE(\beta_i)} \sim Z_{table} \quad 3.5$$

Decision rule: if $Zcal > Z_{table}$, reject the null hypothesis, otherwise; do not reject the null hypothesis.

3.3.2 Assessing the Effects of Microcredit Access on Farmers' Investment Amount

The Ordinary Least Square regression would be employed to achieve this objective. This is due to the fact that the dependent variable is continuous and Ordinary Least Square procedure is the simplest type of estimation procedure used in statistical analyses Gujarati (2004).

Model specification

$$Y_i = \beta_o + \beta_i X_i + \varepsilon_i \quad 3.6$$

Where the Y_i is the continuous explained variable, β_o is the intercept (constant), β_i is the parameter to be estimated, x_i is the explanatory variable in the model and ε_i is the stochastic error term which is independent, identical normally distributed with zero (0) mean and constant variance $\delta_i \sim N(0, \sigma^2)$ Where Y_i is a $N \times 1$ column matrix of cases' scores on the dependent variable, X_i is $N \times (K+1)$ matrix cases' scores on the independent variable, β_i is a $(K+1) \times 1$ column matrix containing the regression constant and coefficients and ε_i is a $N \times 1$ column matrix of cases' errors of prediction. In estimating the parameter, β_i the sum of squares error of must be minimized, this can be expressed as $SSE = \varepsilon' \varepsilon$. In order to take the derivative of the quantity with regard to the β_i firstly the error term, ε is expressed in terms of Y_i, X_i and β_i

The specific model for the study is

$$Investment/ha = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon \quad 3.7$$

Table 3.2: Description of Variables for the OLS Regression Model

Variable	Explanation	Measurement	Apriori Expectation
,,	Farm income investment	Income GHS/Ha	N/A
X1	Age	Years	+/-
X2	H/hold size	Number	+/-
X3	Land Ownership	Land Owner = 1, Otherwise = 0	+
X4	Awareness	Aware = 1, Otherwise = 0	+
X5	Savings	Save @ bank = 1, otherwise = 0	-
X6	Interest on investment	GHS	-
X7	Credit access	Access = 1, Otherwise = 0	+

Source: Author's compilation (2015)

Where:

X1= Age of farmer (AGE), **X2**= Household Size (HSIZE),

X3= Land Ownership (LANO), **X4**= Credit Awareness (CRAW),

X5= Savings (SAVE), **X6**= Interest on Investment (INTVEST),

X7= Credit access (CRESS), β_0= Constant term,

ε= Error term,

β= Corresponding coefficients of the related independent variable.

Hypothesis testing

H_o: Microcredit access (β_7) has no effect on investment amount

H_A: Microcredit access (β_7) has positive effect on investment amount

This is expected for all the other explanatory variables

Validation of hypothesis

$$t_{cal} = \frac{\beta_i}{SE(\beta_i)} \sim t_{table} \quad 3.8$$

Decision rule: if the $t_{cal} > t_{table}$ reject the null hypothesis, otherwise; do not reject the null hypothesis.

Explanatory Variables of the Study

With regards to literature review on the factors influencing access to microcredit, previous research findings and the knowledge of the author concerning the conditions and microcredit programmes of the study area were used to develop the null hypothesis of this thesis.

Farmers' Age (AGE)

This is a continuous variable which defines the age of the farmer and is measured in years. Literature indicates that older people usually have a minimum chance of gaining access to microcredit from microfinance institutions. The age of a respondent is included in the model as a proxy for maturity and the potential ability of the borrower to utilize and repay credit, (Fakayode and Rahji, 2009). Zeller (2001) also stated that older people are normally risk averse than young people and rarely enter into debt obligations. Moreover, the older people usually find it very difficult to comprehend the operations and the conditions of financial institutions Adams (1992).

Gender (GEN)

This variable is a dummy assuming a value of 1 if the respondent is a male and 0 if female. Hence, according to Buvinic *et al*. (1979), there are two major factors which restrict women's access to formal credit more than men's. This relates to the fact that women lack control over economic resources and the nature of their economic activity. Hence, male respondents are expected to have more access to credit than female respondents.

Level of Education (EDU)

This is categorized into those with basic, secondary, vocational and tertiary levels. Years of formal education is generally thought to have a positive impact on microcredit accessibility. A study by Donald (1976) attributed this to the fact that the longer the number of years an individual spent in formal education, the better his or her understanding will be of the procedure and requirements of obtaining credit for agricultural activities. Hence, high education facilitates a farmer's access to microcredit than the farmer who has low or no education.

Farm Size (FARS)

This is the total land size cultivated by the respondent. It is the total land cultivated, land secured through share cropping arrangements or rented. According to Belshaw (1959) an average land holding farm size relates positively to the chances that the household would get credit. He considered that the ownership of the farm requires a high capital to undertake effective production, hence looking for external financing opportunities. This is because the larger the farm size, the more labour required to cultivate and maintain the

crops, which will demand additional resources including capital to achieve a favorable result.

Farming Experience (FAR EXP)

This is attained by measuring the number of years the farmer has been farming. This helps the farmers to know many sources of finance which are available to farmers in his/her category and how to access various credits from those sources.

Landownership (LANDOWN)

This is very significant in accessing microcredit since most of the microfinance companies also look forward to selecting or choosing a farmer with collateral to dispense credit to, in comparison to those without any land for use as collaterals.

Number of Workers (NUWORK)

This refers to the total number of workers working on the farm. The larger the number of workers the more labour force available for production purpose. Family size was hypothesized to have a negative impact on access to credit according to (Yehuala, 2008).

Awareness (AWARE)

This is a dummy variable and it is assumed that, value 0 represents “not aware” of the existence of microfinance companies and 1, “the awareness” of the existence of microfinance companies. It was hypothesized that farmers’ awareness of the microfinance existence in the district of which they are farming should have a positive relation with credit access in that district.

Average Monthly Saving (AVINCOME)

The average monthly saving of the farmer determines the farmer’s chance in accessing credit. This was measured as a dummy variable. The value of 1 is assumed to be “Yes”

and value "0" representing "NO". The proportion of the farmers' income which is saved monthly is presumed to have positive effects on credit accessibility. This is a continuous variable which was measured in Ghana cedis. The higher a farmer's savings, the better his /her chances of accessing microcredit are than a farmer who saves less or not at all. Whether a farmer is a member of an association. This is a dummy variable. A value of "1" may represent YES and "0" represent NO. Where yes means belonging to any association. This is relevant especially in Ghana where one of the main roles of farmer organizations is to aid various farmers gain access to microcredit. This was therefore hypothesized that farmers who are members of farmer associations have more access to formal credit than those who were not.

3.3.3 Identifying and Ranking of Constraints in the Assessment of Microcredit

Constraints were reviewed from literature, pre-tested and presented to the vegetable farmers in the study area. The following were recorded as constraints pertaining to farmers' access to microcredits; the distance of collection point, late disbursement, collateral requirement, association membership requirement, high interest rate, guarantor requirement, inadequate credit size and short repayment period. The constraints ranked by the farmers were collated and the Kendall's Coefficient of concordance was used to calculate the agreement level among the farmers' ranking of the constraints.

The constraints identified are ranked according to the most-pressing to the least-pressing using numerals; 1, 2, 3, 4, 5, 6… in that order. The constraints with the least score are ranked as the most pressing and the one with the highest score is ranked as the less pressing. The total rank score is computed and used in the calculation of the coefficient of concordance.

$$W = \frac{12\left[\sum T^2 - (\sum T^2)/n\right]/n}{m^2(n^2-1)} \qquad 3.9$$

Hypothesis testing

The hypothesis and the significance of the rankings are further assessed using the Chi-square

Ho = No agreement among the rankings

Ha = Agreement among the rankings

Decision rule; If Chi-square calculated > Chi-square critical reject the null hypothesis.

3.4 Sample Size and Sampling Technique

Purposive sampling technique was used to identify the respondents. Various farming group's leaders were first contacted with the aid of the MOFA Extension Officer in the study area. The farming group's leaders introduced us to the vegetable farmers and sought their willingness to participate in the study. A simple random technique was adopted to select and interview the identified farmers who were willing to part-take in the study. Farmers who had access to the microcredit facility and those who did not have access to credit facilities were identified. A total of 152 vegetable farmers were interviewed. In order to gather relevant and reliable data, it was imperative to *triangulate the information gathered* to enable the assessment of the received report's validity. This multi-method research approach has been adopted in several similar studies (DenBiggelaar and Gold 1995, Kiefer, 1996). Triangulation of information gathered is done by conducting a rapid appraisal of the area of study (Casley and Lary, 1987; Chambers, 1989). During the rapid appraisal stage of the research, an in-depth interview was conducted and several visits were made to the fields of the vegetable farmers. An

interview was conducted with the key informants at the North and South Dzorwulu vegetable farmers' fields to get the first hand information of the study area with regards to the availability and accessibility of microcredit for the vegetable farmers and the constraints they encounter when accessing the credit. Questions relating to farming systems, land tenure issues and the credit programmes in the sub-metro were asked in unstructured interviews so that reliable and up-to-date information is obtained to address farmers' needs and pertinent issues in the upcoming research. The information gathered through the rapid appraisal allowed to update and modify the data collection instrument. After this, questions for the interview schedule were designed and were tested on the field with a selected sample of the farmers. Questions which were not well answered and omitted are modified reframed and added to the questionnaire to reflect what the research seeks to achieve. A final survey questionnaire is finally designed taking into consideration all the necessary corrections and then administered to respondents through random sampling technique to select 152 vegetable farmers. This method of triangulation normally give results which are reliable, best fit, give true reflection and address the research questions more effectively.

3.5 Data Collection Method

Data collected was largely through interviews, using both semi and structured questionnaires. A structured questionnaire was administered to the North and South Dzorwulu vegetable farmers in the Greater Accra Region at the Accra Metropolitan Assembly between November, 2014 and February, 2015. Four farming groups were selected from the study area with a team of four enumerators consisted of one MOFA Technical Assistance, the author of this thesis and two assistants. A drafted questionnaire

was prepared based on the objectives of the study. Questions on the interview guide were prepared into five sections which include;

1. Demographic information (e.g. Name, Age, Educational background, marital status)
2. Description of the farming method and how the farm incomes are used.
3. Description of how their access to microcredit informed their investment decisions.
4. Background information on the personal characteristics of the farmer.
5. The major constraints encountered with respect to credit accessibility.

The survey instrument used included a set of questions which were carefully designed to obtain vital and quality information that establish the farmers' views on Microfinance Institutions, microcredit access and investment amount. The questionnaire also covered socio-economic characteristics of the respondents. The questionnaire was designed to obtain information on the size of area cultivated, average monthly income, microcredit needs, awareness, availability and its accessibility as well as total farm output. The drafted questions designed was pre-tested on a selected sample of farmers not farming in the study area in order to help in identifying questions that would perhaps not be well understood and answered by the farmers. Some insufficiencies detected in the pre-test questionnaires were corrected and changes effected to obtain the final questionnaire which was used for this research. This research was carried out during the holidays from December to January. This was done in order to enable me to visit the farmers on the field to observe their agricultural practices. In total, four farming groups were visited in the study area. A sample of the questionnaire is presented in the appendix 1.

3.6 Study Area

This research was conducted in the Northern and Southern portion of Dzorwulu in the Ayawaso West Sub-Metro of the Accra Metropolitan Assembly in the Greater Accra Region as identified in the maps below. The Accra Metropolitan Assembly (A.M.A.) is one of the ten administrative districts of which the Greater Accra Region is divided.

It has; 1) a total land size of 137 square kilometers,

2) an average household size of 4.51,

3) a population density of 24,855 per square kilometers,

4) a housing density of 558 per square kilometers and

5) 76 communities.

The Metropolitan Assembly is made up of ten Sub-Metros namely: Ashiedu Keteke, Osu Klotey, Ablekuma North, Ablekuma South, Ablekuma Central, Ayawaso West, Ayawaso East, Ayawaso Central, Okaikoi North and Okaikoi South. The southern boundary of the metropolis of Accra is the Gulf of Guinea from Gbegbeyise to Osu. It continues by road to the eastern boundary from Cantonments through 37 Military Hospital to Tetteh Quarshie interchange and Legon. The northern boundary includes Achimota through Abeka Lapaz which extends westwards to South Odorkor and Sakaman. It finally continues to Gbegbeyise through Dansoman, OpeteKwei and Mpoasei communities. Dzorwulu vegetable farmers provide the capital city with most of its fresh vegetables all year round. The area is densely populated with about 20 people per km square at the department level, and 50 people per km square at the country level. The agricultural land in the area comprised of mainly loamy soils on some landscapes while other locations also contain silt loamy soils. Due to rapid population growth, the land is cultivated

continually throughout the year, with much concentration beneath the electricity pylons stretching from the Spintex road to Dzorwulu. The major ethnic groups farming in the area are Dagombas, with some few Gas and Hausas.

MAP OF ACCRA METROPOLITAN ASSEMBLY

Figure 3.2 Map of Accra Metropolitan Assembly (Source: Ghana Districts.com)

MAP OF THE STUDY AREA

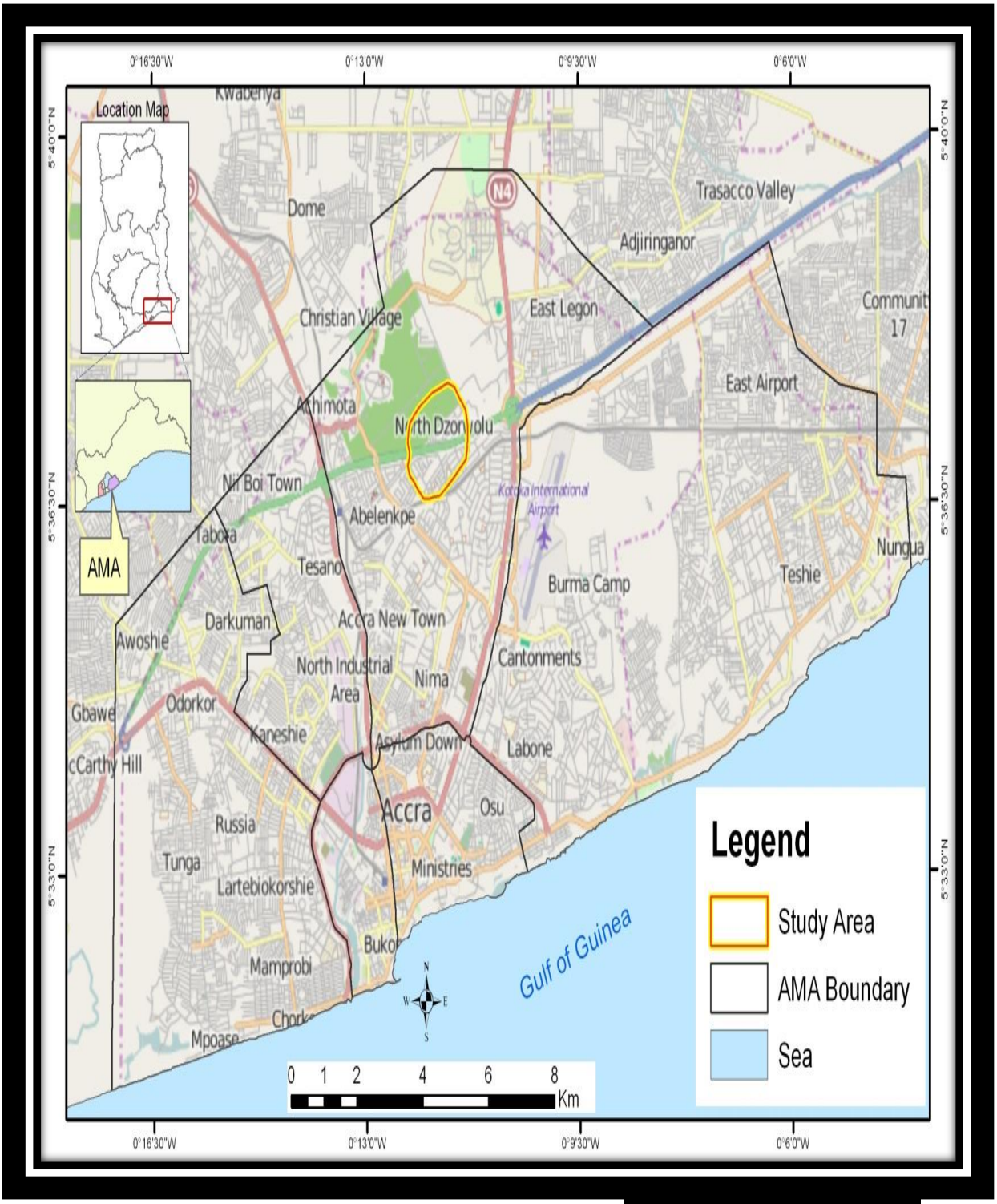


Figure 3.3 (Map of the Study Area) Source: Ghana Districts.com

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents and discusses the results of the study. It gives a description of the socio-economic characteristics of the sampled respondents. This is followed by a discussion of the factors influencing the respondent's access to microcredit. The effect of microcredit loans on respondent's investment decisions in their farming activities and major constraints in accessing microcredit by the respondents are discussed.

4.2 Socio-Demographic Characteristics of Respondents

Table 4.1 below presents the socio-economic characteristics of the respondents.

Table 4.1 Description of Socio-economic Characteristics of Respondents

Variable	Frequency	Percentage
Gender		
Male	120	78.95
Female	32	21.05
Education Attainment		
No education	51	33.55
Basic	73	48.03
Secondary	22	14.47
Tertiary	6	3.95
Landownership		
Self-ownership	16	11.19
Rent	38	26.57
Joint Ownership	2	1.40
Family land	35	24.48
Government land	10	6.99
Squatter	42	29.37
Farmer Association		
Yes	47	30.92
No	105	69.08
Credit Awareness		
Yes	122	80.26
No	30	19.74
Sources of Micro- Credit		
Rural and Community bank	1	1.82
Credit union	1	1.82
NGO	16	29.09
Others	2	3.64
Farm investment		
Yes	129	84.87
No	23	15.13

Source: Author's computation from field survey (2015)

Table 4.1 indicates that about 79% of the respondents were male and 21% were female. Although Ghana has a population with females being in the majority, 2010 population and housing census (PHC) results reveal that majority of the respondents were male.

About 33.55% of the respondents had no education, 48.03% had basic education, 14.47% had secondary education and 3.95% had tertiary education. This confirmed the results obtained from the 2010 PHC which stipulated that majority of the people in the Greater Accra Region had at least basic education. This indicates that majority of the vegetable farmers in the study area have had some level of education which could enhance the update of new techniques.

Land ownership

Figure 4.1 indicates that majority of the respondents; about 29% of them were squatters whilst 11% of the farmers interviewed owned the lands they worked on with the remaining lands being government-owned, family- owned, jointly-owned or rented. This outcome is consistent with the findings of Hofny-Collins (2006) who revealed that less than 30% of respondents interviewed in Accra owned the land.

Microcredit Access and Sources

About 80.26% of the respondents were aware of the availability of microcredit to vegetable farmers whereas 19.74% of the respondents were not. Close to 65% of the respondents acknowledged that they have had access to credit whereas 35% of them said they have never had access to credit.

About 29% of the respondents accessed microcredit from Non-governmental Organizations (NGO's), 1.8% from the Credit Union, 1.8% from the Rural and Community banks (RCBs), 63.64% also accessed credit from Microfinance institutions

whilst 3.64% also accessed credit loans from other sources such as friends and relatives, rotational savings, money lenders and "Susu" collectors.

Investing credit accessed into farming

Majority (85%) of the respondents asserted that they invested credit they accessed into their farming activities. Only 15% of the respondents did not invest into their farming activities after they accessed credit. This signifies that the vegetable farmers invest their credit in activity which is intended for.

Farmer Association

About 69% of the respondents did not belong to any farmer association whilst 31% of the respondents did. The Minimum age of the respondents was 19 years and maximum age was 86 years. The mean ages were about 43 years. The majority (56%) of the sample was between 40 and 59 years. The average household size was 4.5(Table 4.2). This was slightly lower than the results of the 2010 population and housing census which quotes the mean household size for agricultural households in the Greater Accra as 5 (GSS, 2013) (Table 4.2). About 62.5% of the farmers had a farm size of 0.5-2 acres and 37.5% had 3-4 acres. This result is in congruence with the findings of Hofny-Collins (2006) which discovered that mean farm size in Greater Accra region is less than 2ha(Table 4.2.)

Table 4.2 Means of demographic characteristics

Variable	Minimum	Maximum	Mean	Std. Dev.
Age (Years)	19	86	43.33	14.69
Household size (Number)	2	8	4.55	1.38
Farm Size (Ha)	0.5	4	2.06	0.99
Physical asset (GHS)	105.00	10360.00	1697.22	1953.70

Source: Author's computation from field survey (2015)

The table 4.2 indicates that, the mean age of the respondents was 43.33 years, with a minimum of 19 years, maximum of 86 years and standard deviation of 14.69years.

Table 4.2 indicates that, the mean household size was 4.6, with a minimum of 2, maximum of 8 and standard deviation of 1.38.

Table 4.2 indicates that, the mean farm size of the respondents was 2.06ha, with a minimum of 0.5ha, maximum of 4ha and standard deviation of 0.99ha.

Physical Asset (GHS)

Table 4.2 indicates that the mean physical asset valued at GHS was GHS 1697.22, with a minimum value of GHS 105.00, maximum of GHS 10360.00 and standard deviation of GHS 1953.70.

4.3 Factors Influencing Farmers' Access to Microcredit

Table 4.3 presents the results from the binary probit regression. This sought to access the factors influencing farmer's access to micro-credit.

Table 4.3 Estimated Probit Model Results

Variable	Coeff.	Marginal Effect	P-Value
Age	-0.009	-0.003	0.406
Gender	0.615	0.232*	0.095
Household size	0.008	0.003	0.949
Land Ownership	0.146	0.053*	0.092
Credit awareness	1.285	0.478***	0.000
FBO	0.176	0.062	0.580
Farm size	0.035	0.012	0.928
Physical asset	-0.000	-0.000	0.993
Educational level	-0.025	-0.009	0.704
Source of credit	-1.024	-0.377***	0.001
Farm experience	-0.017	-0.006	0.102
Savings	0.000	0.000	0.680
Distance to collection point	0.029	0.103	0.723
Rearing animal	-0.107	-0.039	0.758
Constant	-1.571	-	

Source: Regression Estimation from Author's Household Survey Data (2015), ***p<0.01, *P<0.10

Pseudo R-squared = 0.2458 obs = 152 Log likelihood = -54.7174 LR Chi (2) = 35.67 Prob>Chi (2) = 0.001

Pseudo R-squared of 0.2458 is the proportion of the total response variable explained by the regression model. This implies that about 24.58% of the changes that occur in the dependent variable (access to credit) are jointly explained by the independent variables. P-value of 0.01 implies that there is about 99.99% assurance that the model was not misspecified.

Ownership is statistically significant at 10% and a marginal effect of 0.053. This signifies that 1% increase in the number of owners of farm land results in 0.053% increase in the access to microcredit, all things held constant. This result is consistent with the study's apriori expectation which hypothesized a positive relationship between land ownership and access to credit. This result is coherent with McKechnie (2005) which also reports a positive relationship between land ownership and access to credit when assessing whether land title increases access to credit. Land ownership is very important in accessing microcredit since most of the financial institutions disburse credit to farmers with collateral security, implying that if a farmer does not have a surety such as land, the farmer is denied access to credit by the lender institutions.

Awareness is highly statistically significant at 1% and a marginal effect of 0.478. This implies that 1% increase in awareness of credit availability, lead to a 0.478% increase in the access to credit by the vegetable farmers in the study *ceteris paribus*. This result is consistent with this study's expectation which hypothesized a positive relationship between awareness and micro-credit access. It is also in accordance to Okoronkwo *et al*. (2014) results which showed a positive correlation between access to micro-credit and awareness of micro-credit availability. When assessing access and utilization of micro-lending scheme among rural farmers. The result is again corresponded with Anang *et al*.

(2015) which report a positive correlation between awareness and access to credit. The result was obtained when they were assessing factors influencing smallholder farmers' access to agricultural microcredit in Northern Ghana.

The gender of the respondents was statistically significant at 10% with a marginal effect of 0.232. This implies that the probability of a male vegetable farmer to access credit is higher than their female counterparts by 0.232% all things being equal. This result agrees with the study's expectation, which hypothesized a positive relationship between gender and access to credit. This result also agrees with Obisesan (2013) which assessed the determinant of access to credit among smallholder cassava farmers in the South West Nigeria by employing the binary logit model.

Source of credit was statistically significant at 1% with a marginal effect of 0.377. This implies that the probability of a vegetable farmer who access credit from formal financial institution to access credit reduces by 0.377% compared to their counterpart who access loan from other sources. This result is consistent with the study's *apriori* expectation which hypothesized a negative relationship between source of credit and access to loan. This result can be explained base on the premise that formal financial institution demands for more collateral surety from the vegetable farmers before they disburse credit to them.

Physical asset was not statistically significant and was also inconsistent with the study's expectation which hypothesized a positive relationship between physical asset and access of credit. But this result can be explained on the premise that if a vegetable farmer possesses a physical asset when the need arise instead of him/her accessing credit he/she will prefer liquidating some of the asset which is interest free to borrowing from the

financial institution which is interest bound. This result is consistent with Chauke *et al.* (2013) which report a negative relationship between access to credit and total asset.

Distance to collection point was not statistically significant though it was consistent with the study's expectation which hypothesized a positive relationship between distance of credit collection point and access to credit. This implies that the probability of a vegetable farmer who is close to a credit collection point to access the credit is higher than his/her counterpart that is far from the credit collection all things being equal.

Membership of farmer based organization (FBO) was not statistically significant but it was consistent with the study's *apriori* expectation. This hypothesized a positive relationship between access to credit and FBO. This implies that the probability of accessing credit is higher with farmers who belong to FBO than his/her counterpart who do not. This base on the premise that most financial institution prefers to disburse credit to farmers belonging to an organization. This helps to reduce the moral hazards associated with credit access. This result is also consistent with Obisesan (2013) which reports a positive relationship between memberships of organization and access to credit.

Savings was also not statistically significant but it was consistent with the *apriori* expectation. This implies probability of accessing credit by a vegetable farmer who saves in a financial institution is higher compared to his /her counterparts who do not save.

Farm size was also not statistically significant but it was consistent with the *apriori* expectation of the study. This implies that vegetable farmers that possess large farmers have a higher probability of access credit than their counterparts with smaller size. This

result agrees with Obisesan (2013) which reports a positive relationship between access to credit and land area cultivated.

4.4 Effects of Microcredit Access on Farmers' Investment

Table 4.4 presents the results from the OLS regression which ascertains the effect of micro-credit access on farmer's farm investment.

Table 4.4 OLS Regression Model Results

Variable	Coefficient	Standard Deviation	P-Value
Age	-0.072	0.055	0.199
Household size	0.868	0.053	0.110
Awareness	0.546**	0.261	0.044
Credit Access	0.171***	0.068	0.017
Savings	-0.696*	0.374	0.071
Ownership	-0.003	0.138	0.982
Interest on investment	0.000	0.002	0.928

R-Squared = 0.9091 Adjusted R-Squared = 0.8915 *** = Significant at 5%, **= Significant at 10% level of Significance

From the above table, the R-squared (R=0.9091), this implies that about 91% of the changes in the dependent variable are jointly influenced by the explanatory variables, which his very good for a cross-sectional data analysis. The probability score is normally used to test the null hypothesis of which the entire explanatory variable's coefficients equal to zero is significantly at 1% level of significance. Thus the specified model was significant at 1% level of significance (probability of likelihood ratio of 0.000). As such it can be concluded that the entire coefficients of the explanatory variables of the model are

not simultaneously equal to zero statistically. This identifies that the explanatory variables influence vegetable farmers' decision to access microcredit so as to invest in their farming and non-farming activities. Prob < 0.0001 also indicates that there is 100% assurance that the independent variables correlate with the dependent variable. Since the difference between the R-squared (0.9091) and the adjusted R-squared (0.8915) is little i.e. (0.0176), it implies that the explanatory variables are enough to predict the outcome of the regression and so the model specified for the analysis is a good fit.

From the analysis, awareness was statistically significant at 5% level of significance, with a coefficient of 0.546. This implies that as the awareness creation on the availability of credit for vegetable farmers increase by 1 unit, farmers farm investment amount also increase by 0.546 units, all things held constant. This result was in agreement with the aprior expectation which hypothesized a positive correlation between credit availability awareness and farmers decision to invest in their farms? Also from the analysis, access to credit was statistically significant, with a coefficient of 0.17. This implies that, if access to credit goes up by 1 unit, the investment decisions of vegetable farmers increases by 17%. This is consistent with this study expectation which hypothesized a positive correlation between access to credit and farmer investment amount. The result is in line with Gaih and Thapa (2006) that effective flows of information among farmers promote their awareness which leads to an increase in farmers' microcredit beneficiaries.

Savings was negative statistically significant, implying that 1 unit increase in savings will decrease the chance of a vegetable farmer's farming investment amount. This is inconsistent with the study's expectation which hypothesized a positive correlation

between savings and farm investment amount. The results indicate that age, household size, ownership and interest on investment were not statistically significant.

4.5 Constraints Faced By the Vegetable Farmers in Accessing Credit

The constraints of vegetable farmers in accessing microcredit were identified during the survey as presented in Table 4.5. The Kendall's 'W' was found to be 0.354 and significant at 1% level.

Table 4.5 Constraints in Accessing Microcredit

Identified Constraints	Mean Score	Rank
Collateral requirement	2.17	1st
Late disbursement	3.46	2nd
Association member	3.59	3rd
Distance collection point	4.13	4th
High interest rate	4.62	5th
Guarantor requirement	5.45	6th
Inadequate credit size	6.22	7th
Loan repayment period	6.36	8th
Diagnostics		
Number of observation	152	
Kendall's W	0.354	
D.f	7	
Asymptotic Sig.	0.000	

Source: Constraints Assessment from Author's Survey Data (2015)

The null hypothesis was rejected in favour of the alternate hypothesis which stated that there is an agreement among the vegetable farmers in the ranking of the constraints. The Kendall's 'W' of 0.354 indicates that there was 35.4 percent agreement between the

respondents in the ranking of the constraints faced by vegetable farmers with respect to credit access. (Table 4.5).

Among the identified ranked constraints, collateral requirement, late disbursement and association membership requirement were the three major constraining factors of accessing credit by the vegetable farmers.

Collateral requirement was found to be the most constraining factor of credit access. However, the success of credit access is highly dependent on the collateral to avoid moral hazards; the situation becomes aggravated when the farmer does not have any or enough asset to be used as collateral. The result is in consonance with the earlier findings of IFAD (2001) that lack of collateral requirement to access credit facility due to limited ownership and other factors of production, hinder majority of the farmers' chance of accessing microcredit. This result also confirms the earlier findings of Adebayo (2010) that collateral requirements as well as high interest rate among others are some of the major factor influencing the demand for microcredit.

Late disbursement of microcredit was another constraint identified. Since farming is seasonal, when credit is issued out to farmers before or after a particular season, the money normally gets rechanneled into other business which might not be profitable. The result is consistent with Nagarajan (2008) who identified an innovation of solving this problem by bringing banks closer to clients by the use of mobile vans to ensure that farmers receive credits early to interface their farming activities there by solving the late credit disbursement problem.

Association membership was the third major constraining factor pinpointed. Due to the moral hazards associated with credit disbursement the financial institutions normally prefer disbursing funds to farmers belonging to associations so that in case of default, the association would be held responsible. This result confirms earlier findings of Barham and Chitemi (2009) that farmers' association is an efficient mechanism for enhancing farmers' chance of accessing credit to enhance farm operations and market performances.

Distance collection point was identified as the fourth major constraining factor being identified. Microcredit availability and accessibility work efficiently and effectively when the distance between the microfinance institutions providing the credit is close to the locality of the farmer accessing the credit, than a place very far away. This result confirms the findings of Rehman (1998) and Anang *et al*. (2015) that the proximity of MFIs to customers normally promotes easier and effective transactions between them to solve the constraints in accessing credit.

The fifth constraint experienced by farmers in accessing microcredit is High Interest Rates which is charged on loans by the MFIs. This increases the farmer' risk and becomes more serious when there is a situation of crop failure due to bad weather conditions which affects the well-being of the small-scale vegetable farmers in Dzorwulu. This result corroborate with the previous studies by Okojie *et al.* (2010) and Anyanwu (2004) that one of the principal constraints being faced by farmers' credit access is high interest rates imposed by MFIs.

Inadequate credit size facing vegetable farmers in Dzorwulu affects their investment ability. This is consistent with the findings of Zywicki and Adamson (2007) that

inadequate credit does not enable farmers to undertake efficient and effective methods of production to achieve production targets.

The repayment period was considered the least constraining factor for accessing credit. This result agrees with the findings of Okojie *et al*. (2010) that credit repayment period should not be too short but be made flexible in payment.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, main conclusions and policy recommendations and suggestions based on the findings of the study.

5.2 Summary and Conclusions of the Study

Socio-economic characteristics of the respondents were recorded. These characteristics included age, gender, household size, experience and others. The OLS, Kendall's Coefficient of Concordance ranking techniques and the probit model were employed to estimate the factors influencing farm investment, constraints faced by the vegetable farmers in accessing credit and factors influencing access to credit respectively.

Socio-economic findings show that about 80.26% of the respondents were aware of the availability of credit to vegetable farmers whereas 19.74% of the respondents were not. About 29.09% of the respondent's accessed credit from Non-governmental Organization (NGO), 1.82% from the Credit Union, 1.82% from the Rural and Community banks (RCBs), 63.64% also accessed credit from Micro-finance institutions whilst 3.64% also accessed theirs from other sources such as friends and relatives.

Majority (65%) of the respondents agreed that they have accessed credit before whilst 35% had never accessed. Among those who had accessed credit, 85% of them invested part of the credit in their farming activities while only 15% did not invest into their farming activities.

The results of the study further demonstrated that awareness of the existence of credit for the vegetable farmers and ownership of the farmland influenced access to credit by the vegetable farmers, source of credit and gender out of the total variables incorporated into the probit model. It was observed from the study that awareness, land ownership and gender had a positive influence with access to credit whiles source of credit had a negative influence on access to credit.

The study again revealed that the farmer's farm investment amount was influenced by the awareness of microcredit existence, credit access and savings. The increase in awareness had a positive influence on farm investment amount, as well as credit access. The savings had a negative effect on farm investment.

The three most pressing constraints faced by the vegetable farmers in accessing credit were collateral requirement with a mean score of (2.17), late disbursement and association membership with mean scores of 3.46 and 3.59 respectively.

5.3 Recommendations

Based on the findings of the study, it is recommended that; Microfinance banks should ensure early and timely disbursement of microcredit to farmers so that they can use it to purchase quality and viable seedlings, seeds, fertilizer and to construct irrigation and facilities, etc. so as to realize an increased production during the farming seasons to realize high profits for reinvestment.

Microfinance institutions should minimize their collateral security demanded from farmers before the disbursement of loans since this will motivated these farmers to access the credit to boost their production. This is evident to the fact that majority of the farmers

who secured the microcredit invested part of it into their farming and non-farming activities.

Microfinance institutions should undertake popular education on their operations, terms and conditions to farmers whenever farmers apply for loan. This will enable the farmers to understand the operations whether they should go for the loan or not.

Microfinance institutions should make follow-up to farmers who have received funds to ascertain whether these farmers use monies for the intended purpose.

Vegetable farmers are encouraged to join farmer associations. This is believed to enhance their access to information as well as microcredit from the financial institutions.

The study also aimed at providing useful information to aid in decision making process for the enhancement of microcredit to numerous poor farmers.

5.4 Suggestion for Further Studies

Further research should be conducted on a longitudinal basis taking into consideration a comprehensive survey of the MFI's operations in the Greater Accra Region and its associated constraints which are envisaged in the assessment of microcredit to provide an effective empirical evidence for similar researches.

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APPENDIX 1
QUESTIONNAIRE

UNIVERSITY OF GHANA
COLLEGE OF BASIC AND APPLIED SCIENCES
DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS

TOPIC: ***MICRO CREDIT ACCESS AND FARMERS' INVESTMENT IN SMALL SCALE PERI-URBAN AGRICULTURE: A CASE STUDY OF DZORWULU VEGETABLE FARMERS.***

STRUCTURED INTERVIEW OF PERI-URBAN FARMERS ON ACCESS TO MICRO CREDIT IN NORTH AND SOUTH DZORWULU

This research will be used for academic purposes only and will go a long way to helping the improvement of financial situation of small-scale Peri-urban farmers. It will also open a new page for efficient and effective management of financial institutions and NGO's to come to the aid of the vegetable farmers in Dzorwulu and provide microcredit to enhance their production. Any information given is confidential and will solely be used for the purpose for which it is collected; thank you for your willingness to participate

INTERVIEW DATE…… QUESTIONNAIRE NUMBER……..….
TIME BEGAN …….. FARM AREA……..
TIME ENDED…….

(A) FARMER'S BACKGOUND

1. Name of farmer:
2. Age:
3. Gender: 1=Male [ ] 2= Female [ ]
4. Religion: 1=Islamic [ ] 2=Christianity [ ] 3=Traditional [ ]
5. Marital Status: 1=Married [ ] 2= Not married [ ] 3=Separated [ ] 4=Divorced [ ] 5=Widowed [ ]
6. Number of Wives if married (Does not apply for female farmers)……..
7. How many Children do you have? 1= None [ ] 2= One [ ] 3=Two [ ] 4=Three [ ] 5=above four [ ]

8. Level of education: 1=none [ ] 2=Basic [ ] 3=Middle school [ ] 4=J.H.S. [ ] 5=S.H.S. [ ] 6=Technical/Vocational [ ] 7=Tertiary [ ] 8= other (specify)……

9. Residential Status 1=Migrant [ ] 2=Indigenous [ ]

10. Land ownership: 1=Self ownership [ ] 2=Rent [ ] 3=Joint ownership [ ] 4=Family land (inherited) [ ]

11. How many laborers do you have? 1=One [ ] 2=Two [ ] 3=Three [ ] 4=Four [ ] 5=above four [ ] 6=none [ ]

12. How much do you spend on your laborers as salary?…….

13. How many vegetables crops do you grow?.....

14. What major vegetable crop do you grow?.....

15. What do you do with the income from the sale of your vegetables? Please tick

i. [ ]	Household expenditure
ii. [ ]	For Savings
iii.[ ]	Invest in Farm/ nonfarm activities
iv.[ ]	Others, please specify;

(B) BACKGROUND INFORMATION ON NON-FARM INCOME

In this section, questions on Non-farm income will be asked. Non-farm income is an income obtained through activities apart from the incomes from the agricultural produce. This income comes from buying and selling, food processing tailoring, metal works, crafts, security services, vocation, wage or salaried work and drug store operator etc.

16. In the past year, have you had any income besides your farm income? [Yes] [No]

17. How long have you been doing this non- farm activity and earning an income? 1=One year [ ], 2=Two years [ ], 3=Three years [ ], 4=Four years [ ], 5=Five years and above [ ]

18. Have you ever received a formal or informal loan facility for your non-agricultural enterprise? In the past 5 years? [YES] [NO]

19. From whom did you receive this loan from?

SOURCE OF LOAN	PLEASE TICK
Ghana Commercial Bank	
Agricultural Development Bank	
Microfinance	
Rural Banks	
NGO'S	
Others (Banks)	

(C) FARMER'S LOAN ACCESS AND INVESTMENT DECISIONS

20. Are you aware of any credit facilities for vegetable growers in Ghana?

[YES] [NO]

21. Have you receive credit for your vegetable farmers before?

[YES] [NO]

22. If yes, how much were you given as credit……....

23. Is the amount given enough to undertake any meaningful investment? [Yes] [No]

24. Do you have a choice in the amount to be given or the type of credit? [Yes] [No]

25. Which of the following institutions gave you the credit facility? Please Tick;

1=Commercial Bank [ ] 2=Agricultural Development Bank [ ] 3=NGO [ ]

4=Credit Union [ ] 5=Rural and Community Bank [ ] 6=Microfinance [ ]

7=Apex bank [ ] 8=Savings and Loan Company [ ]

9=others……..

26. When was your last time of receiving credit from this source……..

27. Distance to credit collection point 1 = near 0 = Otherwise

28. How is the repayment of the credit done? 1= in full [ ] 2= Installment [ ]

3=others. Please specify; ……

29. Do you finance part of your farm operations yourself? 1=Yes [ ] 2= No [ ]

30. Do you save part of your income? 1=Yes [ ] 2=No [ ]

31. If yes, how much do you save? GH₵ ……

32. If you go in for the credit, what do you do with it?

1= Expand my farm operations [ ]

2= Invest in non- farm activities [ ]

3= Invest some in my farm operations and invest the rest in non-farm activities [ ]

4= Use it to cater for my family [ ]

5= Use it to pay rent advance and use the rest to buy farm inputs [ ]

33. How do you finance your farm investments?

1= Owned source [ ] 2=Farm Income [ ] 3= Micro credit [ ]

34. If by micro credit, how long have you received micro credit?

1= 1 year [ ] 2= 2 years [ ] 3= 3years [ ] 4= 4years [ ]

5= 5years and above [ ]

35. Have you received any loan from a microfinance company?

[YES], [NO]

36. If yes how much did you received? ……..

37. Did you invest part of your loan from microfinance in farming activities?

[YES], [NO]

38. If yes, what percentage did you invest?

1 = 0 -10 [ ] 2= 11- 20 [ ] 3= 21- 30 [ ] 4= 31-40 [ ]

5= 41-50 [ ] 6= 51-60 [ ] 7= Above 60 [ ]

39. Has the investment affected the productivity of your farm? YES [ ] NO [ ]

40. Do you save part of your income being realized from your farming and non-farm activities? YES [ ] NO [ ].

(D) BACKGROUND INFORMATION OF THE FARMER'S PERSONAL CHARACTERISTICS

In this part of the interview, I want to ask questions about you as a person

41. Do you own a house? [YES] [NO]

42. What land of house do you own? **Value (GHS)**

1= Cement house (Single Room) [ ] .....

2= Cement house (Chamber and Hall) [ ] .....

3= Square mud hut with metal roof [ ] .....

4= Single- Story building [ ] .....

5= Story building [ ] .....

6 = other (Please specify).....

43. Do you rear some animals? [YES] [NO]

If Yes, How many animals do you rear?

	Animal	Quantity	Value
44.	Goats	……	.....
45.	Cows	……	.....
46.	Sheep	……	.....
47.	Horses	……	.....
48.	Donkeys	……..	.....
49.	Other animals (please specify)	……...	.....

50. Other physical asset owned

Asset (List)	Number	Value

51. Have you been able to increase your farm productivity after receiving the credit? [YES] [NO]

52. When are you requested to repay the loan? 1= at the end of the year [ ] 2= after the sales of harvested produce [ ] 3= after the Planting season [ ]

53. How is the paying back of the credit done 1= in full [ ], 2= Installment [ ], 3= others, please specify; ……

54. Are you given any directives on how to use the credit? YES [ ] NO [ ]

55. Have you been able to repay the loan you received? [YES] [NO]

56. If No, do you have any intention and the period of paying back the credit? [YES] [NO]

57. In case of loan repayment default, are you; 1= Pardoned [ ], 2= Charged interest [ ], 3= Repayment scheme adjusted to make it more flexible for payment [ ].

58. How many children in your household take part in your farm activities? 1= 1-2[ ], 2=3-4[ ], 3=5-6[ ], 4=7-8[ ], 5=9-10[ ], 6=Above 10 children [ ].

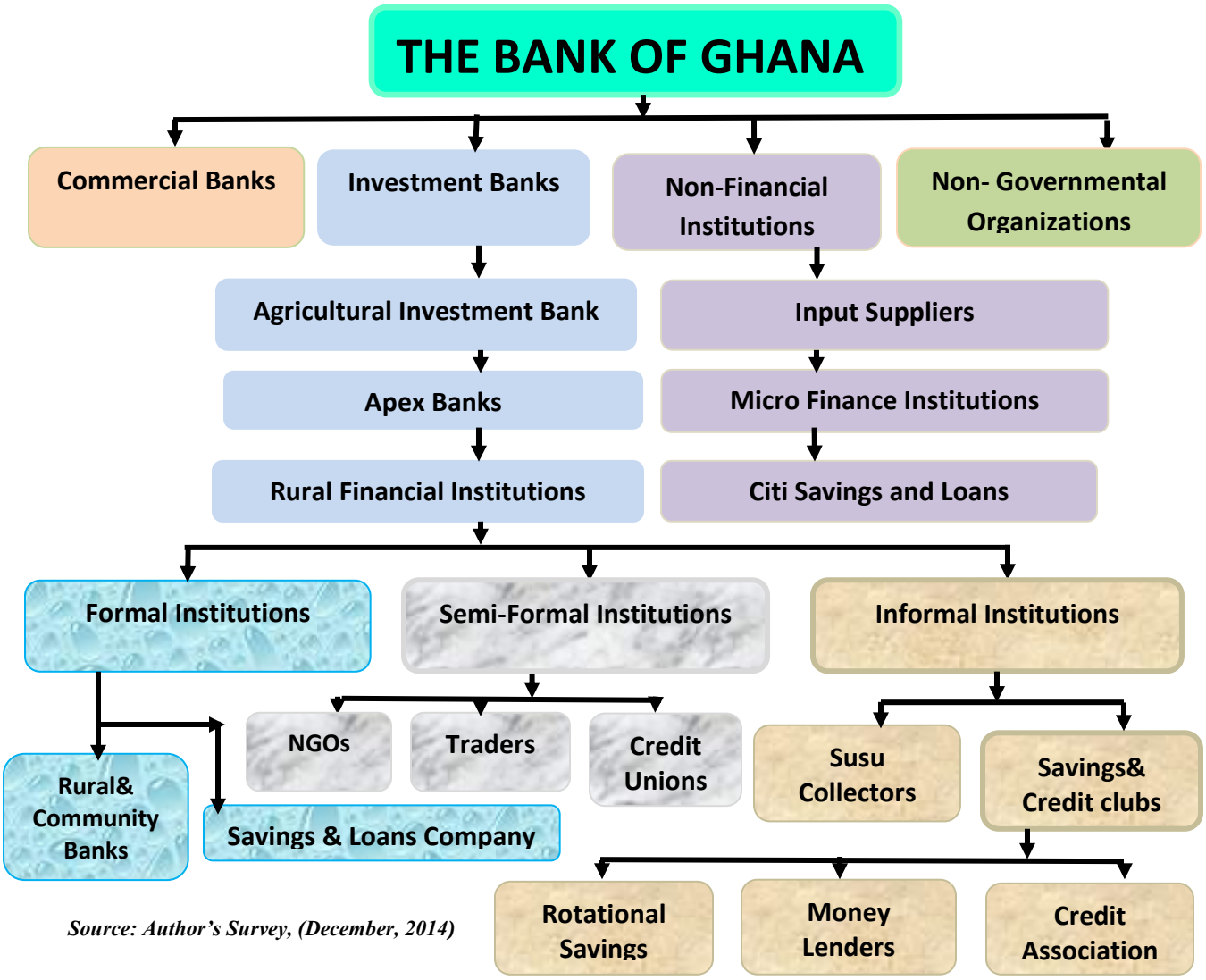
59. How many old farmers part take in your farm activities? 1=1-2[ ]-, 2=3-4 [ ], 3=5-6[ ] 4=7-8 [ ], 5= 9-10 [ ], 6= Above 10 aged [ ].

(E) CONSTRAINTS IN MICROCREDIT ACCESS FOR SMALL SCALE VEGETABLE FARMERS. In general how much of a problem are of the following constraints in accessing micro credit for vegetable farmers like yourself? (Please rank ‘’1’’ for most pressing to ‘’8 for the least pressing constraint:

Question number	**Constraint**	**Rank**
60	Distant collection point	
61	Late Disbursement	
62	Collateral requirement	
63	Association membership requirement	
64	High Interest rate	
65	Guarantor requirement	
66	Inadequate credit size	
67	Short repayment period	

APPENDIX 2

STRUCTURE OF AGRICULTURAL CREDIT SYSTEM IN GHANA



Source: Author's Survey, (December, 2014)