UNIVERSITY OF CAPE COAST

FACTORS INFLUENCING REPAYMENT OF MINISTRY OF FOOD AND AGRICULTURE (MOFA) MICRO-CREDITS BY AGRICULTURAL PRODUCERS IN THE CENTRAL REGION OF GHANA

BY

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Thesis submitted to the Department of Agricultural Economics and Extension of the School of Agriculture, University of Cape Coast in partial fulfilment of the requirements for award of Doctor of Philosophy Degree in Agricultural Extension

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: ..... Date: 23-1-2012

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Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: ..... DATE: 23-01-2012

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ABSTRACT

The study examined the factors influencing the repayment of MOFA micro-credits in the Central Region of Ghana using a descriptive-correlation design. A multi-stage random sampling procedure was used to obtain data for the study.

Chi-square tests at 5% level of significance showed that there was significant difference between the repayment of MOFA micro-credits and the demographic and socio-economic characteristics of clients. The F-values of 686.71 and 15.96 indicated that the micro-credit repayment models had good fit ($p = 0.00$) with an adjusted R^2 of 0.999 and 0.896 for micro-credit clients and Agricultural Extension Agents perceptions on MOFA micro-credit repayment respectively. The probability of MOFA micro-credit repayment is influenced mostly by stability in agricultural production, type of agricultural activity client engaged in, wealth status of client, household size of client, adequacy of credit, market opportunities for produce, repayment duration of credit, training for client, timely credit delivery, and supervision of credit use.

It is recommended that MOFA micro-credits should be re-packaged with reasonable interest rates before delivery to the clients at the right time and with adequate credit repayment duration depending on production cycle. MOFA should target agricultural producers irrespective of age, sex, marital status, educational level, household size and wealth status with credit. Resource poor clients should be in groups for credit programmes. MOFA should train clients in agricultural activities to improve on their knowledge and skills. There should be regular supervision on credit allocation and use, while potential markets established within preferred areas for sale of produce.

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DEDICATION

To my loving son Selorm and the entire Omega family in and outside Ghana.

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LIST OF ACRONYMS

AAGDS	Accelerated Agricultural Growth and Development Strategy
ADB	Asian Development Bank
ADRA	Adventist Development and Relief Agency
AEA	Agricultural Extension Agent
AgSSIP	Agricultural Service Sub-sector Investment Programme
APO	Asian Productivity Organisation
ASA	Association for Social Advancement
BAAC	Bank for Agriculture and Agricultural Cooperatives
BBS	Bangladesh Bureau of Statistics
BRAC	Bangladesh Rural Advancement Committee
CARD	Centre for Agriculture and Rural Development
CGAP	Consultative Group to Assist the Poor
CIDA	Canadian International Development Agency
FABS	Food and Agriculture Budgetary Support
FASDEP	Food and Agriculture Sector Development Programme
FBO	Farmer Based Organisation
FBODF	Farmer-Based Organisation Development Fund
GDP	Gross Domestic Product
GH ¢	Ghana Cedis
GSS	Ghana Statistical Services
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IRDP	India Rural Development Programme
ISSER	Institute of Statistics Social and Economic Research

MFIs	Micro Finance Institutions
MOFA	Ministry of Food and Agriculture
NGO	Non Governmental Organisation
OECD	Organisation of Economic Community for Development
Rs	Rupes
SD	Standard Deviation
SEWA	Self Employed Women's Association
SPSS	Statistical Package for Social Sciences
UPPAP	Uganda Participatory Poverty Assessment Project
UNCDF	United Nations Capital Development Fund

CHAPTER ONE

INTRODUCTION

Background to the Study

Agriculture is considered the bedrock of the economy of Ghana, contributing about 36% to Gross Domestic Product, and contributing significantly to the livelihood of about 60% of the country's population (ISSER, 2002). Food crops such as cassava, yam, sweet potato, maize, sorghum, millet, cowpea, groundnut, oil palm, coconut, citrus, cocoa; and livestock such as sheep, goat, cattle, pig and poultry, as well as aquaculture and marine fishing are among agricultural items produced by farmers in the country.

The traditional roles of agriculture in Ghana include the provision of food security, supply of raw materials for industry, creation of employment and generation of foreign earnings. Beyond these, agriculture is also recognized to have a greater impact on poverty reduction than other sectors. The poverty reduction role of agriculture was assessed via the link between agricultural growth and lower food prices. Other roles of agriculture are ensuring social stabilization, serving as a buffer during economic shocks, and ensuring environmental sustainability (FASDEP I, 2002). These roles of agriculture in Ghana's economy make agricultural policy an intricate part of the broader national policy. However, the agricultural sector has a wide range of challenges. These challenges include an aging farmer population and the

inability of the sector to attract the youth; high illiteracy among producers; high incidence of poverty among farmers limiting their ability to respond to opportunities; traditional practices such as bush burning; and limited access to technologies such as irrigation and agro-chemicals, which hinders the sustainability of resource use (FASDEP II, 2009).

FASDEP II (2009) also mentioned the underlying causes of low productivity in Ghanaian agriculture as poor soil conditions, poor distribution of rainfall, diseases and pests, lack of improved planting materials, and poor seed and breeds. There is also low adoption of existing technologies due to poor market incentives and inaccessibility to relevant inputs. Road and transport infrastructure for the movement of agricultural commodities are inadequate, while the rate of expansion of irrigation infrastructure has been slow, largely because of the high capital cost in irrigation development. The FASDEP II document claims that lack of appropriate technologies for processing, transporting, handling and storing produce as well as limited knowledge in post harvest management have resulted in high post harvest losses of about 20%-50%. Availability of agricultural land is declining due to population pressure and urbanization, while the cost and demand for energy in the agricultural production and processing sectors of the economy is growing rapidly at 7% per annum.

MOFA (2007b) mentioned that lack of credit is one of the most important constraints in agricultural production. The internal factors limiting credit access are lack of collateral due to the poor quality of farm assets, poor financial management, the risky nature of farm production, and the inability of clients to prepare viable project proposals. External factors are high interest

rates, high cost of service delivery to the sector, and perception of financial service providers about farming as being a high risk activity. Following the liberalization of the financial sector in the early 1990s, the share of agricultural credit in total bank lending initially fell from the mandatory 25% to about 10% before recovering to 12% in 1998. The 25% mark has not been achieved since then (Oduro and Kwadzo, 2006).

The continuing inadequate access of African farmers to credit is believed to have significant negative consequences for various aggregate and household level outcomes, including technology adoption, agricultural productivity, food security, nutrition, health, and overall household welfare. World Bank (2007) report shows a strong correlation between credit sector development and reductions in poverty and inequality, and experience in Asia and Latin America has amply demonstrated the credit worthiness of the poor. Therefore, if African countries are to achieve faster, sustainable rates of development, the poor must have access to credit and other financial products, and services targeted to their needs. Agricultural credit enhances productivity and promote standard of living by breaking vicious cycle of poverty of small scale farmers. The crucial role of credit in agricultural production and development can also be appraised from the perspective of the quantity of problems emanating from the lack of it (Adegeye and Dittoh, 1985).

During the past 40 years, African governments and donors have set up credit programmes aimed at improving rural household access to credit. However, the vast majority of these credit programmes, especially the agricultural development banks, which provided credit at subsidized interest rates, have failed to achieve their objective of serving the rural poor as

sustainable credit institutions (Adams, Graham and Von Pischke, 1984; Adams and Vogel, 1985; Braverman and Guasch, 1986).

The World Bank (2007) indicated that between 50 and 80 percent of farmers in many developing countries have inadequate access to financial services. Failure to provide more households and small and medium farm enterprises with the financial services they need acts as a brake on development. Poor people and small scale agricultural enterprises, especially those in rural areas or in the informal sector, face many barriers to financial access, including distance from services, the inability to produce formal documents when needed, and high transaction costs. In response to these failures and recognizing that traditional commercial banks typically have no interest in lending to the poor rural households, innovative credit delivery systems are being promoted as a more efficient way of improving rural households' access to formal credit, with no or some involvement by government. Most of these lending programmes are group based, whereby group of people with common goals, aspirations and interest and who have a constitution and bye-laws are given credit facilities upon request.

Von Pischke (1991) claims that obligations to formal institutions may not be accorded very high priority, especially when institutions are not responsive to clients. In some instances, the opposite may be true. For example, when a non-governmental organization (NGO) that was known in the past for providing grants moved into providing loans, recipients often saw the NGO as a soft target. Loan recipients recognize that the NGO would be unwilling to put pressure on lenders who defaulted and would certainly be unwilling to force the sale of collateral.

Micro-credit as a tool of rural development through the development of micro enterprises was introduced to Ghana's economy because formal credit institutions and informal lending system either failed to deliver the goods or were not very much supportive to the growth of micro enterprises. Non-governmental Organisations; donor countries through their agencies in Ghana and other international bodies; financial institutions both external and internal; and the government of Ghana, so far, have provided funds to the private sector to boost agricultural production.

Non-governmental Organisations like Sasakawa Global 2000 in the early 1980s, Adventist Development and Relief Agency (ADRA), World Vision, Freedom from Hunger Ghana and others entered the country with the objective of helping to improve food production. Projects undertaken by these organizations are supported by funds from external donors. Farmers were given credits in the form of loans and grants for the production of various types of food and agricultural products.

MOFA (2007a) shows that the Canadian International Development Agency (CIDA), as part of its contribution towards supporting Ghana's budget under the project name "Food and Agriculture Budgetary Support" (FABS), in 2005 through the Ministry of Food and Agriculture, made credit facilities amounting to GH ¢126,502.50 available to groups of farmers and fishermen, agro-processors and individual farmers in the Central Region. This was to help boost food and agricultural production. The repayment period ranged from one to three years, depending on the type of agricultural activity engaged in by the recipient and the amount of money received. The amount recovered as at December 2009 was GH ¢26,191.65, representing 20.7% recovery (FABS,

2009). A cross section of concerned Ghanaians claimed the delay in repayment of loan or failure to pay back the credit facilities could be attributed to failure on the part of clients to efficiently use the credit for the intended purpose (MOFA, 2007a).

The Ministry of Food and Agriculture, as part of cushioning the high costs associated with food and agricultural production, introduced and extended various credit facilities to food and agricultural producers. Cases in point include provision of credits in the form of seeds of maize, rice, sorghum and millet, and cash under the Grains and Legumes Development Board. The Accelerated Agricultural Growth and Development Strategy (AAGDS) and FASDED I recognized increased agricultural production and marketing as the driving force for attaining food security, wealth generation, and poverty reduction. Programmes aimed at achieving these goals were implemented during the Agricultural Service Sub-sector Investment Programme (AgSSIP) between 2001 and 2005 (AgSSIP, 2005). MOFA (2007a) highlighted that the AgSSIP component that emphasized the development of Farmer-based Organisations (FBOs) provided funds under its fund operation name, Farmer-based Organisation Development Fund (FBODF). These funds were sourced by various categories of farmer groups, societies, co-operatives and associations for food and agricultural development activities.

The Root and Tuber Improvement Programme, with the first phase completed in 2005, provided improved planting materials for cassava, sweet potato, yam and cocoyam as well as cash to farmers for the establishment of planting material multiplication sites. The programme supported processors of root and tuber products with knowledge, skills and funds to process and add

value to root and tuber produce. The second phase, which started in the year 2006, was designed to provide credit support to all those in the root and tuber production chain to add value to root and tuber products.

Another equally important credit support programme provided by the government of Ghana through the Ministry of Food and Agriculture to maize farmers in the Central Region in the years 2005, 2006 and 2007 was Expanded Maize Production Support Programme (MOFA, 2009a). The programme provided agricultural inputs such as seed maize, fertilizers, weedicides and storage pesticides to farmers, with the condition that repayment would be done either in cash or in kind after harvest or sale of produce. Reports on total debt and amount recovered by the 13 participating districts in the region showed that in the year 2005, out of GH ¢150,000 agricultural credit given to farmers, only GH ¢83, 161.50 was recovered. The debt for 2006 was GH ¢404,880.00 and the recovery was GH ¢192,000.60. In 2007, the government of Ghana gave maize farmers credit facilities amounting to GH ¢78,000. Repayment was GH ¢48,594.

Farmers, especially those who benefited from the micro-credit facilities are still poor, with the low rate of development experienced in their various communities. Ghana is not meeting her food security needs. Therefore, food is not readily available to most Ghanaians in the right quantity and quality, and at the right place and at the right time (FASDEP II, 2009). The regional poverty analysis conducted in 2001 shows that the Central Region is the fourth poorest region in Ghana (Ghana Statistical Services, 2002). The region cannot meet its food requirement and therefore relies on other regions for support.

A look at the result of a study by IFPRI Ghana Strategy Support Programme shows that growth led by the agricultural sector will be more effective in reducing poverty both at the national level and in the poor regions because of strong income and consumption linkages in agricultural growth (Alhassan and Xinshen, 2006).

The main supply side challenges to financial agricultural investments are finding measures to reduce risk and cost of lending to the sector, and improving the response of formal service providers to the needs of operators in the sector. Although smallholders will rely on informal sources of financing, the funding from these sources are limited and interest rates are high. The demand side challenges are reducing the high default rate, improving the financial management ability of operators, and finding more effective social collateral as alternatives to the more traditional forms of collateral that financial institutions prefer.

Statement of the Problem

Issues emanating from agricultural financing indicated the following constraints: limited access to agricultural financing (sources of funding and cost of credit), loan products have not been designed to take account of special needs of agriculture, untimely delivery of agricultural credit, which subsequently limits effectiveness of fund use and results in low credit recovery.

Many factors were believed to militate against the prompt repayment of agricultural credit facilities including late delivery and allocation of credits, low yields and total crop failure due to poor rainfall, poor soils, poor storage

system, post harvest losses, and poor markets and pricing. It is also believed that most of the farmers did not use the credits at the right time, in the right quantity and for the intended purpose (MOFA, 2007a).

The fact is that several millions of Ghana Cedis have been extended to agricultural producers as loans or credit by the government, the international bodies and financial institutions with the expectant growth in the food and agriculture sector. Most of the clients failed to fully pay back loans or credits granted them by MOFA. These developments clearly suggest that a number of undetected factors are constraining the appropriate use of credits and the achievement of the expected benefits from credits. There is therefore the need to identify and investigate these factors in order to promote efficient use and repayment of MOFA micro-credits.

Limited studies have been conducted in Central Region of Ghana to identify factors that militate or encourage the repayment of agricultural micro-credits by farmers. A study was carried out by Arthur (2008) in Mfantseman Municipality to determine, among other things, the attitude of male and female clients towards repayment of loans they contracted with Microfinance Institutions and MOFA. The study revealed that more males have defaulted than females in the category of 4-6 times whilst more females have defaulted than males in the categories of 1-3times and 7 times. Generally there was a significant difference between members who have faced group pressure to repay their loans and full repayment of loan but this was not contingent on either sexes.

Therefore, with the broad attention of the government, donors, NGOs and financial institutions, both formal and informal, directed towards the

provision of soft agricultural credits to small scale agricultural enterprises, it has become paramount to study the factors influencing repayment of MOFA micro-credits by agricultural producers.

Main Objective

The main objective of the study was to examine the factors influencing the repayment of the Ministry of Food and Agriculture's micro-credit facilities (or loans) by clients in the Central Region of Ghana.

Specific Objectives

The study specifically sought to:

- determine the effect of demographic and socio-economic characteristics of MOFA micro-credit clients on the repayment of MOFA micro-credits by clients in the Central Region. The characteristics are based on age, sex, marital status, level of education, household size, wealth status, type of agricultural activity engaged in, and experience in agricultural enterprise.
- Determine the effects of micro-credit sourcing, packaging, delivery, allocation, utilization and repayment conditions on repayment of MOFA micro-credits by clients in the Central Region.
- measure the repayment of MOFA micro-credits based on the percentage of repayments made by clients in the Central Region.
- identify the factors influencing the repayment of MOFA micro-credits by clients in the Central Region.

- examine the relationship among the factors influencing repayment of MOFA micro-credits by clients in the Central Region.
- determine the best predictors of the repayment of MOFA micro-credits by clients in the Central Region.
- design a suitable model for the repayment of MOFA micro-credits by clients in the Central Region.

Research Questions

1. What are the repayment rates of MOFA micro-credits based on the demographic and socio-economic characteristics of MOFA micro-credit clients?
2. What are the repayment rates of MOFA micro-credits based on how micro-credits are sourced, packaged, delivered, allocated and utilized?
3. What is the rate of the repayment of micro-credits by clients in terms of percentage?
4. What are the factors influencing repayment of MOFA micro-credits by clients in the Central Region?
5. Is there any relationship among the identified factors influencing repayment of MOFA micro-credits?
6. What are the best predictors of repayment of MOFA micro-credits by clients in the Central Region?
7. What is the suitable model for repayment of MOFA micro-credits by clients in the Central Region?

Research Hypotheses

i. H_0: There is no significant difference between male and female clients on the repayment of MOFA micro-credits.

H_1: There is significant difference between male and female clients on the repayment of MOFA micro-credits.

ii. H_0: There is no significant difference between married and unmarried clients on the repayment of MOFA micro-credits.

H_1: There is significant difference between married and unmarried clients on the repayment of MOFA micro-credits.

iii. H_0: There is no significant relationship between age of micro-credit clients and the repayment of MOFA micro-credits.

H_1: There is significant relationship between age of micro-credit clients and the repayment of MOFA micro-credits.

iv. H_0: There is no significant relationship between level of education of micro-credit clients and the repayment of MOFA micro-credits.

H_1: There is significant relationship between level of education of micro-credit clients and the repayment of MOFA micro-credits.

v. H_0: There is no significant relationship between household size of micro-credit clients and the repayment of MOFA micro-credits.

H_1: There is significant relationship between household size of micro-credit clients and the repayment of MOFA micro-credits.

vi. H_0: There is no significant relationship between wealth status of micro-credit clients and the repayment of MOFA micro-credits.

H_1: There is significant relationship between wealth status of micro-credit clients and the repayment of MOFA micro-credits.

vii. H_0: There is no significant relationship between experience of clients in agricultural enterprise and the repayment of MOFA micro-credits.

H_1: There is significant relationship between experience of clients in agricultural enterprise and the repayment of MOFA micro-credits.

viii. H_0: There is no significant relationship between time credits are made available to clients and the repayment of MOFA micro-credits.

H_1: There is significant relationship between time credits are made available to clients and the repayment of MOFA micro-credits.

ix. H_0: There is no significant relationship between type of agricultural activities engaged in by micro-credit clients and the repayment of MOFA micro-credits.

H_1: There is significant relationship between type of agricultural activities engaged in by micro-credit clients and the repayment of MOFA micro-credits.

x. H_0: There is no significant relationship between adequacy of credit and the repayment of MOFA micro-credits.

H_1: There is significant relationship between adequacy of credit and the repayment of MOFA micro-credits.

xi. H_0: There is no significant relationship between training for micro-credit clients on skills in agricultural production and business development and the repayment of MOFA micro-credits.

H_1: There is significant relationship between training for micro-credit clients on skills in agricultural production and business development and the repayment of MOFA micro-credits.

xii. H_0: There is no significant relationship between stability in agricultural production and the repayment of MOFA micro-credits.

H_1: There is significant relationship between stability in agricultural production and the repayment of MOFA micro-credits.

xiii. H_0: There is no significant relationship between marketing opportunities for produce and the repayment of MOFA micro-credits.

H_1: There is significant relationship between marketing opportunities for produce and the repayment of MOFA micro-credits.

xiv. H_0: There is no significant relationship between level of income generated when credit was used and the repayment of MOFA micro-credits.

H_1: There is significant relationship between level of income generated when credit was used and the repayment of MOFA micro-credits.

xv. H_0: There is no significant relationship between supervision and follow up of credit allocation and use and the repayment of MOFA micro-credits.

H_1: There is significant relationship between supervision and follow up of credit allocation and use and the repayment of MOFA micro-credits.

xvi. H_0: There is no significant relationship between repayment duration of micro-credits and the repayment of MOFA micro-credits.

H_1: There is significant relationship between repayment duration of micro-credits and the repayment of MOFA micro-credits.

xvii. H_0: There are no significant relationships among micro-credit sourcing, packaging, delivery, allocation, utilization and repayment conditions and the repayment of MOFA micro-credits.

H_1: There are significant relationships among micro-credit sourcing, packaging, delivery, allocation, utilization and repayment conditions and the repayment of MOFA micro-credits.

xviii. H_0: There are no significant relationships among the independent variables (repayment factors) that influence the repayment of MOFA micro-credits.

H_1: There are significant relationships among the independent variables (repayment factors) that influence the repayment of MOFA micro-credits.

Justification of the Study

Micro-credit is a financial innovation which originated in Bangladesh, where it has successfully enabled extremely impoverished people to engage in self-employment projects that allowed them to generate income and, in many

cases, began to build wealth and exit poverty. Micro-credit is increasingly gaining credibility in Ghana and many organizations are contemplating micro-credit projects as a source of future growth.

CIDA (1998) viewed micro-credit as an important instrument to reduce poverty. Access to modest financial services and other forms of micro enterprise support are considered key strategies to reduce poverty, providing the poor with opportunities for self reliance through entrepreneurship and stabilizing the livelihoods of the poor during difficult times. Many donors have quite a number of immediate objectives of micro-credit: broadening and strengthening the financial sector, cultivating entrepreneurship, providing a means of social and economic empowerment, and nurturing greater community participation. Micro-credit in particular has the potential to develop sustainable structures through which disadvantaged groups can gain greater access to resources, because this instrument is targeted towards many poorer communities. It can increase income generating opportunities for the poor and the poorest of the poor, raising productivity and improving their standard of living.

The present study is relevant for the fact that the financial institutions are not responsive to calls from agricultural producers for credits to support food and agricultural production and processing. Therefore, it becomes imperative for farmers to direct attention to the government for credit support through MOFA. MOFA is the government outfit that addresses issues pertaining to food and agricultural production in Ghana. Therefore, policies and strategies that favour food security, employment creation and growth in incomes of citizens through agricultural production are appreciated. If credit is

considered very necessary in combination with other factors of agricultural production to improve production levels, then efforts are necessary to sustain and improve the credit scheme to the benefit of farmers and the government.

Credits advanced to clients are to be repaid within the stipulated time to enable other agricultural producers to benefit. Prompt repayment of MOFA credit by clients leads to the economic benefit of sustained availability of various credits for agricultural producers. More people will have the confidence to take agriculture as a source of employment, as access to capital is assured. The present study could provide the required clue to institutions and organizations into agricultural credit financing on how best to package and deliver credits to agricultural producers and what model to employ in order to ensure the efficient use and effective repayment of agricultural credits. Also the findings and the model developed can form the bedrock upon which studies can be carried out in other regions of Ghana to test the suitability of the credit repayment model developed.

Limitation of the Study

The literature identifies many factors which influence the repayment of micro-credits given to farmers to increase food and agriculture production. However, the present study has been limited to only factors indicated in the literature as very important in influencing the repayment of micro-credit.

Delimitation of the Study

The study was conducted in only ten out of the total of seventeen districts in the Central Region. This geographical limitation is as a result of

limited funding and other resource constraints. In spite of this limitation the findings could safely be generalized to reflect what prevails in the Central Region of Ghana.

Definition of Terms

The following terms are defined within the scope and context of the study:

Factors: A circumstance, fact, or influence that contributes to a result or outcome. The result or outcome in the context of this research is the repayment of MOFA micro-credits by clients in the Central Region of Ghana.

Agricultural production: The cultivation of crops, rearing of animals, aquatic life management, forest product management, and agro processing.

Agricultural producers: These are individuals engaged in the production and/ or processing of agricultural produce. They include crop farmers, woodlot producers, owners of animals, fish farmers, marine fishermen, and agro processors such as crops, animals and fish processors.

Microfinance: refers to loans, savings, insurance, transfer services and other financial products targeted at low-income clients. Micro-credit, then, is one component within the broader spectrum of microfinance.

Agricultural Micro-credit: Refers to small funds; small scale machinery, agro processing facilities, agro storage facilities; planting materials; fertilizers;

pesticides; breeds of animals; feeds; drugs; small housing for animals; fingerlings and small-sized fish ponds, nets, outboard motors. These micro-credits are extended to the unemployed to start an agricultural enterprise, and existing agricultural entrepreneurs to boost the performance of their enterprise.

Small fund: A small amount of money in the form of loan or grant made available to individuals or group of people to start or run a small business. In the context of this research, a small fund is a loan given to small-scale farmers to add value to the production of crops, animals, and for marine fishing and fish farming, processing and storage of food and agricultural products.

Client: Someone who gets services or advice from a professional person, company or organization. In the context of this study, a client is an agricultural producer who produces crops or livestock or who is into fish farming, marine fishing or agro processing and has been provided with agricultural micro-credits in the form of agricultural inputs or cash by MOFA. The agricultural producer is expected to pay back the credit either in cash or in kind within specified time period.

Financial Institution: An institution that acts as an agent that provides financial services for its clients or members. A financial institution provides a service as intermediary of the capital and debt markets. It is responsible for transferring funds from investors to companies in need of those funds. The presence of financial institution facilitates the flow of monies through the economy. Common types of financial institutions include banks, credit unions,

stock brokers and asset management firms.

Transaction Costs: This includes all non-interest expenses incurred in the process of giving or obtaining credit. The transaction costs in the context of this study included transportation costs, processing fees for credits and commitment fees for credits, time spent by the clients and phone calls made.

Adequacy of Credit: This implies the volume of credit sourced by clients. It could be a one package of credit obtained from a single source, or multiple packages obtained from single source or more than one source.

Single Credit Financing: This is a single package of credit made available by a credit source. An example given in the study was a package for maize production. The package included seed maize, fertilizers, weedicide and insecticide.

Multiple Financing: This implies more than one package of credit obtained from a single source or more than one source. An example in the study is a package for maize production and another package for livestock production.

Credit Packaging: Refers to putting together the individual items to obtain a set of item. This in the study implies putting together planting materials, fertilizers, weedicides, and insecticide to get maize credit package; putting together breeds of animals, feeds, drugs, and housing for animals to get package for animal production. Others include putting together fingerlings

and small-sized fish ponds, nets, outboard motors for fisheries; and small scale machinery, agro processing facilities, agro storage facilities as agro-processing credit package.

Credit Allocation: Means assigning credit to a particular activity. Credit allocation in the study implies assigning maize credit or livestock credit to maize or livestock production respectively. Others are assigning fisheries credit and agro-processing credit to fisheries and agro-processing respectively.

Credit Utilization: This is using credit for a purpose. In the study, it involves using maize credit for maize production, livestock credit for sheep, goat and grasscutter production, fisheries credit for fisheries activities, and agro-processing credit for cassava, oil palm and fish processing.

Credit Repayment: This is paying back credit obtained to meet particular purpose to the individual or institution or organization that supplied the credit.

Food Security: is defined as good quality nutritious food, hygienically packaged and attractively presented, available in sufficient quantities all year round and located at the appropriate places at affordable prices.

Type of agricultural activity engaged in by micro-credit client: This implies the specific agricultural production in which the micro-credit client is involved. In the present study, the agricultural production types include crop production, involving maize, coconut and sweet potato; animal production,

involving sheep and goats, and grasscutter. For fisheries, it included marine fishing and fish farming; while agro-processing involved cassava, oil palm and fish processing.

Stability in agricultural production: This denotes reliability in the factors that contribute to agricultural production. This in the study include adequate and well distributed rainfall regime, fertile soils for crop production, adequate fish resources, suitable housing for animals and for agro-processing. Others are favourable land tenure arrangements, accessibility and availability of various agricultural inputs such as fertilizers, planting materials, insecticides, weedicides, fungicides, animal feeds and medications, favourable weather at sea, and adequate quality agricultural raw materials for processing. All these factors mentioned in the right combinations allow for stability in agricultural production. Producers should be able to store produce during time of abundance to meet periods when prices for produce are relatively high.

Marketing opportunities for produce: This implies conditions favourable for disposal of produce to generate incomes. These conditions are suitable market outlets where produce could be sold. The market venue should contain storage facilities, sheds against vagaries of the weather and well established car parking space. Other market opportunities include adequate demand for produce with good prices.

CHAPTER TWO

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Introduction

Over the past two decades, microfinance activities have spread across the globe, reaching tens of millions of poor households with tailored financial services. Current estimates vary between 133 and 190 million microfinance borrowers worldwide.

This chapter reviews the previous literature that has empirically studied the concept of micro-credit, how it came about, how it works, and who benefits from it, explore the role of micro-credit in the fight against poverty, impact of micro-credit and the repayment situation. Although there is some variation in the way micro-credit programmes operate, most follow a very similar model. Micro-credit programmes typically target the rural landless poor and follow a group-based lending model. Other issues reviewed are on characteristics of micro-credit schemes all over the world. The chapter also discusses a conceptual framework for agricultural micro-credit repayment.

Considering lessons learned from a wide range of experiences and exploring other forms of support are prerequisites to building further upon the successes in micro-credit.

Definition of Micro-credit

Credit may be defined as a "temporary transfer of capital resources from an individual or institution to another person or institution for a specific period of time, purpose and at an agreed interest charge" (Owusu-Acheampong, 1986), or "borrowed funds with specified terms of repayment" (Waterfield & Duval, 1996). Bannock and Manser (1989) viewed credit as granting the use of goods and services without immediate repayment. The provision of credit is to ensure consumption stabilization and promotion of self-employment through private investment in local industry. Micro-credit is therefore small loans extended to the unemployed, entrepreneurs and to others who needed such facilities to start a business enterprise or to boost the performance of a business enterprise or to ensure consumption stabilization.

Yunus (2003) believes that some of these individuals lack collaterals, steady employment and a verifiable credit history and therefore cannot meet even the most minimal qualifications to gain access to traditional credit.

Definitions of micro-credit by OECD (1997) are

- a financial service where small amounts of money are loaned to poor people for use as capital to start or expand small businesses.
- programmes granting small and easy term loans to enterprises which are usually excluded from the banking circuit and aimed at job creation and entrepreneurship.
- small loans that are extended to small businesses to finance a business start-up or other business activities.
- the extension of a small loan for income generating projects to entrepreneurs who are too poor to qualify for traditional bank loans.

Yunus (2003) suggested a broad classification of micro-credit as:

- Traditional informal micro-credit (such as money lender's credit, pawn, shops, loans from friends and relatives, consumer credit in informal market). Most of these examples of traditional informal micro-credit are found in Africa (Aryeetey, Hettige, Nissanke & Steel, 1997).
- Micro-credit based in traditional groups (such as tontin, susu).
- Activity-based micro-credit through conventional or specialised banks such as crops credit, livestock credit, fisheries credit, agro processing credit.
- Rural credit through specialised banks.
- Cooperative micro-credit (Cooperative credit, credit union, savings and loan associations, saving banks). Aryeetey and Udry (1997) said that this classification is common in Africa and is playing a significant role in the credit market.
- Consumer micro-credit.
- Bank-NGO partnership based micro-credit.
- Other types of NGO micro-credit.
- Other types of non-NGO, non-collateralized micro-credit.

History of Micro-credit

The concept of micro-credit can be traced back to portions of the Marshall plan at the end of World War II in the middle of the 20th century or even back to the mid 1800s and the writings of abolitionist legal theorist Lysander Spooner, who wrote concerning the benefits of numerous small

loans for entrepreneurial activities to the poor as a way to alleviate poverty. It is also tied to New York's Providence Fund. However, in its most recent incarnation, it can be linked to several organizations starting in the 1920s onward. The idea of micro-credit finance was developed as a survival strategy for the poor. Ela Bhatt established the Self-Employed Women's Association (SEWA) in India in 1974, while in 1976 Mohammed Yunus founded the Grameen Bank project in Bangladesh. Ela Bhatt's first loan was $1.50 to a woman who sold herbs, while Mohammed Yunus' initial outlay was a total of $27 to forty-two poor people (Yunus, 2003).

With the advent of Grameen Bank and other such programmes micro-credit obtained a new identity, a new meaning and a place in development literature. It is no more a mere concept. It is now a worldwide movement. The total outreach of micro-credit programmes as compiled by the Micro-credit Summit is 54.9 million clients including 26.8 million people who were very poor when they started with the programme. According to a guess estimate by Yunus (2003), however, the number of poorest families reached by micro-credit programmes was at least 35 million by the end of 2002.

The Concept of Poverty and Micro-credit

The concept of micro-credit is simple small loans distributed by micro-credit programmes which allow the rural poor to become self-employed and generate the income necessary to improve their household's welfare (Kelkar, Nathan & Jahan, 2004). United Nations (1997) advocated two approaches to the role of credit in poverty reduction. Supporters of the income-generation approach mention that credit should be provided mainly to the entrepreneurial

poor to enable them to finance specific private income-generating activities to increase their revenues. Proponents of the so-called new minimalist approach argue that credit programmes would still be helping the poor fight poverty by giving credit to any poor person, who is able to repay a loan without dictating to that person how and on what the loan should be used.

The micro-credit model pioneered by Grameen Bank has been replicated by thousands of micro-credit programmes across the world. In 2006, 3,316 of such programmes submitted reports to the Micro-credit Summit Campaign revealing that over 133 million clients were being reached by these micro-credit programmes alone and that 70 percent of clients were among the poorest of the poor when they received their first loan (Daley-Harris, 2007). Micro-credit is a tool for socioeconomic development (Sapovadia, 2006).

The United Nations (1995) report on World Summit for Social Development also underlined the importance of improving access to credit for small rural or urban poor producers, landless farmers and other people with low or no income, with special attention to the needs of women and disadvantaged and vulnerable groups. Study affirmed the validity of targeting the landless poor by showing that the positive effect of micro-credit on income was greatest for landless households (Hossain, 1988).

Micro-credit activities have affected the lives of clients (and others) in multiple ways. The most frequently reported types of effects of micro-credit at individual, enterprise and household levels are the following: income, expenditure smoothing, and poverty alleviation effects; business growth and employment effects; schooling effects; and effects in terms of women's empowerment.

It is important to consider the fulfillment of basic needs (food, clothing, shelter, health, education and psychological well-being), the means to achieve welfare at present and in the future, social networks and empowerment and vulnerability to risk. It is known that poor people live in a high risk and vulnerable conditions. Their ability to take advantage of opportunities that will lead to increasing their income or economic status, to protect themselves against risks of crises, and to cope with these when they occur is very important. Reduction of poverty is partly a process of increasing income and economic stability which enables the fulfilment of basic needs and access to different kinds of services. This may also be understood in the form of developing a range of assets that will reduce the vulnerability of the poor to physical, economic and social shocks. These assets may be defined as financial, including income size, regularity and security, savings, loans or gifts; human, including skills and knowledge, ability to work, good health, self-esteem, bargaining power, autonomy and control over decisions; physical, which covers housing, land, productive and non-productive possessions; and social covering networks, group and centre membership, trust based relationship, freedom from violence and wider access to society and social institutions (Sapovadia, 2006).

Approaches to Micro-credit Provision

Micro-credit provision models developed and implemented are the group-based lending, SANASA (thrift and credit cooperatives), individual lending, and best practice, which involves individual lending model using insider information.

1. The group-based lending model is what sets micro-credit apart from the traditional banking system. The exact policy varies between programmes, but most follow a very similar credit delivery system. Borrowers form small groups, typically between five and ten people each, and group members share joint responsibility for the individual loans. If one member defaults on his or her loan, other group members become ineligible to receive further loans until the defaulting member pays what is owed (Nsiah-Gyabaah & Edusah, 1995). Johnson and Rogaly (1997) indicate that this unique system substitutes a form of peer pressure for physical collateral as security for the loan and minimizes information asymmetries. Initial loan amounts are quite low, and borrowers are eligible for subsequent loans of increasing amounts provided they maintain a successful repayment record. This model has proven to be very successful as the majority of micro-credit programmes boast a loan recovery rate of well over 90 percent (Khandker, 1998; Johnson et al., 1997; Besley, 1994; Braverman & Guasch, 1990; Huppi & Feder, 1990; Lianto, 1990).

Iddrisu (2001) in his study on group lending to smallholder farmers and repayment stated that groups that existed for other purposes other than credit alone such as group engagement in other social and economic activities recorded higher performance with respect to credit repayment. Other researchers (Ahmed, 1999; Ladman & Afcha, 1999; Yaron, 1994b; Huppi et al., 1990) made similar observations on the positive effect of groups with diverse objectives and credit repayment performance. Loan periods are typically one-year with weekly or bi-weekly instalments to keep repayment amounts very low.

Micro-credit programmes charge interest rates that are at or even above market rates in order to cover their high costs, and interest is usually paid at the end of the loan cycle. In Bangladesh, for example, micro-credit programmes charged annual interest rates of 20 percent, which is 4 percent higher than the bank rate of 16 percent. However, the micro-credit borrowers typically do not have access to credit provided by traditional banks so the 20 percent interest rate is more sensibly compared to the 85 percent interest rate charged by their only alternative, informal moneylenders (Khandker, 1998).

Non-financial aspects such as skills training and social development are typically included in the credit delivery process. Serving to promote productivity as well as household welfare, these aspects play an integral role in the positive impact of micro-credit. Such skills development is widely regarded as a necessary instrument of a pro-poor strategy, and Bennell (1999) asserts that skills training for the economically disadvantaged should serve to meet the specific work needs of the poor.

2. There may also be side effects to group lending. Montgomery (1996) compares BRAC's Rural Development Program based on solidarity group lending to SANASA (thrift and credit cooperatives) based on collectively managed financial services. He presents SANASA as an alternative to the group-lending model, to which he associates costs, including heightened perception of risk, the erosion of mutual trust and the willingness to support fellow 'solidarity group' members, and ultimately, an increased likelihood that the poorer and more vulnerable will be excluded from such groups (Jain,1996).

3. Individual lending model focuses on one client and does not require other people to provide collateral or guarantee a loan. Fusan and Rogaly (1997) claims that several micro finance institutions have succeeded in reaching the poorest of the poor by devising innovative strategies to support individual clients. These strategies include the provision of small loans to poor people, especially in rural areas, at full-cost interest rates without collateral. The loans are repayable in frequent installments.

4. Best Practices: Beyond group lending other "best practices" that have emerged which merit attention as well involves loans disbursement to individuals, but uses means other than the group mechanism to obtain what Johnson et al. (1997) term "insider information." These programmes emphasize individual client savings first. The lending capital is derived from outside sources as experienced in Indonesia, Sri Lanka and India. The result of this emphasis on savings first is that members' own savings serve as a guarantee. But more importantly, because most of the lending capitals are derived from the community, failure to repay is seen as "stealing" from one's own neighbours. This finding is confirmed in separate studies by Rogaly and Copestake (1996), which emphasize the importance of a sense of ownership and mutual interest in the organization's survival.

Micro-credit Impact

The impact of micro-credit may be examined from the economic, social and political points of views. The impact of micro-credit, because it affects the market for goods and services, will extend beyond the borrowers

themselves. For example, flooding the market with goods for which there is a finite demand will cause prices to fall.

A closer look at the economic struggles of Bangladesh will offer insight into low-income countries in general and will provide a background for how micro-credit can be an effective tool for poverty alleviation and economic growth around the world. Bangladesh was an overpopulated country with almost three-quarters of the population living below the poverty line (Hossain & Sen, 1992). Over the past few decades, however, Bangladesh has made astounding progress. Poverty rates declined to 40 percent by 2005, with nearly one-quarter of the decline occurring since 2000 (BBS, 2006).

Bangladeshi life expectancy has risen in 14 years, infant mortality has declined by 70 percent, literacy rate has doubled, and the gender disparity in primary and secondary education has disappeared (World Bank, 2007). Gross Domestic Product (GDP) is now more than double what it was in 1975. The outstanding loan portfolio for these programmmes totalled over US$1.3 billion. This large micro-credit sector reaches 37 percent of Bangladeshi households, which is among the highest coverage in the world (World Bank, 2005). Bangladeshi has been able to significantly increase its annual household consumption expenditures, support children's schooling and health status (Pitt and Khandker, 2002; Khandker & Chowdhury, 1996).

Grameen has been widely researched and recognized for making a difference in the lives of its members. Studies show that the borrowers of Grameen Bank are steadily moving out of poverty. One such study shows that it is at the rate of 5% a year. According to another study based on a household survey in an area where Grameen has been operating for more than a decade,

about 50% of the Grameen households have crossed the poverty line. A study was conducted on the economic effects of Grameen loan on the life of its borrowers before and after the intervention, with and without Grameen loan. It considered the effects of Grameen's operation on capital accumulation, employment, income and poverty alleviation. The study found that without any capital base at the beginning, the Grameen borrowers started accumulating capital as they joined Grameen, which has not been possible when they were not members of Grameen. Grameen loan is required to be paid back in small instalments as per agreement. The studies reveal and reaffirm the fact that poverty is reduced with micro-credit as the input (Pitt et al., 2002).

An evaluation study of the Integrated Development Foundation which is working with the poorest women in Chittagong Hill Tracts and Chittagong City in Bangladesh states that 35% of its borrowers have already crossed the poverty line. An external study conducted to assess the impact of the Society for Helping Awakening Rural Poor through micro-credit, which operated in Andhra Pradesh, India, states that three out of four (76.8%) of its mature clients experienced significant reduction in their poverty over the past four years. Half of these are no longer poor. The study also states that nearly four out of ten (38.4%) have moved from being very poor into moderate poverty, while exactly the same proportion have come right out of poverty.

An impact study of the Centre for Agriculture and Rural Development (CARD), Philippines, also confirms that the problem of poverty can be successfully addressed with micro-credit. According to an estimate, 75% of the poor farm households served by CARD have already crossed the poverty line. Estimates are also available for many other partners. Nigeria reported

that 60% of the poor farm households served by micro-credit have already crossed the poverty line (World Bank, 2007).

Case Studies on Specific Micro-credit Schemes in India

Findings of studies by authors including Dhillon (1999), Goswami (1986), and Mahajan (1991), found the micro-credit programme in India to be effective. Goswami and Gogoi (1996) and Swaminathan (1990) got different results. Their studies revealed that the procedure followed for the selection of beneficiaries in the North Eastern States, Bihar, Gujarat, Kerala, Punjab and U.P were not proper and monitoring, follow up action and supervision of the programme were totally absent.

Nayak (2002) undertook a study with an objective to find the extent to which micro-credit programmes as a strategic measure of economic uplift of the people of Silchar Development Block in the Cachar District of Assam was successful. His study revealed that there was widespread diversion of loans from the purposes for which loans were sanctioned to other productive purposes. This implied that the concerned authorities were not competent enough to identify the productive schemes in the region. The researcher found that the standard of living of the beneficiaries improved in the form of increased per capita consumption expenditure from Rs. 300 to Rs. 450. But the performance on the repayment of loan was not satisfactory mainly because of political interference and laxity in adherence to rules. Only 30 percent of the beneficiaries repaid the loans. Among those who did not repay the loan, 69 percent were willful defaulters. The author in the concluding remarks of his study lamented for its wrong implementation (Nayak, 2002).

Dhillon (1999) also conducted a study based on data collected from 300 beneficiaries distributed over twelve blocks in three districts of Punjab. Adequate loan assistance was not given to cover the entire cost of the assets to be generated. However, less than 50 per cent of the beneficiaries were able to repay credit advanced them, under IRDP in the study area in Punjab (Dhillon, 1999).

Swaminathan (1990) reported that there was a fair selection of beneficiaries and satisfactory allocation and distribution of loans in West Bengal. His study was based on a sample survey of nine villages in Bankura District and Onda Block as part of a project on Rural Poverty, Social Change and Public Policy in West Bengal. The schemes which generated minimum income (less than Rs. 2000 annually) were goat rearing and rice processing. Some of the schemes which generated relatively higher income (more than Rs. 4500 annually) included fisheries, poultry farming and betel-vine cultivation. As regards the repayment of loan, 75 per cent of beneficiaries had no over dues at the time of the survey. However, the repayment of loan was low in a scheme like animal husbandry (Swaminathan, 1990).

Goswami (1986) made a study on associated problems of the India Rural Development Programme (IRDP) in the implementation of micro-credit programmes in the State of Assam in 1986. The shortcomings of the programme as identified by him were lack of supervision and follow-up action, delay in loan disbursement, and corruption in disbursement of funds. By and large, the programme in terms of family coverage, fund utilization and the repayment of loans was very unsatisfactory (Goswami et al., 1996).

Singh (1983) conducted a survey of 100 beneficiaries belonging to 12 villages of Nalanda district in Bihar to explore the types and nature of various problems associated with the implementation of the micro-credit programme including credit repayment. Not only had he attributed the failure of the programme in the district to inadequacy of loan amount in creating asset but also delay in disbursement of subsidy attached to loan.

Some Existing Models to Assess the Determinants of Credit Repayment

Roslan and Karim (2009), for the purpose of determining the relationship between borrower's characteristics on the probability of loan default, employed the econometric approach that relies on both probit and logit models. The endogenous variable $y_{it>}$ is dichotomous, where y_{it}= 1 if there is loan default and 0= otherwise. He related the variable to another latent non-observable random variable $y^*_{it>}$, which takes the form:

$y^*_{it} = \alpha + x'_{it}\beta + z'_t\gamma + \epsilon it$ .....(1)

where, ϵ_{it} conditional upon $(x_{it}\, z)$ follows a normal or logistic distribution, that is F(a)= 1/{1exp(-a)}, and if also, the relationship is of the type: y_{it}= 1 (if $y^*_{it}>0$), and 0= otherwise. Roslan et al. (2009) obtained: Probability $\{y_{it}= 1 / (x_{it>}\, z_t\}$= Probability $\{ y^*_{it}>0/(x_{it>}\, z_t\}= F(\alpha + x'_{it}\beta + z'_t\gamma)$ .....(2)

Where, Probability $\{y_{it}= 1 / (x_{it>}\, z_t\}$ is the probability of default of the credit. The variable y^*_{it} can be understood as a function of the borrower's losses, such that if this function is greater than zero the borrower defaults. The results by Roslan et al. (2009) show that the probability for loan default is influenced by the gender of the borrower, type of business activity, amount of loan, training of the borrowers, and the repayment period for loan.

Oni (1999) studied the proportion of loan repayment by smallholder farmers in Osun State of Nigeria. His explanatory variables were the amount of loan collected, expenditure on farm, interest rate, and extent of farmers contact with bank, disbursement lag, cultivated land area, and years of experience in farming. The result of linear and log form equations showed that the regression coefficients associated with amount of loan (+), disbursement lag (-) and extent of farmers' contact with banks (+) had expected signs and were statistically significant at 5 per cent.

Chirwa (1997) specified a probit model to assess the determinants of the probability of credit repayment among smallholders in Malawi. The model allows for analysis of borrowers as being defaulters or non-defaulters. Various specifications of the X-vector were explored by step-wise elimination. However, only five factors (sales of crops, size of group, degree of diversification, income transfer and the quality of information) were consistently significant determinants of agricultural credit repayment. The explanatory power of the model is plausible with the log likelihood statistically significant at 1 percent. Four independent variables, gender, amount of loan, club experience and household size were not statistically significant in various specifications.

Reports by researchers in micro-credit repayment performance such as Oke, Adeyemo and Agbonlahor (2007), Bassem (2006), Bhatt and Sui-Yan (2002), Olomola (2001), Cowdhury, Kashem and Miah (1998), and Bhatt (1994) suggested the use of the multiple regression model in determining factors influencing the repayment of micro-credits. In an empirical analysis of micro-credit repayment in Southwestern Nigeria, Oke et al. (2007) conducted

a multiple regression analysis, and established causal relationship between the determinants of credit repayment in the model. The model was specified as follows:

$Y=a+b_1X+b_2X+b_3X+ \ldots\ldots b_{23}X.$

The independent variable in the equation were proportion of micro-credit repaid on the date when repayment falls due; income of respondent; size of the borrowers club/group; amount of loan obtained; group membership experience; gender of the respondents; degree of diversification of loan investment; and the repayment of loan from transfer income. Others were repayment without transfer income; partial/ full repayment with transfer income; adult equivalent family size of the respondents; the number of spouses of respondents; the quality of business information; the enterprise of the respondents; the number of visits by loan officials per month; the number of years of formal education of the respondents; and the number of days micro-credit group members' meet in a month. The rest were the amount of business investment in the year; loan disbursement lag defined as the number of days between the submission of loan application and actual loan collection; business enterprise combination; distance between the dwelling unit of respondents and the nearest bank; expenses on socio-cultural activities; number of months for which the loan is due for repayment; membership of cooperative society; amount paid as penalty for lateness; and poverty indicators.

The variables that significantly influence repayment are income, distance between dwelling place and bank, amount of business investment, socio-cultural expenses, amount of loan borrowed, access to business

information, penalty for lateness to group meetings, membership of cooperative society, number of days between loan application and disbursement, and poverty (Oke et al., 2007).

Some Factors Affecting Micro-credit Repayment

Bassem (2006) studied factors that affect the repayment performance of 328 individual Tunisians, who benefited from loans offered by Tunisia Bank of Solidarity and ADNA, an international financial NGO. Nineteen independent factors were identified, including age, gender, marital status, educational level, wealth status and work experience, family size, sector of activity, length of repayment, legal status of enterprise, loan size, interest rate, availability of guarantor, ratio of debt to sales turnover, credit rationing, distance from Micro Finance Institutions, presence of other loan sources, non financial services offered, and type of institution. Results of the regression analysis reveal that loan repayment was found to be significantly and positively influenced by customer's age, level of education, wealth status and work experience, length of repayment, sector of activity, credit rationing (dynamic incentive), non financial services offered, and type of micro finance institution. Factors significantly and negatively related to repayment performance included legal status of the enterprise, guarantor, rate of indebtedness, family size, the loan size, and presence of other Micro Finance Institutions. Customer's gender, marital status, interest rate level, and distance from Micro Finance Institutions had no significant effect on repayment performance.

Another cause of credit default is situations where loans are advanced to farmers who are not essentially interested but prompted and persuaded to take the credit (Robinson, 2001). The tendency to default is sometimes informed by their view on the relative merit of different lenders and with which one it is most important to retain a good credit record (Johnson & Rogaly, 2001). Some of the credits to smallholders fail because amounts, schedules and repayment terms are ill-suited to farm production patterns (Wampfler, 2002; Raeburn, 1984).

Cowdhury et al. (1998) examined the characteristics of credit clients based on age, occupation, land holding status, credit availability, mass media contact, attitude towards credit, education, family size, annual income, amount of loan, being cosmopolitan, aspiration, and level of confidence. They explored the relationship between characteristics of women and patterns of loan utilization, and finds that most loan recipients (94%) say the loan they received from the Grameen Bank in Bangladesh brought them some profitable gain, and that the women with smaller families had highest loan utilization and repayment.

Lekshmi, Rugmini and Thomas (1998), Chirwa (1997), and Kashuliza (1993) respectively reported of poor repayment among smallholder farmers in Malawi, Tanzania and India. Factors mentioned to account for the poor repayment performance include perception of clients that credit is a gift or grant and thus not to be repaid, poor implementation of lending procedures by scheme staff, diversion of credit resources from intended purposes, unfavourable weather, disasters, and poor marketing of products from farmers' enterprises (Kashuliza, 1993).

Bhatt (1994) studied the factors causing over dues and explored remedial measures that can be taken against these factors. He identified the following factors as responsible for over dues: crop loss, the loan waiver scheme, loan diversion, high cost of cultivation, market fluctuations, non availability of real inputs and other factors, insufficient income generation, local political interference, willful default, difficulty in end use supervision, under-financing and multiple financing, and lack of bank knowledge.

Remedial measures suggested include the simplification of loan formalities, reduction of cost of credit, effective end use supervision, avoidance of political interference, avoidance of multiple financing and over financing, lending to agriculture, lending to target groups, education of the beneficiaries, increased working hours, and issue of common agricultural pass book.

Atengdem (1991) has suggested measures to improve credit repayment, which include the formation of cohesive, mutually responsible groups under careful supervision, as well as the promotion of technically proven, simple to use and financially viable production packages and a well supervised, standardized and disciplined credit delivery mechanism.

Characteristics of MOFA Micro-credit Scheme in the Central Region

Agricultural production in Ghana is mostly on small-scale for domestic consumption and the rest is sold to the public. The agricultural producers used mostly their own resources to produce (MOFA, 2007a). Several requests made by the agricultural producers for support from the government after subsidies were taken off from agricultural inputs have been responded to in the past 6

years. In the Central Region, the government through the Ministry of Food and Agriculture provided the agricultural producers credit facilities in the form of agricultural inputs such as planting materials, fertilizers, weedicides, insecticides and cash for farm maintenance. The inputs were given for maize, sweet potato, cassava, rice, vegetables and coconut production. The input cost ranged from GH ¢50 to GH ¢150 per acre, depending on the type of crop (MOFA, 2009a). For animal production, parent stock (one male and at most 5 females), housing, and cash for feed and medication were provided for grasscutter, pig, sheep and goat rearing. These cost GH ¢800 to GH ¢5,600, based on type of animal (FABS, 2009). Outboard motors were made available to artisanal marine fishermen to power their boats to travel far away in deep sea to fish. The input was GH ¢2,500 (MOFA, 2005).

Agricultural producers into agro-processing were supplied machinery and equipment for processing cassava into gari and industrial starch, and palm fruits into palm oil and palm kernel oil. In the fisheries sector, fish processors received mostly cash for purchase of fresh fish for processing into smoked fish. Cash was given for housing and installation of machinery and equipment. Credit costs ranged between GH ¢7,600 and GH ¢12,000, based on the type of housing and agro-processing equipment supplied (AgSSIP, 2005).

The agricultural producers were sensitized by the Agricultural Extension Officers on the availability of the credit packages, with emphasis on type of credit, category of agricultural producers that qualified for the credits (group of agricultural producers or individuals), when and how the credit will be made available to interested agricultural producers and the cost of credits.

Other information was on conditions such as interest rates, repayment durations, and whether repayment is in cash or in kind.

Interested agricultural producers registered with the Agricultural Extension Agents, and later entered into memorandum of understanding with agreements signed in the presence of two witnesses who were resident in the communities. The AEAs and the supervisors countersigned. Then, the District Director of Agriculture approved by appending his signature. The credit facilities are sent to beneficiaries free of charge or beneficiaries were asked to go for them in their convenient time. Training was organized by MOFA staff for beneficiaries on issues pertaining to operation of equipment, processes involved in improved methods in production for crops, livestock and agro-processing, and business management. Supervision was made by the MOFA staff starting from when credits were allocated to the agricultural producers up to when the full repayment of credits were made. A total of 7,500 agricultural producers in the Central Region had benefited from MOFA micro-credits from 2000 to 2009 (MOFA, 2009a).

No interest rate was charged on outboard motors and sweet potato credits advanced to fishermen and sweet potato farmers. Those who benefited from maize, coconut, cassava, rice and vegetables production, grasscutter, sheep and goat rearing were charged 10-20 % interest rates. For agro-processing, interest rates ranging between 21-40% were put on the credits advanced to the agricultural producers. The interest rates depended on the type of credit and the repayment duration. Thus, the more the repayment duration, the higher the interest rate charged.

Repayment in kind was made just after harvesting, whereby the MOFA members of staffs moved to take produce such as maize on the field or at clients' home. For food crops such as cassava, sweet potato, coconut and vegetables, as well as animals and processed agro-products, cash payment to the MOFA staff was demanded. Payment was to be made in lump or by instalment, preferably monthly, until repayment duration was met. The AEAs handed over the cash to the MOFA accountants who paid into an approved MOFA account. Food crops collected in kind were stored as buffer stock. MOFA (2009a) mentioned that the repayment rate for all MOFA credits as of December 2009 was less than 50%.

Conceptual Framework

In the diagrammatic representation of the conceptual framework provided in Figure 1, the boxes represent the various concepts, which are grouped into independent and dependent variables at the bottom and top respectively. The arrows show the direction of influence.

Since socio-economic characteristics as shown by a lot of empirical studies have influence on credit allocation and use, it is believed that it will have a bearing on clients' attitude towards MOFA micro-credit repayment. It is strongly believed that the perception of clients on the source of credit will highly influence their attitude and will definitely affect repayment attitude. Knowledge acquired through proper information channel from the credit source will have direct bearing on a sound utilization of loans which in effect will influence repayment. Again how clients' utilize their loans, either profitably or otherwise, will have an effect on repayment.

The intervening variables are more or less the processes and procedures involved in the credit sourcing, packaging and delivery. The effectiveness and efficiency of these processes is assumed to have an influence on the rate of credit repayment.

Pattern of Credit Use

Phutrakul (1997) in her study on behavioural analysis of credit use by farmer clients of Bank for Agriculture and Agricultural Cooperatives (BAAC) observed two patterns of credit use by individual farmers. These are consumptive and productive use. She observed that farmers either use their credits on non-productive activities such as family expenses, refinancing old debts and home repairs or use them for items that have direct implication on their production such as purchase of farm tools, equipment, land, livestock and drugs, outboard motors and other fishing tools, agro-processing equipments, farm inputs and the employment of labourers (Phutrakul, 1997).

Zeller and Meyer (2002) provided the reasons why clients used credits for consumption instead of production. He stated that in poor households the spheres of consumption, production and investment are not separable, in the sense that consumption and nutrition are important to a household's ability to earn income. Also, the main suppliers of credit, informal lenders, are generally ill equipped to finance substantial, long-term investment. The characteristics of informal credits make them more useful for financing short-term activities such as consumption stabilization and providing working capital for farm and off-farm enterprises (Zeller and Sharma, 1998). Raeburn (1984) recommends that lenders should understand all the loan needs of creditors or borrowers so

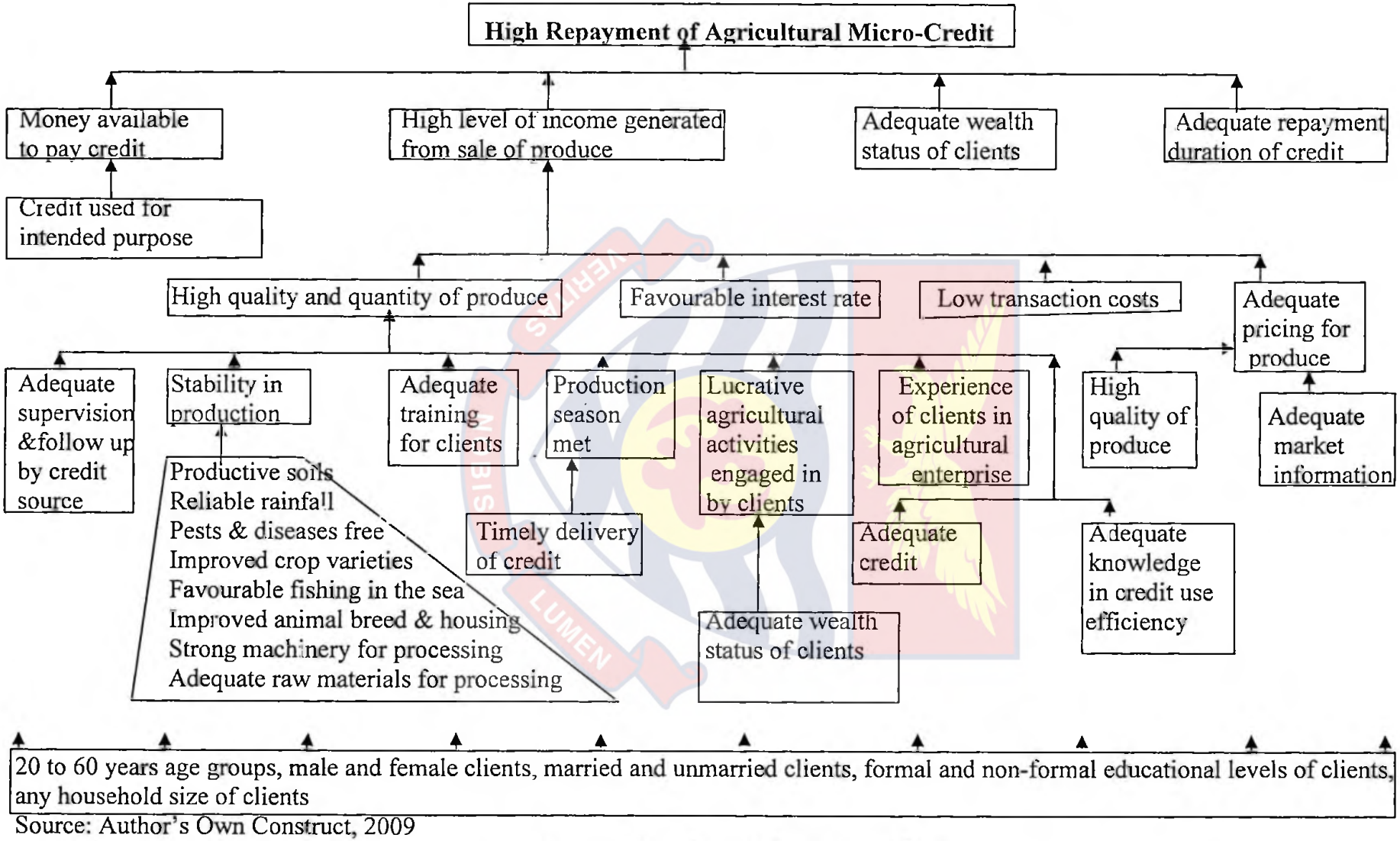
that farm economic plans can be complete and household consumption plans consistent with them.

Therefore, credits which are adequate and usually given as seasonal or one year or more, are more useful for financing seasonal agricultural and other inputs, hence, might have positive effect on loan repayment rates.

Clients Perception about Credit Sources

Lack of understanding of the purposes and conditions of credits is common in Africa and Latin America. In some areas, credits are even regarded mainly as a token for lenders because of their disadvantaged or low socio-economic status (Raeburn, 1984). The orientation of the farmer towards the credit source may influence his decision as to what could be done with credit received. Where farmers believe or have cause to suspect that the credit is from the government, the tendency to default is high. This is because of the perception in some communities about everything that belongs to government belongs to "all and nobody" and therefore failure to pay back may not attract stringent measures as in the case with borrowing from money lenders and other non-governmental sources.

Borrowers incentives to repay loans are limited if it is known that no serious efforts will be made to collect the dues and that default will not affect access to future loans. Government leniency on delinquencies has frequently encouraged new defaults (APO, 1988).



Source: Author's Own Construct, 2009

Figure 1: Conceptual Framework for High Repayment of Agricultural Micro-credits

Personal Characteristics of Farmer Credit Clients

The personal characteristics of a farmer client in terms of age, education, sex, marital status, family size and experience can influence whether or not a farmer will efficiently use credit to generate enough income to pay credit back (Colman & Young, 1995). Young farmers, farmers with certain level of formal education, male farmers, farmers who are single, and those with adequate experience are generally more venturesome and receptive to call for change and willing to accept risk. Old people are conservative, localize and feel insecure sourcing and using innovations, including credits (Colman et al., 1995).

Farmers with no formal education or less educated, female farmers, farmers who are married, and others with less experience are also insecure in accepting agricultural credits. This is because decisions they take do not affect them only but also their entire family (Brynes, 1978). Blackburn (1989) observed that people at different ages differ greatly in the way they respond to what they are taught, and the way they organize as well as recall, articulate and use information. In a study in Thailand, Phutrakul (1997) observed that there was a positive relationship between age of household heads and loan misuse by household heads. That is, the older the household head the higher the chance of credit misuse. It is argued that older borrowers are wiser and more responsible than younger borrowers. On the other hand, younger borrowers are argued to be more knowledgeable and more independent. Hence, age might have positive or negative effect on loan repayment rates. The results of a regression analysis by Bassem (2006) revealed that loan repayment was significantly influenced by customer's age.

Marriage is another personal characteristic of respondents that may influence the behaviour or reaction to issues. The married person's behavior may differ significantly from that of the unmarried person because of certain social responsibilities and expectations society expects from a married person. Marriage imposes strains, difficulties, responsibilities and challenges on an individual (Giddens, 1994). Thus, borrowers with different marital status may have different loan repayment rates.

The gender of an individual exerts a great influence on what he can or cannot do. It establishes the socially and culturally accepted roles for men and women and differentiates household production and consumption functions (Mehra, 1994). It demarcates areas of responsibility and determines the choice of activity an individual can indulge in (Fieldstein & Jiggins, 1994; Fieldstein & Poats, 1989). It is argued that lending to women can lead to their economic empowerment and inculcate in them a culture of hard work and financial discipline, which can lead to high loan repayment rates. Thus, women borrowers may have high loan repayment rates. Results from Roslan et al. (2009) study show that the probability for loan default is influenced by the gender of the borrower.

Education is an important factor that influences the acceptance or otherwise of an information (Onu, 1991). Education affects the way individuals think about and solve their problems and also provide skills for processing information from printed texts and other sources (Eisemon, 1992). The level of education of a farmer will therefore affect and influence his reception, understanding and the possible use of the information received.

Higher educational levels enables credit clients to comprehend more complex information, keep business records, conduct basic cash flows analysis and, generally speaking, make the right business decisions. Hence, credit clients with higher levels of education may have higher repayment rates.

Experience is a key social factor in determining the working ability of any person (Atengdem, 1997). Credit clients who have been in business for long are expected to be more successful with their enterprise. They have more stable sales and cash flows than those who have just started. Thus, those who are more experienced may have high repayment rates. The results of a regression analysis by Bassem (2006) revealed that loan repayment was significantly influenced by the work experience of borrowers.

The Size of the Clients Household

The family size of an individual imposes an economic stress on the farmer if other members of the family depend on the farmer for their livelihood and survival. Gyekye (1989) states that an individual with a large family size will have greater financial responsibility. The tendency and temptation to utilize part of the credit facility to attend to the numerous family needs will be higher for individuals with large household sizes especially where the majority is of non-working age. Phutrakul (1997) observed that the use of loans for other activities like welfare activities was highest among individual borrowers with high non-working age family members. Cowdhury et al. (1998) explored the relationship between characteristics of women and patterns of loan utilization and repayment, and found that women with smaller families had the highest loan utilization and repayment rate.

Wealth Status of Credit Clients

The criteria used in assessing whether a household is poor or wealthy are based on an evaluation of whether household income is sufficient to meet the food, clothing, housing and other basic needs of all household members (Henry, Sharma, Lapenu & Zeller, 2001). The indicators considered to represent the poverty index across farm households are maximum level of education, percentage of adults who are wage earners, type of housing, electric connection, source of cooking fuel, type of latrine, access to water, and per person expenditure on clothing. Others are food stock in house; meal type and number of times meal is taken in a day; ownership of television set, radio set, fans, video player, refrigerator, vehicle, bicycle, and sewing machine. The rest are agro-processing facilities, farm lands, agricultural enterprise, cash at bank and cash at home, and expenses on health and education of household (Sharma & Zeller, 1999). Zeller et al. (2002) observed that these poverty indexes favour households living at areas with high living standards.

Zeller, Wollni and Shaban (2002) and Henry et al. (2001) recommended a comprehensive assessment to be done by micro-credit institutions and organizations on the wealth status of the target groups so that credit package and repayment conditions reconcile with the poverty status of target groups, and the poverty outreach of the credit programme.

Gyekye (1989) reiterated the tendency and temptation by borrowers to utilize part of the credit facility to attend to the numerous family needs to be higher for individuals with very low wealth status. It is likely that individual borrowers with average to high wealth status will use credit for the intended purpose. Also, clients with average to high wealth status may be able to get

monies from other sources to repay credit in time of failure. Thus, borrowers with different wealth status may have different loan repayment rates. The results of a regression analysis by Bassem (2006) revealed that loan repayment was significantly influenced by the wealth status of clients.

Adequacy of Credit

The size of credit to a client may influence what activity the credit may eventually be used for. Credit far less than enterprise requirement may discourage the client from using it for the enterprise activity since it may be too scanty. Similarly, credit value far above what the client actually needs will result in the excess credit being used on unplanned and unproductive activities for which the borrower may not be able to repay when the credit repayment time is due.

Singh (1983) reported that the failure of the credit programme in 12 villages of Navanda district in Bihar was the inadequacy of loan amount to clients. In a study on the impact of credit on smallholders, Atengdem (2002) found that there were high rates of credit default among clients who access lower levels of credit. However, Wampfler (2002) is of the view that small sum for short periods have a positive impact on individual and household cash flow, smooth out irregularities in consumption and can, to some extent, strengthen economic resilience.

It is argued that larger amount of loans requires decision to be made further up the management hierarchy of the loan source, which delays credit delivery. Furthermore, it is also argued that smaller amount of loans are insufficient, creating cash flow problems to the borrower, which in turn

significantly affect the enterprise. Thus, excessively large or small amount of credit negatively affect the repayment rate. Njoku (1986) and Ojo (1986) adduced increasing incidence of loan defaults to the inadequacy or excess of credits issued to farmers. The results of a regression analysis by Roslan et al. (2009), Oke et al. (2007), Bassem (2006), and Oni (1999) revealed that loan repayment was significantly influenced by the loan size. Bhatt (1994) in his study identified under-financing and multiple financing as factors that cause low credit repayment.

Transaction Costs

In the credit extension process, transaction costs are incurred at the level of both lender and the borrower being an individual client or a credit group. Zeller et al. (2002) states that at the level of the lender, data collected on transaction costs comprise costs of staff, buildings, office, travel, audits, training, and related maintenance costs. At the group and individual client's levels, transaction costs include costs associated with transportation, paperwork, lodging and meals, gifts, phone calls and the opportunity costs of time. To make these costs comparable, they must be defined in unit or percentage terms (Desai & Mellor, 1993). Zeller et al. (2002) found that in developing countries, group lending is often recommended as a way to reduce lenders' and borrowers' transaction costs.

This finding is collaborated by Schmidt and Zeitinger (1994), who investigated the transaction costs of individual clients and farmer groups that were given credit for local food production in Cameroon. The results indicate that the transaction cost per unit of credit lent to individual clients was 50%

higher than the average cost for group clients. The high level of unit cost is caused by the high cost of educating farmers and of extending the credit component and technical services to individual clients. Zeller et al. (2002) therefore, advise lending institutions, especially those concerned with poverty intervention programmes, to minimize the transaction costs on credit advanced to the resource poor clients.

Interest Rates

Interest rate may be defined as the amount of money paid by a borrower for using borrowed funds (Eckaus, 1972), or the price of money (Johnson et al., 1997). To the lender, the interest rate is what will be used to pay for the cost of the funds, cost of providing credit and cost of default. The level of interest rate plays a major role in determining the sustainability of any credit scheme. Low interest rates encourage the diversion of most of the credits to farmers with larger farms even under highly supervised credit schemes (Bottrall, 1976). Low interest rates also do not encourage savings deposit. High interest rates in contrast are relatively unimportant to the short term smallholder borrower compared with rise in input prices or drop in producer prices. High interest rate will also induce large scale farmers to release funds from less productive uses and make available to small scale farmers.

Morss, Hatch, Mickelwait and Sweet (1975), in their study of rural development projects, observed that high interest rates do not appear to affect smallholder farmers' willingness to borrow or ability to repay credit. Morss et al. (1975) further say that low interest rates for credit designed for smallholder

farmers will attract larger scale and more powerful farmers, pushing aside intended recipients. CGAP (2002) indicated that interest rates are set with the aim of providing viable long term financial services on large scale. To reach good degree of sustainability, MFIs must set interest rates that cover all administrative cost and the cost of capital (including inflation), credit losses and the provision of increasing equity. It was therefore recommended that governments and donors should not subsidize interest rates in micro-credit since they distort market. However, Zeller et al. (2002) calls for reduced interest rates on loans granted resource poor farmers to enable them meet the repayment conditions.

Time of Credit Delivery

Agricultural production, particularly crop production, is seasonal. Negotiations concerning agricultural credits take into consideration the timing for the use of such credits. Therefore, credit lenders should include time of credit delivery in their management decisions to encourage timely credit delivery. Also, decision by lenders regarding delivery of credit at the doorsteps of borrowers is a better strategy to overcome the delay in transporting input by clients. Singh (1983) reported that the failure of the credit programme in 12 villages of Navanda district in Bihar was the delay in the disbursement of loan to clients.

Swaminathan (1990) reported that there was a fair selection of beneficiaries, timely and satisfactory allocation and distribution of loans in West Bengal. This brought about the efficient use of credit, which led to the improvement in credit repayment.

It is argued that credit delivered in time is mostly used for the intended purpose at the right time to meet the season. Clients normally experience high productivity, which culminate in high revenue from sales of produce, if all other things remain equal. Thus, borrowers who receive loans at different times may have different loan repayment rates. Findings by Olomola (2001) indicate that timely credit disbursement decreases delinquency in borrowers. Akinleye, Akanni and Sekumade (2005) advise lending institutions to make efforts to grant agricultural credits to farmers who meet the conditions at the appropriate time. A study by Oke et al. (2007) and Oni (1999) found time of credit delivery to have significant influence on the repayment of credits.

Agricultural Activity Credit Clients Engaged in

A measure of the use and repayment of credit is the profitability of the agricultural activity the client is engaged in. One way of assessing profitability is the determination of the amount of savings made after undertaking an activity.

Determination of profitability is difficult because of the fungibility of money, seasonality of enterprises, inflations in incomes, as well as the sensitivity of profit assessment (Daniels, 1999). In the light of the above, proxis are used. While lenders measure profitability by repayment performance and change in cash savings, clients rather consider the ability to undertake financial responsibilities which they could not undertake previously. Swaminathan (1990) in a survey in Bankura District and Onda Block found that with the same amount of credit allocated to different agricultural enterprises, agricultural activities such as goat rearing and rice processing

generated minimum income (less than Rs. 2000 annually), while fisheries, poultry farming and betel-vine cultivation generated relatively higher income (more than Rs. 4500 annually) .

It is argued that different types of agricultural enterprise have different level of risk and for that matter, profitability. Thus, borrowers with different types of agricultural enterprise may have different loan repayment rates. The result of a regression analysis by Roslan et al. (2009) and Bassem (2006) revealed that loan repayment was significantly influenced by sector of activity.

Training of Micro-credit Clients

Regular provision of frequent technical training on credit use and management to clients is associated with high repayment of credits (Iddrisu, 2001). Freedom from Hunger (1998) evaluated credit with training scheme concluded that credit and training when provided together to groups of women could increase income, and improve nutrition and health.

Training of clients also empowers and ultimately improves household food security and also the availability of money to repay credit. Many credit programmes funded or supported by international donor organizations require extensive business plans and financial management training as a pre-requisite for securing credits. Managerial competency development and the improvement of managerial decision making through training, mentoring or coaching should be considered by institutional investors (OECD, 1998).

The most successful credit programmes and institutions train their staff to train the clients, both initially and in stages over time. Training includes diverse topics such as time management, marketing, bookkeeping, lending

methodologies best practices, delinquency prevention and management, risk reduction, credit management systems and business planning. Yunus (2006) and Morshed (1997) reported that life improvement training are drawn up in some credit schemes and are structured in such a way that each loan cycle covers at least two topics under five broad headings: business management, including time management and bookkeeping; marketing; health; christian education and teamwork; and planning for the future. In addition, since the first cycle encompasses the fundamentals of all these topics, clients who take out only one loan can acquire basic knowledge in all the topics. Most often, the training is highly practical to enable clients use their credits as effectively as possible to grow their business.

Thus, borrowers who have been given adequate training on business development, including business management such as bookkeeping and marketing, production technologies, time management, and other relevant training topics may have high loan repayment rates. Roslan et al. (2009) mentioned that the probability for good credit repayment performance is influenced by the training of the borrowers on all that it takes to utilize credit efficiently.

Stability in Agricultural Production

The underlying causes of high productivity in agriculture are good soil condition, adequate rainfall which is well distributed, availability of improved and healthy planting materials, livestock breeds and fish, accessibility to relevant inputs, minimal or no effects of pests and diseases, and increase in the adoption of existing production technologies (Irgco, Mitchell & Nash, 2004).

Agriculture in developing countries is a natural resource-based, with extensive crop and livestock production systems, rain-fed crop production, and fishing from the natural water bodies. Widespread security of land tenure where there is legal titles to land with clear demarcation can avail land for agriculture. Complex and uncertain land tenure relations hamper private investment in agriculture as a recent contribution by Goldstein and Udry (2008) and earlier by Besley (1995) indicates. Since land is an immobile resource, population pressures and urbanization limit land availability. Land and water management activities to forestall land degradation, desertification and soil erosion are appropriate measures to improve upon the fertility of the soil, soil texture and volume, suitable consistency and the profile of the scarce agricultural lands.

The dependence of agriculture on rainfall calls for adequate and timely preparation of resources, including agricultural credits, to meet the season. The alternative is the provision of irrigation services for all time agricultural production. The availability of the right level of moisture in the soil on the onset of production through the vegetative and reproductive phases of crop growth and development, coupled with improved soil fertility, is a positive sign of yield increase.

Developed road and transport infrastructure for the movement of agricultural inputs and commodities encourage the development of agriculture in the high agricultural production areas. Simple but improved housing facilities to house farm animals are essential. Also, it is necessary to provide credits to livestock owners to acquire improved breeds and provide supplementary feeds and medication to the animals. The supply of hatcheries,

ponds, cages, feed, nets, outboard motors and even canoes on credit to fishermen, and infrastructure for landing and hygienic handling of fish can drastically develop the fishing industry. The improvement in income levels of agricultural produce is possible if value is added to the produce. The acquisition and use of suitable and efficient agricultural machinery and equipment by agro-processors with the availability of enough funds to obtain raw materials can improve the agro-processing sector to generate enough income.

The development and dissemination of agricultural production technologies is incomplete without the end users accepting and applying these technologies to better their enterprise. Farmers who adopt technologies in crop improvement such as use of improved crop varieties, fertilizers, adequate land preparation, pests and disease control measures and effective pre and post-harvest handling of matured produce can boost the quality and yields of crops.

Similarly, technologies in livestock improvement, fishing industry, processing, and the handling and storage of farm produce, especially in the value chain, are essentials to crop quality and high yield, which in turn are signs of improvement in revenue. Since credit is critical for investment in agricultural production, government intervention is to guarantee that credit is available and affordable. There is the realization that the stability in agricultural production can lead to high production and with favourable market conditions enough income can be generated for higher credit repayment rate. Akinleye et al. (2005) observe that reasons adduced to the absence of these factors may lead to increasing incidence of low credit repayment rates. Factors that accounted for the poor repayment performance

reported by Kashuliza (1993) are unfavourable weather and disasters like floods, drought, bush fires, pests and diseases outbreak and storms at sea. Bhatt (1994) identified crop loss, high cost of cultivation, non availability of real inputs and other factors to be responsible for poor credit repayment performance.

Supervision and Monitoring of Credits

Experience among micro-credit programmes has shown that close supervision of field staff by management is important, especially at the outset. This increases the morale among both field staff as well as borrowers (Yunus, 2006; Morshed, 1997). Before a loan is disbursed, information about the prospective client's family, economic and educational status, household assets, credit history and other relevant information are collected and entered on a personal information form. The client is required to clearly indicate the purpose for which he or she plans to use the credit (Aryeetey, 1996). It must be a purpose that is likely to produce returns.

The field staff of the credit organization or institution begins the process of credit allocation and utilization supervision, when the staff visits the clients to see whether the credit is rightly allocated to the purpose for which it was requested. If clients failed to use the credit for the intended purpose, he or she will be required to return the credit. The field staff continues with the timely visits to clients to see how things are going, what challenges they face and whether they need help, such as an additional credit or an extension in credit repayment period. The close relationship and interaction, as well as the spot checks, take place more intensively at the

outset, and later become less frequent as clients repay reliably and a track record is set (OECD, 1998).

Finally, as repayment time approaches, the field staff visits the clients yet again to make sure they are preparing to repay their loans. This process will end up with encouraging credit repayment rates. Internal monitoring provided by clients is also a critical factor bringing about excellent repayment records. Regular reporting, on weekly and monthly basis, on credit programme performance generally include statistical and narrative sections, which can be tracked especially to pick up early warning signs. Goswami et al. (1996) and Swaminathan (1990) reported that the shortcomings of credit programmes are lack of supervision and follow-up actions. Hence, credit clients who received adequate and relevant supervision and monitoring, with sound credit worthy history records and/or regular internal monitoring may have higher repayment rates. A report by Bhatt (1994) shows that inadequate supervision of credit use was responsible for credit defaults by borrowers.

Marketing Opportunities for Produce

Some of the important conditions essential for the adequate marketing of agricultural produce are adequate and suitable infrastructure such as market stalls, car parking spaces, storage facilities, water and electricity, banks; adequate product development for effective utilization of farm produce, availability of adequate market information (which can be sourced when and where needed) and marketing skills, and generally strong commodity value chains. The value chain refers to the string of actors working together to satisfy market demand for a particular product. It includes input dealers

involved in backward linkage activities in the production system, and transporters, traders, processors and others involved in forward linkage activities. The participation of small farmers in high value markets, both domestic and global, including the supermarkets revolution, offers a new opportunity. Borrowers who have reliable markets for produce, reliable transportation system and good roads to the market centres, adequate market infrastructure and market information, and high demand for produce with accompanying highly stable pricing regime will be able to generate enough income to repay credits., Thus, borrowers with different market opportunities for their produce may have different loan repayment rates. Oke et al. (2007), Chirwa (1997), and Kashuliza (1993) reported that marketing opportunities such as the availability of market information and the demand for products significantly influence the repayment of micro-credits. Bhatt (1994) mentioned market fluctuations as a factor that influences credit repayment.

Income Generated from Credit Use

Income generated from credit use may be high or low, depending on the effect of factors such as the content of the credit (credit package), time of credit delivery, credit allocation and concentration on credit usage, the application of production technologies provided and business management strategies, type of produce, the quality and quantity of produce, and marketing opportunities for produce, including the level of demand and prices for produce. Studies indicate that when incomes increase, they tend to level off after some time and only a small percentage of borrowers will realize sustained increases in income (Goetz & Gupta, 1994). Barnes (2001) observed

that extremely poor farmer micro-credit clients participating in the Zambuko Trust in Zimbabwe increased their incomes, which reflected in the increased consumption and remaining for debt servicing. MkNelly and Dunford (1999) reported that the income of 66 percent of clients in CRECER in Bolivia, had increased 86 percent, and the clients in a Freedom from Hunger programme in Ghana increased their incomes by $36 from $18. This led to increase in consumption, and repayment of debts including micro-credits.

Income generated from agriculture is used on consumption, repayment of debt including credit, re-investment, and investment in different enterprises (Zeller et al., 2002). Controlled consumption expenditure would allow enough money to be available for credit repayment, re-investment and further investment in other businesses. Thus, borrowers who have different levels of income generated from the use of credits may have different loan repayment rates. However, repayment may be derived from sources other than the income generated from the micro-credit used. These might include, for instance, savings, other earnings, borrowings from a moneylender, a loan from a spouse or relative, or the wage earnings of the borrower or another family member (MacIsaac, 1996). Oke et al. (2007) and Chirwa (1997) reported that income significantly influence repayment of credits. Bhatt (1994) indicated that insufficient income generation contributes to low agricultural credit repayment.

Repayment Period of Credit

Repayment period of credit here refers to the period of time during which the entire loan must be repaid. Ledgerwood (1999) demonstrates that

cash flow in part determines the debt-servicing capacity of borrowers. Shorter repayment period might cause the borrower not to have generated enough revenue to make loan payments (Ojo, 1986). On the other hand, longer repayment periods are detrimental to borrowers if they cannot access future loans until the existing loans are paid back. Hence, both shorter and longer loan repayment period can have negative effects on the default rate. The result of a regression analysis by Roslan et al. (2009) and Bassem (2006) revealed that loan repayment was significantly influenced by the repayment period of credit.

Measurement of Credit Repayment

Credit repayment is usually measured in terms of the level of recovery made by credit sources on credits advanced to clients. It could also be based on the percentage of clients who have successfully paid all the credits advanced to them. All these depend on credit use performance (Goetz & Gupta, 1996). The measurement of credit repayment performance could be achieved by the lender determining the difference between the total amount of credit advanced to clients and the returns, or questioning clients about the rate of repayment made on credit given.

The success of any credit scheme is dependent on what the credits are used for, how adequate the credit is, when they are made available and used, whether what is planned to be produced is marketable, and significantly if effective repayment of credit is made (Raeburn, 1984).

CHAPTER THREE

METHODOLOGY

Introduction

This chapter presents the research methods and procedures used to generate data to explain the factors influencing repayment of MOFA micro-credits by clients in the Central Region of Ghana. The section comprises a description of the research design used, the study area, population of the study, sample size and sampling procedure, data collection instrument used, type of data collected and how it was collected, and finally how data was processed and analysed.

Research Design

The study used a descriptive-correlational survey design. Kerlinger (1979) described this design as that directed towards determining the nature of a situation, as it exists at the time of investigation. Gay (1987) agreed on the view that descriptive research provides opportunities for researchers to gain reliable insight into the current status of a phenomenon with respect to variables or conditions in a situation. This design was used because, according to Sarantakos (1998), it is a research design which is appropriate when a researcher attempts to describe some aspects of a population by selecting an unbiased sample of individuals who are asked to complete questionnaires or respond to interviews. The design allows researchers to gather data based on

the variables in the study, using structured and semi-structured questionnaire and an interview schedule. Neuman (2003) has indicated that the design systematically asks many people the same questions about a situation or a programme and measures many variables, which can infer temporal order from questions about past behavior, experiences or characteristics, or test multivariate hypotheses.

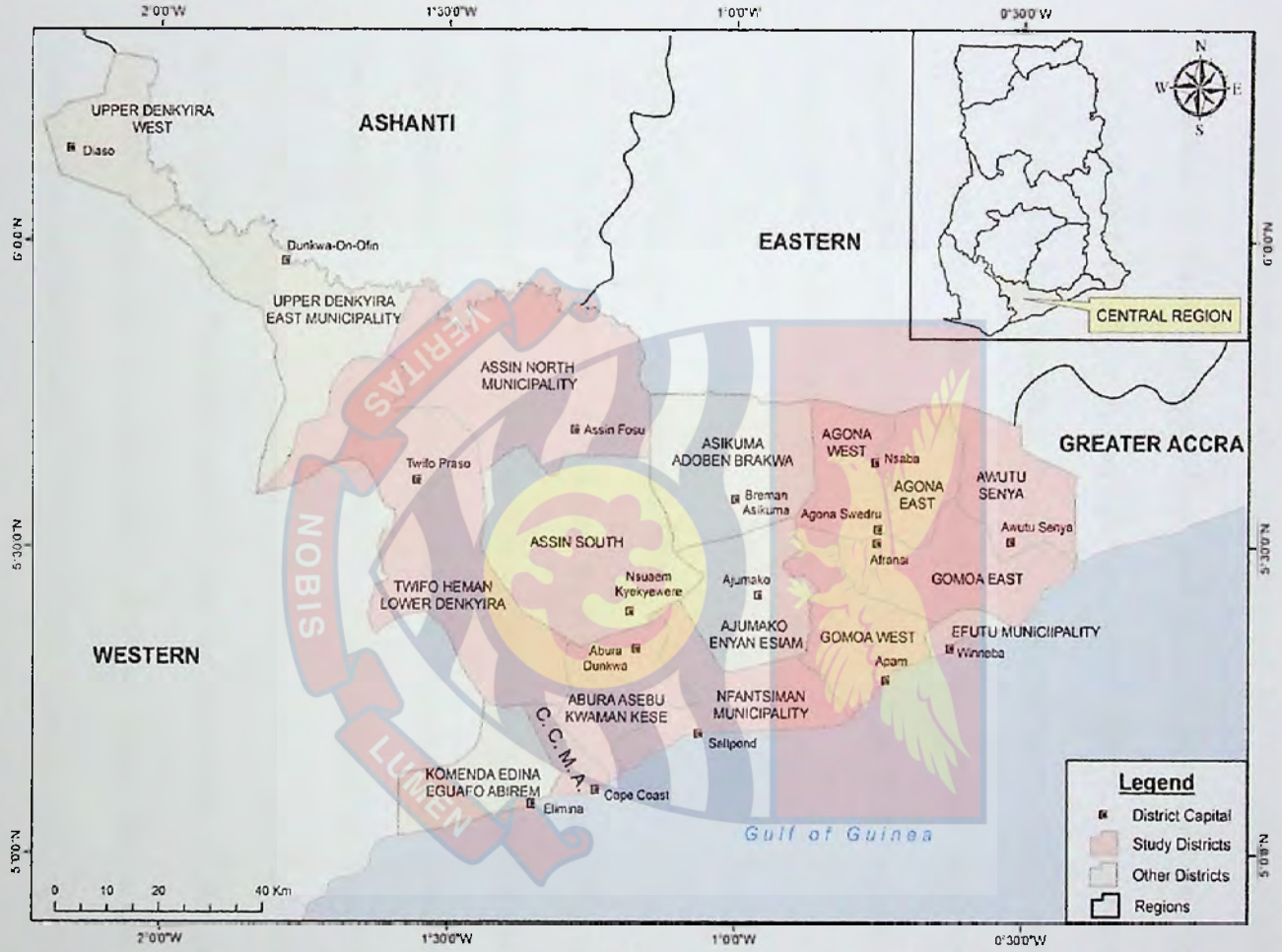
The design also allows the researcher to carry out correlation studies which clarify the understanding of the researcher and others of how the independent variables influence the dependent variable. The design also helps the researcher identify the factors used to predict the dependent variable. Fraenkel and Wallen (2000) indicate that if a relationship of sufficient magnitude exists between two variables, it becomes possible to predict a score on either variable if a score on the other variable is known.

The Study Area

The research was carried out in the Central Region of Ghana, and the Map of the region is shown in figure 2. The Central Region is located in the southwestern centre of Ghana, bounded on the south by the Gulf of Guinea, northwest by the Ashanti Region, northeast by the Eastern Region, southeast by the Greater-Accra Region, and west by the Western Region. It covers a total land area of approximately 9,830 sq km, 4.1% of the national land area (Ghana Survey Dept, 1998). A total land area of about 7,864 sq km is suitable for agriculture out of which 3,932 sq km is put into agriculture use. The region also has a coastline of 150 km. The region is made up of one metropolis, six municipalities and ten districts with the capital as Cape Coast.

The total population is 1,593,823 (8.6% of the national population) out of which 1,122,000 (about 71% of the population) are into agriculture and agriculture-related activities with 71% of the farming population having land holding less than 1.2 hectares (Ghana Statistical Services, 2000). The sex distribution shows that 52% women and 48% men are into agriculture. The dominant age group in agriculture, making up to 45%, belongs to the age group range of 30-49 years (Ghana Statistical Services, 2000).

Vegetation is mainly a deciduous forest, and coastal thickets and shrubs. There are two seasons of rainfall with peaks in May-June and October. The annual total rainfall ranges between 80cm-150cm. Dry periods are experienced between November to February. The temperature is generally high and ranges between 24°C and 34°C. Relative humidity range of 50% to 85% is being experienced. Soil type is mostly forest ochrosols (MOFA, 2009b). The main occupation of the people is farming and fishing with few of them into industrial and commercial activities. Farming systems practiced include permanent cropping, shared cropping, and on a limited scale bush fallowing. Major crops grown are maize, rice, groundnut, vegetables, cassava, cocoyam, sweet potato, yam, plantain, pineapple, oil palm, citrus, cocoa, coconut, and cashew. The various animals reared are sheep, goats, pigs, cattle, rabbits, grasscutters, and poultry. Marine fishing and aquaculture are also undertaken in the region.



Source: Geography Dept, UCC, Cape Coast, 2009

Figure 2: Map of Central Region

Population of the Study

Population is defined by Fraenkel et al. (2000) as all members of any well-defined class of people, events or objects of interest in a research study. The target population to which the findings of the study were generalized was all agricultural producers who had obtained MOFA micro-credits for the production of food and agriculture and agriculture-related activities in the Central Region of Ghana. It was estimated that 7,500 agricultural producers in Central Region had benefited from MOFA micro-credits from 2000 to 2009. These micro-credit clients are located in all the districts, metropolitan and municipal areas in the region, and are engaged in crop farming, livestock rearing, marine fishing, and agro-processing.

Sampling Procedure and Sample Size

The population of interest was much too large to be studied as a whole. Therefore, samples were selected and studied. The information derived from these samples was used to draw conclusions about the population from which the samples were taken. Walsh (1990) alerted the student researcher that to make inferences about population parameters from sample statistics one should make sure that the sample was representative of the population. Researchers generally have the notion that the larger the sample size, the smaller the sampling error. However, they unanimously agree that this assertion holds only when the sample is randomly chosen. According to Best and Khan (1998), "there is no fixed number or percentage of subjects that determines the size of an adequate sample". Sample size may depend on the

nature of the population, the data to be collected, the type of analysis to be done and funds available for the study.

Based on the recommendation made by Oke et al. (2007), Bassem (2006), Bhatt et al. (2002), Olomola (2001), Cowdhury et al. (1998), and Bhatt (1994) on selection and use of sampling procedure, a multi-stage sampling procedure was used to select samples for the study. This sampling procedure combined cluster random sampling with individual random sampling. It means that the researcher selected groups, or cluster of subjects from larger number of clusters. The selected groups or cluster of subjects was the 10 districts shown in Table 1, and the larger number of clusters consisted of the 17 districts, and metropolitan and municipal areas in the Central Region.

Then, simple random selection of individual MOFA micro-credit clients and Agricultural Extension Agents in each district, based on the number of samples to be taken from each district, was carried out. The multi-stage sampling procedure was used to save time and to reduce costs. It also contributed to overcome likely problems associated with geographically dispersed population as face-to-face contact was needed.

A simple random sampling is the best way to obtain a sample representative of the population from which it has been selected. Fraenkel et al. (2000) advices researchers to most often employ the ballot method, which is an example of a simple random sampling. Simple random sampling ensures that each and every member of the population has an equal and independent chance of being selected. The method is also easy, time-saving and allows for representativeness of samples for the generalization of research results.

Lists of MOFA micro-credit clients were obtained from the district, metropolitan and municipal offices of the Ministry of Food and Agriculture.

At the first stage, a ballot box technique simple random selection was conducted, whereby all the 17 districts, metropolitan and municipal areas in the Central Region were assigned numbers written on pieces of paper and folded. The folded papers were placed into a box and picked one after the other. The papers picked were placed back into the box, shuffled and picked until 10 districts were selected. At the second stage, 400 MOFA micro-credit clients and 60 Agricultural Extension Agents (AEAs) were randomly selected from the total population of 7,500 clients and 190 AEAs respectively. A total of 40 micro-credit clients and 6 AEAs were chosen from each study district. These were done by giving names to represent the various micro-credit clients and AEAs in each study district. Their names were then written on pieces of paper and folded individually. All the folded papers were shuffled together in an empty box and picked one after the other, but placed back into the box. Reshuffling and picking of papers continued until 40 micro-credit clients and 6 AEAs had been selected. The same was done for all the study districts. Table 1 shows the distribution of the sample size.

Table 1: Sample Districts and Sample Sizes Allocated

Serial No	Sampled District	Sample Size	
		Credit Clients	AEAs
1	Cape Coast	40	6
2	Twifo Hemang Lower Denkyira	40	6
3	Abura Asebu Kwamankese	40	6
4	Mfantseman	40	6
5	Gomoa West	40	6
6	Gomoa East	40	6
7	Assin North	40	6
8	Awutu Senya	40	6
9	Agona West	40	6
10	Agona East	40	6
Total		400	60

Source: Field Study, 2009

Walsh (1990) claims that the larger the sample size, the lower the error in generalizing to the population. Based on the total number of MOFA credit clients in the Central Region, a sample size of 400 clients was deemed sufficient to provide the needed information which could be generalized to the population with lower error. Also, the 60 sampled AEAs out of 190 was sufficient.

Instrumentation

Validated questionnaires and interview schedules were developed and used to collect categorical and quantitative data from the AEAs and micro-

credit clients respectively for the study. Oke et al. (2007), Bassem (2006), Olomola (2001), Oni (1999), and Chirwa (1997) recommended the use of questionnaires and interview schedules for data collection from micro-credit clients because these instruments allow for the collection of adequate information from respondents.

The interview schedule for micro-credit clients was divided into three main parts as shown in Appendix IV. Part one contained close-ended, open-ended and partially close-ended questions, where respondents chose one or more answers from those provided and also provided their own answers to questions, respectively. Other questions in this part were a 5-point Likert-type scale ranging from 1=highly inadequate to 5= highly adequate to measure respondents' perceptions on the adequacy of credit repayment duration. Questions were based on the specific objectives outlined in chapter one.

Part two of the interview schedule contained questions that led to identifying various potential factors influencing the repayment of MOFA micro-credits. Respondents' perception about the identified factors was rated on a 5-point Likert-type scale ranging from 1=strongly disagree to 5=strongly agree. Respondents chose the appropriate description. In part three of the interview schedule for credit clients, respondents provided certain information that best describes their characteristics based on age, sex, level of education, marital status, household size, wealth status, type of agricultural activity engaged in, and their experience in the agricultural enterprise.

The questionnaire for AEAs contained questions that best described the characteristics of AEAs based on age, sex, level of education and marital status as indicated in part one of the questionnaire in Appendix V.

Part two was a 5-point Likert-type scale ranging from 1= strongly disagree to 5= strongly agree. The ratings on the Likert-type scale was used against the perceptual data collected from the respondents. Bennett (1976) encourages the gathering of perceptual data, as they are easier and less costly to collect than hard evidence. Also, Levin (1990) puts forward perception studies as showing a positive correlation between perceptual data and objective facts.

Appendix I provides a brief description of the concepts, the information required and type of questions necessary to assess and collect valid and reliable data for the study. Appendix II also shows the Likert-type scales in the interview schedule and questionnaire and their interpretations.

In research, validity and reliability are the most important principles to consider when preparing or selecting an instrument for use (Fraenkel et al., 2000). Validity is defined as "the ability of an instrument to measure accurately what it has been set out to measure", while reliability refers to "the consistency with which repeated measures produce the same results across time and across observers". The following measures were undertaken to be sure the questionnaires and the interview schedules were valid and reliable of the concepts: The content validity of the questionnaire and interview schedule were adequately scrutinized by three experts who are lecturers from the Department of Agricultural Economics and Extension, and the Institute for Development Studies, both of the University of Cape Coast. Three Agricultural Extension Workers of the Ministry of Food and Agriculture, Cape Coast Metropolis, conducted face validity of the questionnaire and interview

schedule and established clarity and level of difficulty in the understanding of question items. They also provided suggestions for modification.

To establish reliability, a pilot study was conducted using the interview schedule developed for 40 MOFA micro-credit clients from a district which has not been covered in the study but was very similar to those respondents in the study districts in terms of geographical location, socio-economic and cultural characteristics. Specifically, the pilot study was conducted in the Assin South District in August 2009. The purpose of the pilot study was to find out whether the questions were well presented, clearly understood and easy to answer, and do not cause anxiety, embarrassment and resistance from respondents. Also, the pre-test showed how long it actually took respondents to complete the interview schedule and indicated the best time to distribute the interview schedules. The data collected from the pilot study was entered into a computer and analysed using the Statistical Package for Social Sciences (SPSS) version 15.0 and generated Cronbach alpha coefficients for the various variables or constructs to determine the internal consistency of all the Likert-type scales.

As shown in Table 2, the Cronbach Alpha of 0.86 indicates that the statements on the sub-items of the factors influencing the repayment of MOFA micro-credits by clients are internally consistent. The reliability coefficient ranges from 0-1. For reliability to be accepted, an alpha coefficient of between 0.6 and 1 is considered the best (Pallant, 2001).

Table 2: Reliability Analysis using Cronbach Alpha

Construct	Number of Items	Cronbach Alpha
Time credits are made available to clients	3	0.864
Type of agricultural activity micro-credit clients engaged in	3	
Adequacy of credit	9	
Training for micro-credit clients	11	
Stability in agricultural production	8	
Market opportunities for produce	10	
Level of income generated when credit was used	3	
Supervision and follow up of credit allocation and use	6	
Repayment duration of micro-credit	4	
Wealth status of credit clients	9	
Total Number of Items	66	

N= 40. Source: Field Data, 2009

Data Collection

Data was collected by reviewing secondary data sources like books, journals, annual reports, conference proceedings, theses and documents from the Internet, which were useful in designing the interview schedules and questionnaires.

Introductory letters were requested from the head of the Department of Agricultural Economics and Extension, University of Cape Coast to district directors of the Ministry of Food and Agriculture whose directorates covered

areas where the samples were drawn for the study and sought their support. AEAs in the study districts were also requested to support in the distribution and completion of the interview schedules.

Training was organized for the AEAs, where the contents of the questionnaires and interview schedules were clarified and difficulties in understanding items were addressed. Cover letters signed by the researcher and the dissertation supervisors were attached to the questionnaires and interview schedules to explain the purpose of the research to the respondents, and also appealed to them to honestly respond to questions. All the 400 interview schedules and the 60 questionnaires distributed were fully completed and returned. The data was collected between the third week of October 2009 and the third week of January 2010 as indicated in Appendix III.

Variables of the Study

Dependent variable: Repayment of MOFA micro-credits by clients

Independent variables:

- Time credits are made available to clients
- Type of agricultural activities engaged in by micro-credit clients
- Adequacy of credit
- Training for micro-credit clients on skills in agricultural production and business development
- Stability in agricultural production
- Marketing opportunities for produce
- Level of income generated when credit was used
- Supervision and follow up of credit allocation and use

- Repayment duration of micro-credits
- Wealth status of micro-credit clients
- Age of micro-credit clients
- Sex of micro-credit clients
- Marital status of micro-credit clients
- Level of education of micro-credit clients
- Household size of clients
- Experience of clients in agricultural enterprise

Data Analysis

The interview schedules and questionnaires collected were screened for their usability and coded using coding manual developed to code the various completed items. Data were entered into a computer and analysed using SPSS.

For objectives 1, 2, 3 and 4, descriptive statistics comprising frequencies, percentages, means and standard deviations were computed and used in describing the general trend of the data. Chi square was extensively used. Chi square was used to find out the distribution of the demographic and socio-economic characteristics of clients in relation to the repayment of MOFA micro-credits, and to test the hypotheses on differences between male and female clients, married and unmarried clients, and between the other demographic and socio-economic characteristics on the repayment of MOFA micro-credits. Chi square was also employed in examining the effect of MOFA micro-credit sourcing, delivery, allocation, use, and repayment conditions on the repayment of the credit.

Mean scores and standard deviations were calculated to describe differences in micro-credit clients' and AEAs perceptions in terms of some variables.

For objective 5, Pearson product-moment correlation coefficient, Spearman correlation coefficient and Point biserial correlation coefficient were used to determine the relationships that exist between the independent and dependent variables, and among the independent variables themselves. The correlation coefficients were used to find out if the relationships were positive or negative; strong or weak; negligible, low, moderate, substantial or very strong associations. The coefficient ranges from -1 to +1. The higher the coefficient, say between 0.5 and +1 the stronger the correlation (Walsh, 1990). The discussions and interpretation of the strength of associations of the factors were based on Davies Convention (Davies, 1971), which is stated in Table 3. The correlation coefficients were used for their simplicity and because they actually indicated the strength of the relationship, which allowed for prediction to be made.

Table 3: Davies Convention Correlation Coefficient

Coefficient	Description
0.70 or higher	Very strong association
0.50 to 0.69	Substantial association
0.30 to 0.49	Moderate association
0.10 to 0.29	Low association
0.01 to 0.09	Negligible association

Source: Davies, 1971

Also, correlation coefficients were compared regardless of how the variables they describe were measured, because the squared correlation coefficient is interpreted in terms of the amount of variance explained in the dependent variable by the independent variable (Walsh, 1990). The correlations were further projected in testing the hypotheses for acceptance or rejection of the null hypotheses.

The best way of describing the linear relationship between two interval level variables is the least-square regression line, denoted as Y= a + bX (Walsh, 1990). In order to address objective six, the regression line was extended to include the sixteen independent variables with significant coefficients obtained from the correlations. Since the objective of this study was to establish causal relationships between the dependent and the independent variables in the model, the linear form of the regression was run, as suggested by (Oke et al., 2007; Bassem, 2006; Bhatt et al., 2002; Olomola, 2001; Cowdhury et al., 1998; and Bhatt 1994). Ordinary Least Square (OLS) technique was used to estimate the parameters of the model. This was because with the normality assumption, the OLS estimators are normally distributed and they are said to be best unbiased estimators (Gujarati, 1995). The regression analyses were run stepwise using the SPSS package so as to determine the order of importance of the explanatory variables in explaining the variations observed in the dependent variable. The regression model is defined by: $Y=a+b_1X+b_2X+b_3X+b_4X+b_5X+b_6X+b_7X+b_8X+b_9X+b_{10}X+b_{11}X+b_{12}X+b_{13}X+b_{14}X+b_{15}X+b_{16}X$

Where, Y= Repayment of MOFA micro-credits by clients

a= Y intercept (constant)

X_1= Time credits are made available to clients.

X_2=Type of agricultural activities engaged in by micro-credit clients

X_3=Adequacy of credit.

X_4=Training for micro-credit clients on skills in agricultural production and business development.

X_5=Stability in agricultural production.

X_6=Marketing opportunities for produce.

X_7=Level of income generated when credit was used.

X_8=Supervision and follow up of credit allocation and use.

X_9=Repayment duration of micro-credits.

X_{10}=Wealth status of micro-credit clients.

X_{11}=Age of micro-credit clients.

X_{12}=Sex of micro-credit clients.

X_{13}=Marital status of micro-credit clients.

X_{14}=Level of education of micro-credit clients.

X_{15}=Household size of clients.

X_{16}=Experience of clients in agricultural enterprise.

b_1= the partial slope of the relationship between the time credits are made available to clients and the repayment of MOFA micro-credits, with other independent variables controlled.

b_2= the partial slope of the relationship between the type of agricultural activities engaged in by micro-credit clients and the repayment of MOFA micro-credits, with other independent variables controlled.

b_3= the partial slope of the relationship between the adequacy of credit and the

repayment of MOFA micro-credits, with other independent variables controlled.

b_4= the partial slope of the relationship between the training for micro-credit clients in agricultural production and business development and the repayment of MOFA micro-credits, with other independent variables controlled.

b_5= the partial slope of the relationship between the stability in agricultural production and the repayment of MOFA micro-credits, with other independent variables controlled.

b_6= the partial slope of the relationship between the marketing opportunities for produce and the repayment of MOFA micro-credits, with other independent variables controlled.

b_7= the partial slope of the relationship between the level of income generated when credits were used and the repayment of MOFA micro-credits, with other independent variables controlled.

b_8= the partial slope of the relationship between the supervision and follow-up of credit allocation and use and the repayment of MOFA micro-credits, with other independent variables controlled.

b_9= the partial slope of the relationship between the repayment duration of micro-credits and the repayment of MOFA micro-credits, with other independent variables controlled.

b_{10}= the partial slope of the relationship between the wealth status of micro-credit clients and the repayment of MOFA micro-credits, with other independent variables controlled.

b_{11}= the partial slope of the relationship between the age of clients and the repayment of MOFA micro-credits, with other independent variables controlled.

b_{12}= the partial slope of the relationship between the sex of clients (male or female) and the repayment of MOFA micro-credits, with other independent variables controlled.

b_{13}= the partial slope of the relationship between the marital status of clients (married or unmarried) and the repayment of MOFA micro-credits, with other independent variables controlled.

b_{14}= the partial slope of the relationship between the level of education of clients and the repayment of MOFA micro-credits, with other independent variables controlled.

b_{15}= the partial slope of the relationship between the household size of clients and the repayment of MOFA micro-credits, with other independent variables controlled.

b_{16}= the partial slope of the relationship between the experience of clients in the agricultural enterprise and the repayment of MOFA micro-credits, with other independent variables controlled.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the results and the major findings of the study. The results of the study have been arranged systematically based on the specific objectives of the study. The chapter examines the relationships between the characteristics of MOFA micro-credit clients and the repayment of MOFA micro-credits. Results and discussions has been focused on the investigation of agricultural micro-credit sourcing, packaging, delivery, allocation and repayment conditions on the repayment of MOFA micro-credits. The measurement of the repayment of MOFA micro-credits shows an overall rating of credit repayment.

In chapter four, discussions on the results also focus on the means and standard deviations of the respondents' perceptions on the factors that influence the repayment of MOFA micro-credits by clients. Also, correlation matrixes are drawn, where correlation coefficients of the variables (factors identified) have been used to examine the relationships between the factors influencing the repayment of MOFA micro-credits. The chapter also presents prediction models showing the stepwise regression of perceptions of the respondents about the factors identified to be influencing the repayment of MOFA micro-credits by clients in the Central Region. Reasons are given to

why the distributions follow a certain trend, and the findings are related to the literature.

Characteristics of MOFA Micro-credit Clients and Repayment of MOFA Micro-credits

The study examined the repayment of MOFA micro-credits by clients on the characteristics of clients based on age, sex, marital status, level of education, household size, wealth status, type of agricultural activity engaged in, and experience of clients in agricultural enterprise to answer objective one. This was to find out if there existed variations in the relationship between the characteristics of the credit clients and the repayment of MOFA micro-credits, and if variations existed to what extent were the variations.

Age of Respondents and Repayment of MOFA Micro-credits

Table 4 shows the details of the age range of respondents. Young MOFA micro-credit clients were not many. Only 3.5% of the respondents of the age group of 21-30 sourced for micro-credits. Respondents attributed this to the unwillingness of the young enterprising youth to engage in agriculture, but prefer to migrate to the urban centers in search of white collar jobs and better social life. However, Brynes (1978) sees young farmers as generally more venturesome and receptive to call for change and willing to accept risk. Old people are conservative, localize and feel insecure sourcing and using innovations including credits. This is because decisions they take do not affect them only but also their entire family. The respondents could be described as mature since more than 50% of them were over 40 years. This supports

finding by Giddens (1994) indicating that credit clients above 40 years source credit more than any age group.

Table 4: Distribution of Respondents by Age and Repayment of MOFA Micro-credits

Repayment Status on Credit	Age Range of Clients (Years)				Total
	21- 30	31- 40	41- 50	Over 50	
No full repayment made	10 (71.4%)	85 (76.6%)	108 (73.5%)	85 (66.4%)	288 (72%)
Full repayment made	4 (28.6%)	26 (23.4%)	39 (26.5%)	43 (33.6%)	112 (28%)
Total	14 (100%)	111 (100%)	147 (100%)	128 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 77.4$, df= 1, p= 0.000

It is inferred that on the whole majority of the respondents were within the active work force of 30 – 50years. The result supports finding by (Atengdem, 1997). Meanwhile, Table 4 shows that all the age groups indicate low credit repayment rates. For instance, micro-credit clients in the age range of 41-50 years, representing 36.8% of the respondents, benefited from the MOFA credits. However, the credit repayment distribution indicated that as high as 73.5% of beneficiaries in this age group could not repaid fully credits obtained. The age group of over 50 years made a significant attempt to repay credits they collected. The results in Table 4 support the findings of Colman et al. (1995) on the influence of age on the repayment of micro-credits, which revealed that the age of client can influence whether or not a client will efficiently use credit to generate enough income to pay back credit.

The Chi-square test indicated that there is a significant difference (p = 0.00) between ages of clients on the repayment status of MOFA credits.

Sex of Respondents and Repayment of MOFA Micro-credits

Table 5 shows that male agricultural producers sourced micro-credits more than their female counterparts. The difference in the number of male respondents, 78.3% as against 21.7% female respondents, is very high. Reasons given by respondents for poor female participation in credit sourcing include credit sourcing being the prerogative of a male farmer, who is normally the head of household, female inability to get information on credit sourcing, inadequate resources as collaterals and even to cover transaction costs, fear for defaulting in repayment of credit and the negative consequences that befall defaulters, and total disinterest in credit sourcing.

Table 5: Sex Distribution of Respondents and Repayment of MOFA Micro-credits

Repayment Status on Credit	Sex of Clients		Total
	Male	Female	
No full repayment made	223 (71.2%)	65 (74.7%)	288 (72%)
Full repayment made	90 (28.8%)	22 (25.3%)	112 (28%)
Total	313 (100%)	87 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 77.8$, df= 1, p= 0.000

Similarly, Essel (1996) also found that more men accessed rural bank credit than women. This marginalization of women, he noted, was due in part to institutional and cultural factors.

The same reasons are provided by Atengdem (1997), who emphasized that female farmers feel insecure in accepting agricultural credits, because decisions they take do not affect them only but also their entire family. Brynes (1978) also added that male farmers are generally more venturesome and

receptive to call for change and willing to accept risk. Meanwhile, the finding is at variance with findings of Cheston (2004), ADB (2003), and Muntemba (2000), which indicated that women are being predominantly served with micro-credits than men.

From Table 5, the study found out that out of 87 females interviewed only 25.3% had fully repaid credit. Regarding the males, 28.8% out of 313 respondents were able to fully settle MOFA credits obtained. The Chi-square test indicated that there is a significant ($p = 0.00$) difference between male and female on the repayment of MOFA micro-credits. These findings show that the credit repayment rate for both male and female differ. This supports the findings of Arthur (2008), ADB (2005), Amoah (2004), Siameh (2004), Adeyeye (2003), Olomola (2001), ADB (2000), Adebayo (1997), and UNCDF (1997) that female clients of microfinance improve on their credit repayment rate more than the male counterparts. These authors gave reasons that because women fear embarrassment and public ridicule they made sure that they paid their loans on time just to avoid harsh words.

The null hypothesis which stated that there is no significant difference between male and female clients on the rate of the repayment of MOFA micro-credit is therefore rejected. The alternative hypothesis is accepted.

Marital Status of Respondents and Repayment of MOFA Micro-credits

Marriage is another personal characteristic of respondents that may influence the behaviour or reaction to issues. The results in Table 6 show that more married respondents (93.0%) sourced for agricultural micro-credits than the unmarried counterparts. It is obvious that decisions taken by two or more

people in a household favour credit sourcing. Large size households are compelled to source for credits to supplement what is available.

Table 6: Marital Status Distribution of Respondents and Repayment of MOFA Micro-credits

Repayment Status on Credit	Marital Status of Clients		Total
	Married	Not married	
No full repayment made	267 (71.8%)	21 (75%)	288 (72%)
Full repayment made	105 (28.2%)	7 (25%)	112 (28%)
Total	372 (100%)	28 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 79.7$, df= 1, p= 0.000

The results in Table 6 does not corroborate Brynes (1978) observation that farmers who are single are generally more venturesome and receptive to call for change and willing to accept risk, and that farmers who are married are also insecure in accepting agricultural credits.

The statistical analysis conducted showed that significantly (p = 0.00) more married respondents consented to the MOFA credit repayment than unmarried respondents. However, the rate of credit repayment of 28.2% for married and 25% for unmarried respondents who have fully repaid is not encouraging. The difference in the credit repayment rate by married and unmarried clients could be attributed to the fact that married person's behaviour may differ significantly from the unmarried persons because of certain social responsibilities and expectations the society expects from married people. In other words, marriage imposes strains, difficulties, responsibilities and challenges on an individual (Giddens, 1994). The null hypothesis which stated that there is no significant difference between married

and unmarried clients on the rate of the repayment of MOFA micro-credit is therefore rejected. The alternative hypothesis is accepted.

Level of Education of Respondents and Repayment of MOFA Micro-credits

In Table 7, clients with JSS/ Middle School education sourced for MOFA credits more than those of other educational levels. It was shown that out of 176 respondents with JSS/ Middle School education who sourced for MOFA credits 75% had defaulted in repayment. This confirms the finding of Ekumah and Essel (2001) that about 36% of rural credit clients have basic education and are culprit in credit default.

The results in Table 7 also show that 80.7% of the respondents had formal education, ranging from basic education through secondary education to university level. This points to the fact that MOFA micro-credit clients were literate individuals in their rural communities. Based on Colman et al. (1995), this is likely to afford them some level of managerial ability in their business pursuit, and can influence the client to efficiently use credit to generate enough income to pay back credit. Meanwhile, the number of respondents who made full credit repayment for all the educational levels was less than 40%. Meanwhile, Eisemon (1992) sees education as a factor that affects and influence individual reception, understanding and the possible use of the information received. The study revealed that there was a significant ($p = 0.00$) difference in the level of education of respondents and the repayment of MOFA micro-credits by clients.

Table 7: Distribution of Respondents by Level of Education and Repayment of MOFA Micro-credits

Repayment Status on Credit	Level of Education						Total
	No formal education	Primary education	Junior Secondary/ Middle school education	Senior Secondary/ Technical/ Business/ Vocational education	Diploma/ Agric/ Teacher/ Nursing Training education	University/ Higher National Diploma education	
No full repayment made	54 (70.1%)	38 (64.4%)	132 (75%)	49 (72.1%)	8 (72.7%)	7 (77.8%)	288 (72%)
Full repayment made	23 (29.9%)	21 (35.6%)	44 (25%)	19 (27.9%)	3 (27.3%)	2 (22.2%)	112 (28%)
Total	77 (100%)	59 (100%)	176 (100%)	68 (100%)	11 (100%)	9 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 79.7$, df= 1, p= 0.000

Household Size of Respondents and Repayment of MOFA Micro-credits

The family size of an individual farmer imposes an economic stress on him or her if other members of the family depend on the farmer for their livelihood and survival.

Distribution of respondents based on their household size revealed that the respondents had between one and over 10 individuals in their households. The modal household size is 6 persons, as mentioned in Table 8. High respondents recordings of 18.0%, 16.4% and 19.3% indicated household sizes of 4, 5 and 6 respectively. The results in Table 8 show that only households with one person could make 50% credit repayment. This supports the argument by Gyekye (1989) that an individual with a large household size will have greater financial responsibility. The findings from the study in consonance with what was reported by Phutrakul (1997) indicated that the tendency and temptation to utilize part of the credit facility to attend to numerous family needs, spending on basic household needs such as food, water, clothing, health care and education, will be higher for individuals with large household size especially where the majority are of non-working age. Also, much or the entire produce from credit utilization could be used for household upkeep with little or no product left for sale to raise monies to repay credit obtained.

A Chi-square test at 5% level of significance showed that there was a significant ($p = 0.00$) difference in household sizes and the repayment of MOFA credits.

Table 8: Distribution of Respondents by Size of Household and Repayment of MOFA Micro-credits

Repayment Status on Credit	Household Size											Total
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Over Ten	
No full repayment made	1 (50%)	16 (84.2%)	30 (90.9%)	54 (75%)	40 (61.5%)	49 (63.6%)	28 (73.7%)	28 (70%)	11 (73.3%)	15 (75%)	16 (84.2%)	288 (72%)
Full repayment made	1 (50%)	3 (15.8%)	3 (9.1%)	18 (25%)	25 (38.5%)	28 (36.4%)	10 (26.3%)	12 (30%)	4 (26.7%)	5 (25%)	3 (15.8%)	112 (28%)
Total	2 (100%))	19 (100%)	33 (100%)	72 (100%)	65 (100%)	77 (100%)	38 (100%)	40 (100%)	15 (100%)	20 (100%)	19 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 90.3, df= 1, p= 0.000

Wealth Status of Respondents and Repayment of MOFA Micro-credits

The indicators of wealth status of MOFA credit clients are the amount of money spent on household feeding and clothing, type of housing owned, size of agricultural enterprise owned, and specific household items owned, including vehicles, television sets, radio sets, refrigerators, video decks, cash at bank and at hand. The indicators considered represent what Henry, Sharma, Lapenu and Zeller (2001), and Sharma and Zeller (1999) recommended, which represented poverty index across farm households. Tables 9, 10, 11, 12, 13 and 14 provide details of the wealth status of respondents.

Cost of Households Yearly Feeding and Repayment of MOFA Micro-credits

Households' food included food or food stuff bought with money and foodstuff produced by the respondents. Cost of foodstuff produced by respondents was determined based on the prevailing market price. More than half of the respondents (60.8%) spent GH ¢501-1,500 on food per annum as indicated in Table 9. This shows that in a day, a household spent GH¢1.37 to GH ¢4.11 on food. The high cost of household feeding can negatively affect the reserve levels, reducing funds available to repay credits. In Table 9, credit repayment was less than 50% for all the household yearly feeding costs incurred by respondents. However, respondents with higher spending ranges of GH ¢1001-1,500 and GH ¢1,501-2,000 recorded an encouraging rate of credit repayment. The study revealed that there was a significant ($p = 0.00$) difference in the cost of household yearly feeding and the repayment of MOFA micro-credits.

Table 9: Distribution of Respondents by Cost of Household Yearly Feeding and Repayment of MOFA Micro-credits

Repayment Status on Credit	Cost of Household Yearly Feeding					Total
	Less than GH ¢500	GH ¢501-1,000	GH ¢1001-1,500	GH ¢1,501-2,000	Over GH ¢2,000	
No full repayment made	36 (76%)	88 (84.6%)	95 (68.4%)	26 (54.2%)	43 (69.4%)	288 (100%)
Full repayment made	11 (24%)	16 (15.4%)	44 (31.6%)	22 (45.8%)	19 (30.6%)	112 (28%)
	47 (100%)	104 (100%)	139 (100%)	48 (100%)	62 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 91.4$, df= 1, p= 0.000

Cost of Household Yearly Clothing and Repayment of MOFA Micro-credits

The dominant annual household clothing expenses of less than GH ¢500 shown by 82.5% of respondents in Table 10 seems reasonable. With an average household size of 6, a yearly spending on clothing is GH ¢83.3 per person. Those households who spent less than GH ¢500 on clothing in a year claimed they normally buy less costly clothing like second hand clothing because they don't earn enough income to enable them afford expensive ones. However, credit repayment was very low for both respondents who spent low and higher amounts on clothing, repayment rates were less than 40%.

The difference between these costs of household yearly clothing and the repayment of MOFA credit is statistically significant (p=0.00 in all cases)

Table 10: Distribution of Respondents by Cost of Household Yearly Clothing and Repayment of MOFA Micro-credits

Repayment Status on Credit	Amount Range			Total
	Less than GH ¢500	GH ¢501-1,000	GH ¢1,001-1,500	
No full repayment made	239 (72.4%)	35 (63.6%)	14 (93.3%)	288 (72%)
Full repayment made	91 (27.6%)	20 (36.4%)	1 (6.7%)	112 (28%)
Total	330 (100%)	55 (100%)	15 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 83.2, df= 1, p= 0.000

Ownership of Housing and Repayment of MOFA Micro-credits

Table 11 shows as much as 57.0% of respondents claiming ownership of houses. In addition to rent free and those occupying family houses, increasing the number to 82.5% respondents having stable minds on issues pertaining to accommodation, it is believed that monies not spent as rent could be deposited for credit repayment.

Nevertheless, more than 50% of respondents could not make full credit repayment. The Chi-square test indicated that there is a significant difference (p = 0.00) between ownership of housing by clients and full repayment of MOFA credit.

Table 11: Distribution of Respondents by Ownership of Housing and Repayment of MOFA Micro-credits

Repayment Status on Credit	Ownership of Housing				Total
	Rented	Owned	Rent Free	Family House	
No full repayment made	48 (68.6%)	166 (72.8%)	23 (60.5%)	51 (79.7%)	288 (72%)
Full repayment made	22 (31.4%)	62 (27.2%)	15 (39.5%)	13 (20.3%)	112 (28%)
Total	70 (100%)	228 (100%)	38 (100%)	64 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 81.4$, df= 1, p= 0.000

List of Household Items Owned, Cash at Home and Cash at Bank

Household items are items bought by respondents and are being used for the purpose for which they were bought. These are items that can be kept and used for a longer time period. Household items mentioned by respondents include cooking bowls and plates, radio sets, television sets, refrigerators, video decks, bicycles, motor bikes, cars, and agro-processing facilities.

Table 12 shows the main household items owned by most of the respondents as cooking bowls and plates, radio sets, television sets and refrigerators. Other assets include cash at bank and home. Most of the items were bought many years ago and costs were low and affordable. As low as 0.8% of the respondents owned only cooking bowls and plates, while a little above 10% of the respondents have additional costly items such as cars, motor bikes and agro- processing equipment.

Table 12: Distribution of Respondents by List of Household Items Owned

Household Items	Frequency	Percentage
Cooking bowls and plates	3	0.8
Television set, radio set, refrigerator, car and cash at home, cooking bowls & plates	10	2.5
Television set, radio set, cash at home cooking bowls and plates	77	19.2
Radio set, cash at home, cash at bank, cooking bowls and plates	29	7.3
Radio set, cash at home, cooking bowls and plates	48	12.0
Television set, radio set, refrigerator, Video deck, bicycle, cash at bank and cash at home, cooking bowls and plates	90	22.4
Television set, radio set, refrigerator, cash at home and cash at bank, cooking bowls and plates	59	14.7
Television set, radio set or cash at home cooking bowls and plates	46	11.5
Television set, radio set, refrigerator cash at home and bank, shares, cooking bowls and plates	5	1.3
Television set, radio set, refrigerator Bicycle, cash at home, cooking bowls and plates	14	3.5

Table 12 Continued

Television set, radio set, refrigerator, bicycle, video deck, cash at home, cash at bank, agro processing equipment (or) motor- bikes, cooking bowls and plates	19	4.8
Total	400	100

Source: Field Survey Data, 2009

Size of Agricultural Enterprise Owned and Repayment of MOFA Micro-credits

Based on the definitions given by respondents on the sizes of agricultural enterprises, it was indicated that a micro-sized farm is a one acre farm containing specific crop(s). In some cases, 2 farm animals are added. A small-sized agricultural enterprise could be 2 to 10 acre crop land with or without farm animals. Farm animals such as poultry and small ruminants are reared.

A medium-sized farm is made up of 11 to 50 acre farm land with crops and farm animals and at times included agro-processing facility. In the fishing industry, it involves artisanal fishing with ownership of not more than 2 large boats, powerful outboard motors, and employed about 10 casual and permanent fishermen. Large-sized agricultural enterprise employs more than 20 farm hands, both permanent and casual, on more than 50 acre of crop land of different types of crops. Big structures that hold about 5000 and more poultry, more than 50 small ruminants and other livestock could be part of the farm. Some large scale farmers owned small to large agro-processing facilities to process what is produced on the farm. For marine fishing, the large scale

fishers own more than 5 large boats and fishing gears, and employ more than 20 hands.

Table 13: Distribution of Respondents by Size of Agricultural Enterprise Owned and Repayment of MOFA Micro-credits

Repayment Status on Credit	Size of Farm Enterprise				Total
	Micro size (cost less than GH ¢100)	Small size (cost GH ¢101-1,000)	Medium size (cost GH ¢1,001-5,000)	Large size (cost more than GH ¢5,000)	
No full repayment made	55 (79.7%)	110 (72.8%)	113 (69.8%)	10 (55.5%)	288 (100%)
Full repayment made	14 (20.3%)	41 (27.2%)	49 (30.2%)	8 (44.5%)	112 (100%)
Total	69 (100%)	151 (100%)	162 (100%)	18 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 81.4$, df= 1, p= 0.000

In Table 13 most of the respondents (78.2%) estimated their agricultural enterprises medium-sized costing GH ¢1,001-5,000, and small-size costing GH ¢101-1,000. Although credit repayment rate was less than 50%, those respondents with large and medium sized agricultural enterprises made a stride to improve upon the credit repayment. The Chi-square test indicated that there is a significant difference (p = 0.00) between the size of agricultural enterprise owned by respondents and the repayment of MOFA credit.

The present study is at variance with findings by Gyekye (1989) on the influence of wealth status of clients on credit repayment. Gyekye (1989) mentioned that borrowers with low wealth status have the tendency and temptation to utilize part of the credit facility to attend to the numerous family

needs leading to credit default, and individual borrowers with high wealth status use credit for the intended purpose and could repay credit or can obtain monies from other sources to repay credit in time of failure. The present study shows that both low wealth status clients and high wealth status clients failed to make full credit repayment.

Type of Agricultural Activity Engaged in by Clients and Repayment of MOFA Micro-credits

In Table 14, more than 72.8% of respondents were into crop farming. This shows that the majority of respondents sourced for agricultural inputs for crop production. Other agricultural enterprises include livestock production, fish farming and marine fishing, processing of cassava into gari and processing of palm fruit and kernel into palm oil and palm kernel oil respectively.

Meanwhile, full credit repayment was less than 50%. But those engaged in multiple enterprises like crop farming and fish farming, as well as crop farming and agro-processing showed a little improvement of more than 40% in rate of repayment. A measure of the use and repayment of credit is the profitability of the agriculture activity the client is engaged in (Daniels, 1999). The study revealed that there was a significant ($p = 0.00$) difference in the agricultural enterprise owned by clients and the repayment of MOFA micro-credits. Thus, borrowers with different types of agricultural enterprise may have different loan repayment rates, which are in line with findings by (Roslan et al., 2009).

Table 14: Distribution of Respondents by Agricultural Enterprise

Owned when Credit was used and Repayment of MOFA Micro-credits

Repayment Status on Credit	Agricultural Item								Total
	Crop farming	Livestock/ poultry production	Marine fishing/ fish farming	Processing of agricultural produce	Crop farming and livestock production	Crop farming and fish farming	Crop farming and processing of agricultural produce	Crop farming, livestock production and processing of agricultural produce	
No full repayment made	218 (74.9%)	18 (78.3%)	9 (60%)	3 (60%)	29 (60.4%)	1 (33.3%)	5 (55.6%)	5 (83.3%)	288 (100%)
Full repayment made	73 (25.1%)	5 (21.7%)	6 (40%)	2 (40%)	19 (39.6%)	2 (66.7%)	4 (44.4%)	1 (16.7%)	112 (100%)
Total	291 (100%)	23 (100%)	15 (100%)	5 (100%)	48 (100%)	3 (100%)	9 (100%)	6 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 85.6$, df= 1, p= 0.000

Experience of Clients in Agricultural enterprise and Repayment of MOFA Micro-credits

As indicated in Table 15, 28.5%, 20.5%, and 20% of the respondents stated that they already spent 6-10 years, 11-15 years, and 16-20 years respectively in agricultural activities. Since the number of years one has been on a job or task correlate to experience gained, Coleman et al. (1995), it could be inferred from the results that majority (83.0%) of the respondents have considerable experience because they have been in agricultural enterprise for 6years and more. The distribution in Table 15 shows that respondents have the requisite experiences in agriculture. It is therefore prudent to provide all conditions necessary for production for better yields, and potential markets with good matching prices for produce so that clients can generate enough revenue to repay credit.

Table 15: Distribution of Respondents by Experience of Clients in Agricultural enterprise and Repayment of MOFA Micro-credits

Repayment Status on Credit	Period						Total
	1- 5 years	6- 10 years	11- 15 years	16- 20 years	21- 25 years	Over 25 years	
No full repayment made	49 (72.1%)	81 (71.1%)	67 (81.7%)	56 (70%)	23 (71.9%)	12 (50%)	288 (72%)
Full repayment made	19 (27.9%)	33 (28.9%)	15 (18.3%)	24 (30%)	9 (28.1%)	12 (50%)	112 (28%)
Total	68 (100%)	114 (100%)	82 (100%)	80 (100%)	32 (100%)	24 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 85.3$, df= 1, p= 0.000

However, repayment rate for all the categories is less than 40%. Meanwhile, respondents who spent over 20 years in farming improved upon credit repayment by 50%. The result of the study relates with findings by Brynes (1978), who further added that farmers with adequate experience are generally more venturesome and receptive to call for change and willing to accept risk. The implication for the study is that respondents with these adequate experiences are secured in accepting agricultural credits and making adequate repayment decisions. The study revealed that there was a significant ($p = 0.00$) difference in the experiences of clients and the repayment of MOFA micro-credits.

The study revealed that there were significant ($p = 0.00$) differences in the demographic and socioeconomic characteristics of micro-credit clients and the repayment of MOFA micro-credits.

The null hypotheses which stated that there are no significant relationships between the demographic and socioeconomic characteristics of micro-credit clients and repayment of MOFA micro-credits are therefore rejected. The alternative hypotheses are accepted.

Micro-credit Sourcing, Packaging, Delivery, Allocation, Utilization, and Repayment Conditions and Repayment of MOFA Micro-credits

Addressing objective two, the study investigated the relationship between agricultural micro-credit sourcing, packaging, delivery, allocation, utilization and repayment conditions and the repayment of MOFA micro-credits.

The study finds out if repayment of MOFA micro-credit has relationship with adequacy of credit, type of credit sourced, interest rates and transaction costs, time of credit delivery, and training on credit use. Results and discussion are also on what credit was used for, total amount spent on agricultural production during the time credit was used, problems faced during credit use, and end product from credit use. Other areas of note are whether produce were sold and income generated from sale, supervision and follow up of credit allocation and use, reason for supervision and follow up and when it was done, and repayment duration of credit.

Challenges with Level of Credit Obtained and Repayment of MOFA Micro-credits

Level of credit financing implies a one-off package of credit obtained from a single source, or multiple packages obtained from a single source or more than one source.

Challenges with Single Credit Package and Repayment of MOFA Micro-credits

It has been stated in Table 16 that 14.4% of respondents out of the 292 respondents who had one-off credit package faced no challenge. Most of these respondents benefited from MOFA micro-credits in maize production.

Table 16: Whether Faced Challenges with Single Credit Package and Repayment of MOFA Micro-credits

Repayment Status on Credit	Whether Faced Challenges with Single Credit Package		Total
	Yes	No	
No full repayment made	188 (75.2%)	28 (66.7%)	216 (74%)
Full repayment made	62 (24.8%)	14 (33.3%)	76 (26%)
Total	250 (100%)	42 (100%)	292 (100%)

Source: Field Survey Data, 2009. χ^2= 91.6, df= 1, p= 0.000

However, in Table 18 the most problem indicated by more than 40.4% of respondents is the inadequacy of credit to meet intended purpose, mostly agricultural production. Other challenges of less importance include high transaction costs, diversion of credits into non agricultural activities, inadequate income generated to repay credit, the dying of breeding stock, and farmers not allowed to take decisions on the type of credit needed. Due to these problems, repayment was very low. The study revealed that there was a significant ($p < 0.01$) difference in single financing and the repayment of MOFA micro-credits due to the challenges.

Challenges with Multiple Credit Package and Repayment of MOFA Micro-credits

A total of 27.0% respondents accepted the fact that they benefited from multiple credit package at a time, as indicated in Table 17.

Table 17: Whether Faced Challenges with Multiple Credit Package and Repayment of MOFA Micro-credits

Repayment Status on Credit	Whether Faced Challenges with Multiple Credit Package		Total
	Yes	No	
No full repayment made	73 (67.6%)	0	73 (67.6%)
Full repayment made	35 (32.4%)	0	35 (32.4%)
Total	108 (100%)	0	108 (100%)

Source: Field Survey Data, 2009. χ^2= 76.8, df= 1, p= 0.000

It has been identified that all the 108 respondents had challenges in the multiple credit financing, and the pronounced impediment shown by more than 58.3% of respondents is difficulty in the repayment of credit when income generated was low as shown in Table 19. Other challenges included using credit for other purposes, high cost of credits, inefficiency in credit utilization, and inadequacy of credit. These challenges contributed to low credit repayment. The study revealed that there was a significant ($p < 0.01$) difference in multiple financing and the repayment of MOFA micro-credits due to the challenges.

Table 18: Challenges faced with Single Credit Package and Repayment of MOFA Micro-credits

Repayment Status on Credit	Challenges in Single Financing						Total
	Inadequacy of credit to meet intended purpose	High transaction costs	Diversion of credit into non-agricultural activities	Inadequate income generated to repay credit	Inadequacy of credit to meet purpose and inadequate income generated to repay credit	Farmer not allowed taking decisions on type of credit needed	
No full repayment made	100 (84.7%)	12 (70.6%)	4 (100%)	42 (71.2%)	30 (61.2%)	0	188 (75.2%)
Full repayment made	18 (15.3%)	5 (19.4%)	0	17 (28.8%)	19 (38.8%)	3 (100%)	62 (24.8%)
Total	118 (100%)	17 (100%)	4 (100%)	59 (100%)	49 (100%)	3 (100%)	250 (100%)

Source: Field Survey Data, 2009. χ^2= 74.9, df= 1, p= 0.000

Table 19: Challenges faced with Multiple Credit Package and Repayment of MOFA Micro-credits

Repayment Status on Credit	Challenges in Multiple Financing						Total
	Used credit for other purposes	High cost of credit	Inefficiency in credit utilization	Difficulty in repayment of credit when income generated was low	High cost of credit and difficulty in repayment of credit when income generated was low	Inadequacy of credit	
No full repayment made	3 (75%)	5(83.3%)	14 (70%)	42 (66.7%)	2 (66.7%)	7 (58.3%)	73 (67.6%)
Full repayment made	1 (25%)	1 (16.7%)	6 (30%)	21 (33.3%)	1 (33.3%)	5 (41.7%)	35 (32.4%)
Total	4 (100%)	6 (100%)	20 (100%)	63 (100%)	3 (100%)	12 (100%)	108 (100%)

Source: Field Survey Data, 2009. χ^2= 13.5, df= 1, p= 0.000

The implications of the findings in Tables 18 and 19 are in line with findings by Atengdem (2002) and Wampfler (2002), which admit that the size of credit to a client may influence what activity the credit may eventually be used for. Credit far less than enterprise requirement may discourage the client from using it for the enterprise activity since it may be too scanty. Similarly, credit value far above what clients actually need will result in the excess credit being used on unplanned and non-productive activities, for reason which the borrower may not be able to repay when the credit repayment time is due. Atengdem (2002) later added that there were high rates of credit default among clients who accessed lower levels of credit. Njoku (1986) and Ojo (1986), however, adduced increasing incidence of loan defaults to the inadequacy or excess of credits issued to farmers.

Type of Credit Sourced by Respondents and Repayment of MOFA Micro-credits

Agricultural credits sourced by respondents are stated in Table 20. The mostly sourced credit was agricultural inputs for crop production as mentioned by more than 83.3% of respondents. It was revealed by the respondents that the credit package was mostly a one acre agricultural input for maize production.

The package comprises a bag each of NPK fertilizers and Urea or Sulphate of Ammonia, 9 kg seed maize, 2 litres weedicides and (or) 1 litre insecticide. Other credit packages were coconut which contained coconut seedlings, fertilizer, wire mesh and cash; Sweet potato credit composed of cash and vines. The animal inputs were the provision of grasscutter, poultry

and small ruminants to clients including cash for housing. The agricultural machinery was mainly outboard motor advanced to marine fishermen. The agro-processing inputs involved equipment and housing.

Crops input beneficiaries complained about the insufficiency in credit package advanced them. They claimed that the package could not guarantee more harvest for domestic use and excess for sale to generate adequate income to pay for the credit. OECD (1997) therefore suggested that credit needed by farmers should be adequate, and be supplemented with access to land and appropriate technology which should be available and accessible for use by agricultural producers. The low credit repayment is a reflection of the small package provided to clients. The statistical analysis conducted showed that a significant ($P < 0.01$) difference exists between type of credit sourced and the repayment of MOFA micro-credits.

Table 20: Distribution of Respondents by Types of Credit Sourced and Repayment of MOFA Micro-credits

Repayment Status on Credit	Types of Credit Sourced						Total
	Agricultural inputs for crops production	Agricultural inputs for livestock production	Agricultural inputs (Machinery)	Cash	Agricultural inputs (crops) and cash	Agricultural inputs (livestock) and cash	
No full repayment made	238 (71.5%)	1 (50%)	0	12 (80%)	28 (77.8%)	3 (100%)	282 (70.5%)
Full repayment made	95 (28.5%)	1 (500%)	11 (100%)	3 (20%)	8 (22.2%)	0	118 (29.5%)
Total	333 (100%)	2 (100%)	11 (100%)	15 (100%)	36 (100%)	3 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 77.9$, df= 1, p= 0.000

Transaction Costs incurred by Micro-credit Clients and Repayment of MOFA Micro-credits

Type of transaction is concerned with activities undertaken by clients to facilitate credit delivery. These are shown in Table 21.

Table 21: Whether Clients Incurred Credit Transaction Costs and Repayment of MOFA Micro-Credits

Repayment Status on Credit	If Credit Transaction Cost Incurred		Total
	Yes	No	
No full repayment made	213 (71.7%)	75 (72.8%)	288 (72%)
Full repayment made	84 (28.3%)	28 (27.2%)	112 (28%)
Total	297 (100%)	103 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 60.9, df= 1, p= 0.000

In Table 21, there was less repayment rate for both respondents who incurred transaction costs and those who did not. The statistical analysis conducted showed that a significant difference (p = 0.00) exist between respondents who incurred transaction costs and those who did not incur transaction costs on the repayment of MOFA micro-credits. The 25.8% of respondents who had declared not incurring any transaction cost during credit sourcing, packaging and delivery were clients who received inputs at their door steps, as part of measures to cushion the burden of mostly maize project beneficiaries.

Table 22: Distribution of Respondents by Credit Transaction Costs Incurred and Repayment of MOFA Micro-credits

Repayment Status on Credit	Cost						Total
	Less than GH ¢20	GH ¢21-40	GH ¢41-60	GH ¢61-80	GH ¢81-100	Over GH ¢100	
No full repayment made	176 (68.2%)	10 (83.3%)	2 (100%)	7 (100%)	11 (100%)	7 (100%)	213 (71.7%)
Full repayment made	82 (31.8%)	2 (16.7%)	0	0	0	0	84 (28.3%)
Total	258 (100%)	12 (100%)	2 (100%)	7 (100%)	11 (100%)	7 (100%)	297 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 39.5$, df= 1, p= 0.000

The study revealed that there was a significant (p = 0.00) difference in credit transaction cost incurred by clients and the repayment of MOFA micro credits. In Table 22, a total of 86.9% of the respondents incurred less than GH ¢20 on most of the transaction types indicated in Table 23. The rest 13.1% incurred transaction costs ranging from GH ¢21 to over GH ¢100 with 2.4% of respondents spending over GH ¢100. These costs, when added to the actual credit costs, will definitely increase the production cost per head.

Therefore, recommendations by Desai et al. (1993) and Zeller et al. (2002) that lending institutions should minimize the transaction costs on credit advanced to the resource poor clients, or group lending be encouraged to reduce lenders' and borrowers' transaction costs must be considered by MOFA.

In Table 23, the transaction types mentioned by respondents are similar to what Zeller et al. (2002) found in their study. The transaction costs

comprised costs on transportation, time, processing fee, commitment fee and phone calls.

Table 23: Distribution of Respondents by Types of Transaction Faced

Transaction Types	Frequency	Percentage
Transportation	122	41.1
Time	3	1.0
Transportation and time	109	36.7
Transportation and phone calls	27	9.1
Phone calls	7	2.4
Transportation, processing fee, commitment fee and time	9	3.0
Transportation, processing fee and commitment fee	20	6.7
Total	297	100

Source: Field Survey Data, 2009

However, Zeller et al. (2002) mentioned additional transaction costs as cost on staff, buildings, office, audits, training, and related maintenance costs. At the group level, transaction costs include costs associated with transportation, paperwork, lodging and meals, gifts, and the opportunity costs of time.

Interest Rate Charged on Credits and Repayment of MOFA Micro-credits

Agricultural credits used by clients attracted different levels of interest

rate, depending on the type of credit obtained, as mentioned in Table 24. In Table 24 the free interest rate was mentioned by those who benefited from sweet potato credits. These beneficiaries made low repayment, less than 15% on the credit.

Table 24: Whether Interest Rate was Charged on Credit Granted and Repayment of MOFA Micro-credits

Repayment Status on Credit	If Interest was Charged on Credit		Total
	Yes	No	
No full repayment made	239 (69.7%)	49 (86%)	288 (72%)
Full repayment made	104 (30.3%)	8 (14%)	112 (28%)
Total	343 (100%)	57 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 56.1, df= 1, p= 0.000

Table 25: Interest Rate Charged on Credits and Repayment of MOFA Micro-credits

Repayment Status on Credit	Interest Rate Charged on Credit				Total
	10 and less	11-20	21-30	31-40	
No full repayment made	15 (88.2%)	215 (68.9%)	2 (100%)	7 (58.3%)	239 (69.7%)
Full repayment made	2 (11.8%)	97 (31.1%)	0	5 (41.7%)	104 (30.3%)
Total	17 (100%)	312 (100%)	2 (100%)	12 (100%)	343 (100%)

Source: Field Survey Data, 2009. χ^2= 54.8, df= 1, p= 0.000

As shown in Table 25, the study revealed that there is a significant (p = 0.00) difference in the interest rate charged on credit and the repayment of

MOFA micro-credits. Interest rates in Table 25, whether low or high, show low repayment rates. Most of the respondents who were advanced crops and livestock inputs are within the 91.0% respondents who were charged about 11 to 20 percent interest rates. Respondents mentioned that interest rates of 20 and more percent were obviously at the higher side. In further discussions, respondents attested to the fact that the increase in the rates brought about increase in total production costs. However, respondents were quick to contend that the rates were far better than the 35 to 40% charged by financial institutions such as rural and commercial banks, and the over 50% rate charged by traders and money lenders in the Central Region.

Findings by (Buckley, 1997) attest to the fact that in many developing countries, overall interest rates are relatively high to begin with, so that rates charged by micro lending schemes are quite high when the risk premium is added. Bottrall (1976) has been quick to justify the reason why high interest rates were charged on micro-credits by lenders; the reason being that low interest rates encouraged the diversion of most of the credits to larger farmers even under highly-supervised credit schemes. Low interest rates do not encourage savings deposit. Morss et al. (1975) have said that low interest rates for credits designed for smallholder farmers will attract the larger and more powerful farmers, pushing aside intended recipients.

It was therefore recommended that governments and donors should not subsidize interest rates in micro-credits since they distort market.

Time Credit was made Available to Clients and Repayment of MOFA Micro-credits

The time period credit availability was announced to clients and the time it was delivered takes a little over or a little less than 40 days. Table 26 shows the time periods.

Table 26: Distribution of Respondents by Time Credit was made Available to Clients and Repayment of MOFA Micro-credits

Repayment Status on Credit	Period				Total
	10 days or less	11-20 days	21-30 days	Over 40 days	
No full repayment made	50 (73.5%)	91 (69.5%)	84 (68.3%)	63 (80.8%)	288 (72%)
Full repayment made	18 (26.5%)	40 (30.5%)	39 (31.7%)	15 (19.2%)	112 (28%)
Total	68 (100%)	131 (100%)	123 (100%)	78 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 81.0, df= 1, p= 0.000

It was mentioned in Table 26 by 32.8% of the respondents that the time period between the announcement of credit availability at the source and when the credit was released to them was 11-20 days. Adding this to the 30.8% of respondents who took between 21 to 30 days to receive their credits, it could be said that 63.6% of the respondents collected credits within two weeks and one month period.

In the respondents' response to the appropriateness of the time period credit was delivered, only those who collected credits in 20 days and less period agreed to the statement that the time period was appropriate. Also, 78.2% of the respondents said the time period was not a concern as such.

Meanwhile, repayment rates were low whether credit was collected early or late, showing less than 40% recovery.

Implications for the delay in the disbursement of credits, as supported by Singh (1983) are delays in the acquisition of real agricultural inputs and the failure to meet production season. Such untimely credit disbursement as noted by Johnson et al. (1997) is always undesirable, especially to farmers whose activities are tied to rainfall patterns, natural phenomenon which they cannot control. Based on the advise by Akinleye, Akanni and Sekumade (2005), lending institutions should make efforts to grant agricultural credits to farmers who meet the conditions at the appropriate time.

Training on Credit Use and Repayment of MOFA Micro-credits

Acquisition of knowledge and skills, and improvement in already acquired knowledge and skills are fundamental to the use of modern and appropriate technologies. Agricultural production requires the acquisition and use of improved and recommended production technologies. It is imperative to expose agricultural producers to the appropriate technologies for the production of quality and high yielding agricultural produce. Training is also important to develop the entrepreneurship of agricultural producers.

In Table 27, 69.8% of the 400 respondents received training when credits were obtained. However, the repayment rate for both those who received training and those who did not receive training was low.

Table 27: Whether Training was Organized when Credit was obtained and Repayment of MOFA Micro-credits

Repayment Status on Credit	If Benefited from Training		Total
	Yes	No	
No full repayment made	203 (72.8%)	85 (70.2%)	288 (72%)
Full repayment made	76 (27.2%)	36 (29.8%)	112 (28%)
Total	279 (100%)	121 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 77.6, df= 1, p= 0.000

Training for credit clients on the use of credits came from MOFA staff in the districts and regional offices. The study revealed that there is a significant (p = 0.00) difference between training of clients on agricultural production and business development on the one hand and the repayment of MOFA micro-credits.

Training Topics Treated

The training topics specified in Table 28 are relevant topics for the agricultural production activities, especially, when the use and repayment of credit are keen. The results specifically indicated that many respondents (69.9%) were trained in just one aspect. That is training in modern production technologies. The other topics treated included modern business development skills, group formation and sustainability, and credit sourcing and repayment. These topics are the right combinations that can instill the culture of engaging in modern agricultural production as a business, using group membership as a guarantee to meet the requirements for sourcing appropriate and needed agricultural credits to develop and expand production.

Table 28: Distribution of Respondents by Topics Treated during Training on Credit Use

Training Topics	Frequency	Percentage
Modern technologies in agricultural Production	181	64.9
Business development skills	8	2.9
Group formation and sustainability	4	1.4
Credit sourcing and repayment	5	1.8
Modern technologies in agricultural production, and group formation and sustainability	12	4.3
Modern technologies in agricultural production, business development skills, group formation and sustainability, and credit sourcing and repayment	7	2.5
Modern technologies in agricultural production, business development skills, group formation	17	6.1
Modern technologies in agricultural production, and credit sourcing and repayment	42	15.0
Group formation and sustainability, and credit sourcing and repayment	3	1.1
Total	279	100

Source: Field Survey Data, 2009

Respondents indicated that the training topics were adequately treated and were relevant to their enterprises. In agreement with the relevance and adequacy of training organized for the MOFA micro-credit clients, and the resource persons involved, Iddrisu (2001) and OECD (1998) admitted that regular provision of frequent technical training on the use and repayment of credit to clients is very necessary and is associated with high repayment of

credits. Freedom from Hunger (1998), in an evaluation research of their credit with training scheme, concluded that credit and training when provided together to groups of credit beneficiaries could increase incomes, improve nutrition and health and prompt credit repayment.

What Credits were used for and Repayment of MOFA Micro-credits

Although credits were advanced to clients for agricultural production, it is obvious in Table 29 that some clients diverted credits, especially cash into the purchase of cloth, family health care and provision of food for the family.

Table 29: Distribution of Respondents by what Credits were used for and Repayment of MOFA Micro-credits

Repayment Status on Credit	What Credit was used for				Total
	Agricultural production	Agricultural production and Cloth	Agricultural production, food and medication	Agricultural production and food	
No full repayment made	276 (72.1%)	6 (85.7%)	2 (100%)	4 (50%)	288 (100%)
Full repayment made	107 (27.9%)	1 (14.3%)	0	4 (50%)	112 (100%)
Total	383 (100%)	7 (100%)	2 (100%)	8 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 70.5$, df= 1, p= 0.000

In Table 29, despite the diversion of credits to other uses, the more than 95.8% of respondents who claimed the credits advanced them were used solely in agricultural production could not honour full repayment. The difference between the results of the study and findings by Nayak (2002) is that Nayak observed that despite the diversion of credits, there were successes

in repayments of credits advanced to beneficiaries. Nayak found that clients did not divert the entire credit package and made sure that there was increased attention on production activities. But the diversion of credit by MOFA clients was minimal than what Phutrakul (1997) observed on credit used by farmer clients of Bank for Agriculture and Agricultural Cooperatives (BAAC) which adversely affected repayment. That is, farmers used their credits on non-productive activities such as family expenses, refinancing old debts and home repairs.

Total Amount Spent on Agricultural Production during Credit use and Repayment of MOFA Micro-credits

Table 30 shows that 93.0% of the respondents spent GH ¢500 or less on production of a particular agricultural commodity. Most of these respondents spent this amount on crop and animal (grasscutter) production. Those who spent over GH ¢2,000, particularly 11 out of the 12 respondents, were clients who collected outboard motors.

It is obvious that the total cost of production, which is the aggregate cost including cost of credit and cost of other inputs and activities employed by the clients is high. The repayment rates for clients who spent low and high amounts on production were low. The impacts of credit on cultural practices on the farm as was confirmed by Gibbons and Schroeder (1983) are paying for seasonal labour needed to plant and weed farms, to apply fertilizers and to harvest matured crops when there is no surplus to provide wages. The study revealed that there is a significant ($p = 0.00$) difference between the total amount spent on production and the repayment of MOFA micro-credits.

Table 30: Distribution of Respondents by Total Amount Spent on Agricultural Production during Credit use and Repayment of MOFA Micro-credits

Repayment Status on Credit	Total Amount Spent on Production			Total
	GH ¢500 or less	GH ¢501-1,000	Over GH ¢2,000	
No full repayment made	267 (71.8%)	15 (93.7%)	6 (50%)	288 (72%)
Full repayment made	105 (28.2%)	1 (6.3%)	6 (50%)	112 (28%)
Total	372 (100%)	16 (100%)	12 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 82.8, df= 1, p= 0.000

Problems Faced by Clients During use of Credit for Production and Repayment of MOFA Micro-credits

Production related problems encountered by clients included flood, drought, diseases, pests, fire outbreaks, and high transportation costs. Others were inadequate markets, poor prices for produce, high cost of agricultural inputs including farm lands, and when houses for grasscutters collapsed and the animals escaped.

In Table 31, out of the 400 respondents, only 29.3% did not experience any form of problems during production when credits were used. Credit repayment rate for respondents who did not experience any production problems was encouraging.

The study revealed that there is a significant (p =0.00) difference between problems faced during production and the repayment of MOFA micro-credits.

Table 31: Whether Clients faced Problems during Credit Utilization and Repayment of MOFA Micro-credits

Repayment Status on Credit	If faced Problem during Credit Use		Total
	Yes	No	
No full repayment made	214 (75.6%)	74 (63.2%)	288 (72%)
Full repayment made	69 (24.4%)	43 (36.8%)	112 (28%)
Total	283 (100%)	117 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 82.5$, df= 1, p= 0.000

Table 32: Distribution of Respondents by Problems Faced by Clients During use of Credit for Production

Problem	Frequency	Percentage
Flood	22	7.8
Drought	87	30.7
Disease	1	0.4
Pests	19	6.7
Fire outbreak	1	0.4
High transportation costs	4	1.4
Inadequate markets	26	9.2
Low prices for produce	59	20.8
High cost of agricultural inputs/ land	16	5.6
Structure collapsed and animals escaped	5	1.8
High cost of production, drought, low prices for produce	24	8.5

Table 32 Continued

Disease, sickness, high agricultural inputs cost	4	1.4
Drought and low prices for produce	14	4.9
Disease, pests and low prices for produce	1	0.4
Total	283	100

Source: Field Survey Data, 2009

More than 30.7% respondents, who were crop farmers, complained about severe seasonal drought that affected their production, especially maize production, as shown in Table 32. Most of the factors stated in Table 32 were also identified by Akinleye et al. (2005), Bhatt (1994), and Kashuliza (1993), which they said have accounted for the poor credit repayment performance.

End Product from Credit Use and Repayment of MOFA Micro-credits

The study revealed that there is a significant ($p = 0.00$) difference in the end product of credit used by clients and the repayment of MOFA micro-credits. The dominant end product of production by micro-credit clients shown in Table 33 was maize mentioned by about 86.8% of respondents. The 3.5% of the respondents who said there was no end product were those into grasscutter rearing who suffered escape by animals due to collapsed houses and those whose crop farms were affected by drought and floods. Meanwhile, 4 out of 10 of these clients made full credit repayment.

Table 33: Distribution of Respondents by End Product from Credit Use and Repayment of MOFA Micro-credits

Repayment Status on Credit	End Product									Total
	Failure in production	Maize	Livestock (small ruminants & grasscutters)	Poultry products (eggs and meat)	Processed agro products (crops, fish and livestock)	Sweet potato tubers	Fresh coconut	Fresh marine fish	Maize and livestock (small ruminants)	
No full repayment made	10 (71.4%)	254 (73.2%)	4 (80%)	1 (100%)	4 (100%)	4 (33.3%)	5 (100%)	6 (54.5%)	1 (100%)	288 (72%)
Full repayment made	4 (28.6%)	93 (26.8%)	1 (20%)	0	0	8 (66.7%)	0	5 (45.5%)	0	112 (28%)
Total	14 (100%)	347 (100%)	5 (100%)	1 (100%)	4 (100%)	12 (100%)	5 (100%)	11 (100%)	1 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 80.5, df= 1, p= 0.000

In Table 33, respondents who produced poultry products including meat and eggs, processed agro products like fish and gari, fresh coconut, and maize and livestock as produce from multiple credit packages could not pay at all.

In Table 34, the repayment rate for those who could not sell their produce (16.0% respondents) was better than those who sold their produce.

Table 34: Whether Produce were Sold and Repayment of MOFA Micro-credits

Repayment Status on Credit	If Produce Sold		Total
	Yes	No	
No full repayment made	244 (72.6%)	44 (68.7%)	288 (72%)
Full repayment made	92 (27.4%)	20 (31.3%)	112 (28%)
Total	336 (100%)	64 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 80.2, df= 1, p= 0.000

The implication is that credit repayment is not dependent on whether produce have been sold or not. In Table 34, the study revealed that there is a significant (p =0.00) difference between whether produce was sold and the repayment of MOFA micro-credits.

Income from Sale of Produce when Credit was used and Repayment of MOFA Micro-credits

Produce were sold in markets in clients' community, markets in clients' district, region and country, and at times outside the country.

In Table 35, the highest of 66.9% of the respondents realized not more than GH ¢500 from sale of produce, while 20.4% of the respondents also said the income generated was between GH ¢501 and GH ¢1,000, depending on the size of enterprise.

Table 35: Distribution of Respondents by Income from Sale of Produce when Credit was used and Repayment of MOFA Micro-credits

Repayment Status on Credit	Income from Sale of Produce					Total
	GH ¢500 and less	GH ¢501-1,000	GH ¢1,001-1,500	GH ¢1,501-2,000	Over GH ¢2,000	
No full repayment made	163 (72.1%)	50 (72.5%)	12 (85.7%)	11 (84.6%)	10 (62.5%)	246 (72.8%)
Full repayment made	63 (27.9%)	19 (27.5%)	2 (14.3%)	2 (15.4%)	6 (37.5%)	92 (27.2%)
Total	226 (100%)	69 (100%)	14 (100%)	13 (100%)	16 (100%	338 (100%)

Source: Field Survey Data, 2009. χ^2= 72.4, df= 1, p= 0.000

Respondents were dissatisfied with the levels of income obtained when the produce were sold. For instance, respondents who spent about GH ¢500 on production could not breakeven because income generated equals cost of production. One major reason for low income being generated from sale of agricultural produce is the low prices during harvesting seasons. The consequence was low income available to the farmer to pay debt.

Although the observed trend agrees with what Feder, Just & Zilberman (1985) reported when they stated that access to credit may allow an increased acquisition and use of improved seeds and fertilizers leading to high crop output per unit of land and labour, it disagrees with the issues of high incomes being generated because income generation is dependent on other factors like

pricing, demand and supply levels and quality of produce. The implication of the results is that the repayment of credit was not dependent on the level of income generated from sales of produce. In Table 35, those respondents who realized high incomes as much as over GH ¢1,500 from the sale of produce could not fully repay the credit. The statistical analysis conducted showed that a significant difference ($p = 0.00$) exists between income generated from the sale of produce from credit used and the repayment of MOFA micro-credits.

Findings from elsewhere reported that even if there was satisfactory allocation and distribution of loans there would be differential increase in income on different schemes (Swaminathan, 1990). Repayment of loan could be low or high, depending on income generated from schemes. Example is a study undertaken by Swaminathan (1990), which revealed that the animal husbandry scheme, although received highest allocation of fund, yielded low returns. Meanwhile, MacIsaac (1996), Oke et al. (2007), and Chirwa (1997) reported that income significantly influence repayment of credits.

Supervision and Follow up of Credit Allocation and Use and Repayment of MOFA Micro-credits

Supervision and follow up are important in every activity to make sure proper things are done. Under this topic discussions are made on whether supervision and follow up were carried out during the credit programme, and if done, what are the reasons. The discussions extended to include the rate of repayment made on credit with or without the supervision and follow up.

In Table 36, 84.5% of the respondents were supervised on credit allocation and utilization, but made low repayment on credits. The results

suggest that whether clients received supervision and follow up or not credit repayment is always low.

Table 36: Whether there was Supervision and Follow up during Credit Allocation and Use and Repayment of MOFA Micro-credits

Repayment Status on Credit	If there was Supervision and Follow up		Total
	Yes	No	
No full repayment made	241 (71.3%)	47 (75.8%)	288 (72%)
Full repayment made	97 (28.7%)	15 (24.2%)	112 (28%)
Total	338 (100%)	62 (100%)	400 (100%)

Source: Field Survey Data, 2009. $\chi^2 = 77.8$, df= 1, p= 0.000

Table 37 shows that about 36.4% of the respondents were supervised to adopt modern technologies in agricultural production, while 46.7% of the respondents were supervised based on more than one reason as follows: to be sure clients adopted modern technologies in production; to advice, direct and encourage clients in their activities; be sure clients use knowledge and skills in business development; and to be sure clients establish links with financial institutions.

However, Goswami et al. (1996) and Swaminathan (1990) reported that the shortcomings of credit programmes are lack of supervision and follow-up actions. Therefore, MOFA should be aware that credit clients who received adequate and relevant supervision and monitoring, with sound credit worthy history records and/or regular internal monitoring may have higher repayment rates.

Table 37: Distribution of Respondents by Reason for Supervision of Credit Use and Allocation

Reason	Frequency	Percentage
To be sure clients adopted modern technologies in production	123	36.4
To be sure clients use knowledge and skills in business development	17	5.0
To be sure clients established links with financial institutions	2	0.6
To advice, direct and encouraged clients in their activities	38	11.3
Be sure clients adopted modern technologies in production, and to advice, direct and encouraged clients in their activities	69	20.4
To be sure clients adopted modern technologies in production, to advice, direct and encouraged clients in their activities, and be sure clients use knowledge and skills in business development	89	26.3
Total	338	100

Source: Field Survey Data, 2009

When Supervision and Follow up were carried out and Repayment of MOFA Micro-credits

Supervision and follow up of credit allocation and utilization were done daily, weekly, fortnightly, monthly, at the beginning of planting season and occasionally.

In Table 38, supervision and follow up were done mostly on weekly, fortnightly and monthly basis, as declared by 92.3% of the respondents. These schedules were acceptable to enable clients successfully utilize credits. All the respondents, who received supervision, got them from Agricultural Officers from the district and the regional offices.

Table 38: Distribution of Respondents by timing of Supervision and Repayment of MOFA Micro-credits

Repayment Status on Credit	Period						Total
	Daily	Weekly	Fortnightly	Monthly	At the beginning of planting Season	Occasionally	
No full repayment made	4 (57.1%)	69 (75%)	101 (75.4%)	52 (60.5%)	0	15 (88.2%)	241 (71.3%)
Full repayment made	3 (42.9%)	23 (25%)	33	34 (39.5%)	2 (100%)	2 (11.8%)	97 (28.7%)
Total	7 (100%)	92 (100%)	134 (100%)	86 (100%)	2 (100%)	17 9(100%)	338 (100%)

Source: Field Survey Data, 2009. χ^2= 71.3, df= 1, p= 0.000

It is believed that supervision from the right source could implant the requisite expertise, knowledge, skills and direction in clients for effective and efficient allocation and utilization of credits. However, frequencies in

supervision indicated in Table 38 do not influence the full repayment of credits by respondents as repayment rates were low for most of the periods.

Micro-Credit Repayment by Credit Clients

Under this topic, issues on adequacy of repayment duration, repayment rate, and reasons for failure to make full repayment were addressed.

Repayment Duration of Credits and Repayment of MOFA Micro-credits

MOFA credit clients were given repayment duration of 6 months, one year, two years, three years and some up to 5 years. The clients who were advanced maize and sweet potato inputs, outboard motors and processed agro products were given 6 months to one year to repay credits. The period of 2 years and more were time periods available to those who collected credits for animal production and coconut farming.

In Table 39, 92.8% of the respondents were in the first category of 6 months to 1 year time period, while less than 8% respondents belonged to more than 1 year time period. For those who sold their produce, more than half of the respondents disposed of the produce within 6 months duration from the time of production. These are maize and sweet potato farmers. While crop production takes a short time to produce and sell, animal production takes longer periods to be ready for sale. Respondents (1.3%) who were given more than 3 years to repay credit are yet to start the repayment.

Table 39: Distribution of Respondents by Repayment Duration of Credits and Repayment of MOFA Micro-credits

Repayment Status on Credit	Duration					Total
	6 months	1 year	2 years	3 years	More than 3 years	
No full repayment made	137 (71.4%)	127 (70.9%)	16 (80%)	3 (75%)	5 (100%)	288 (72%)
Full repayment made	55 (28.6%)	52 (29.1%)	4 (20%)	1 (25%)	0	112 (28%)
Total	192 (100%)	179 (100%)	20 (100%)	4 (100%)	5 (100%)	400 (100%)

Source: Field Survey Data, 2009. χ^2= 74.6, df= 1, p= 0.000

The results show that for the various duration for credit repayment, more than 70.0% in each category failed to make full repayment of the credits. This implies that MOFA credit repayment is independent of duration for the repayment of credit. At 1% level of significance, it was found that there was a significant difference in the repayment duration of credit and repayment of MOFA micro-credits as shown in Table 39.

The study revealed significant (p = 0.00) differences in micro-credit sourcing, packaging, delivery, allocation, utilization, repayment condition and the repayment of MOFA micro-credits. The null hypotheses which stated that there are no significant relationships among micro-credit sourcing, packaging, delivery, allocation, utilization, repayment condition and repayment of MOFA micro-credits are therefore rejected. The alternative hypotheses are accepted.

Adequacy of Credit Repayment Duration

The results in Table 40 are the true reflection of what farmers experienced from financial institutions and other organizations that advanced credits to agricultural producers. In response to adequacy of repayment

duration, 70.3% of the respondents said the duration was inadequate or highly inadequate. Even the 15.1% of the respondents who indicated that the duration was somewhat adequate were not sure of the response. This implies that more time is needed by clients to raise monies to repay credits.

Agricultural produce like crops take some time to mature and be ready for sale in the market. But lenders, most often, compel clients to repay credits while the crops are not even matured. Respondents expected repayment duration that goes beyond the 6 months with opportunities to make repayment in monthly installments, as it is done elsewhere mentioned by (Fusan et al., 1997).

Table 40: Distribution of Respondents by Adequacy of Credit Repayment Duration

Adequacy	Frequency	Percentage
Highly inadequate	39	9.8
Inadequate	242	60.5
Somewhat adequate	61	15.1
Adequate	53	13.3
Highly adequate	5	1.3
Total	400	100

Source: Field Survey Data, 2009

Repayment of Credit

The micro-credit programme designed and being implemented by MOFA started in the year 2000 in the Central Region. The results in Table 41 show that only 28.0% of the respondents had fully paid the credit advanced

them. This calls for developing effective strategies to improve upon credit repayment by agricultural producers.

Table 41: Distribution of Respondents by Repayment of Credit

Response	Frequency	Percentage
Made full repayment	112	28.0
No full repayment made	288	72.0
Total	400	100.0

Source: Field Survey Data, 2009

Findings on reasons for no full repayment in the study, like what Bhatt (1994) revealed, covers issues such as late release of credit, destruction of produce by rains, pests destruction, diseases, drought, sickness, and credit used on non-agricultural activities. Others are under financing and multiple financing, unfavourable market conditions, short repayment duration, poor yields, and debt higher than income.

Other findings from reasons of no full repayment of credit similar to findings from Kashuliza (1993) include perception of clients that credit was a gift or grant and thus need not be repaid, poor implementation of lending procedures by scheme staff and diversion of credit resources by clients from intended purposes. Another cause of credit default was in situations where loans were advanced to farmers who were not essentially interested but prompted and persuaded to take the credit, similar to findings by (Robinson, 2001). Additionally, respondents claimed that credit repayment by some of the smallholders failed because amounts, schedules and repayment terms are ill-suited to farm production patterns. Similar reasons were mentioned by Raeburn (1984) and Wampfler (2002).

Measurement of Micro-credit Repayment

The measurement of credit repayment was based on what Goetz et al. (1996) suggested. They admitted that credit repayment could be based on the percentage of clients who had successfully paid all the credits advanced them. They also said that it could be measured in terms of the level of recovery made by credit sources on credits advanced to clients. All depends on credit use performance.

Raeburn (1984) provided an alternative way of measuring credit repayment performance by determining the difference between the total amounts of credit advanced to clients and the returns, or questioning clients about the rate of repayment made on credit given.

Ranking of Overall Micro-credit Repayment

The results on the measurement of the repayment of MOFA micro-credits in order to address objective 3 is an overall rating scale constructed showing the rate of repayment on an interval scale as follows: 1= very low, 2= low, 3= fair, 4= high and 5= very high. Basing the scale on the percentage repayment shown in Table 42, 20% and less repayment= very low; 21-40%= low; 41-60%= fair; 61-80%= high; and 81-100%= very high. The percentages signify the percentage of loan repaid by clients.

The results in Table 42 showed 38.3% of the respondents who made very low repayment of credit advanced them as far back to year 2005.

Table 42: Distribution of Respondents by Ranking of Overall Micro-credit Repayment

Overall % Repayment	Rating	Frequency	Percentage	Cum %
20 and less	Very low	153	38.3	38.3
21-40	Low	87	21.8	60.0
41-60	Fair	37	9.3	69.3
61-80	High	11	2.8	72.0
81- 100	Very high	112	28.0	100.0
Total		400	100	

Source: Field Survey Data, 2009

Most of the 28.0% respondents who indicated very high repayment of credit were those who benefited from outboard motors in the year 2005. These respondents were 11 in number and paid in cash. In addition were maize farmers, most of whom collected credits in 2008. These farmers repaid credits in kind, that is, they returned a certain quantity of maize equivalent to the amount of inputs collected and interest payable.

Table 42 also shows other categories of clients who made various rates of repayment. With a low rating, 21.8% of the respondents mentioned a 21-40% repayment being made so far while 9.3% respondents said they made 41-60% repayment with the rating of fair. The rating of high was associated with 61-80% repayment made by 2.8% respondents. Lastly, a recovery of 81-100%, being very high, was associated with 28.0% of the respondents. Results in Table 42 on repayment rates of credit indicate that the average repayment

rate is just above 41%, lying between the overall percentage repayment range of 41 and 60, rated fair.

Means and Standard Deviations of how MOFA Micro-credit Clients Perceived the Factors Influencing MOFA Micro-credit Repayment (N=400).

For objective four, the factors influencing repayment of MOFA micro-credits by clients in the Central Region were identified from (Roslan et al., 2009; Oke et al., 2007; Bassem, 2006; Akinyele et al., 2005; Bhatt et al., 2002; Olomola, 2001; Bhatt, 1994; Cowdhury et al., 1998; Chirwa, 1997; Morshed, 1997; Phutrakul, 1997; Aryeetey, 1996; Kashuliza, 1993; Atengdem, 1991; Njoku, 1986; Ojo, 1986).

The factors were rated high by respondents to have an influence on the repayment of MOFA micro-credits. These are the time credits are made available to clients, type of agricultural activities engaged in by micro-credit clients, adequacy of credit, training for micro-credit clients on agricultural production and business development, and stability in agricultural production. Others are marketing opportunities for produce, the level of income generated when credit was used, supervision and follow-up of credit allocation and use, and repayment duration of micro-credits. The wealth status of micro-credit clients, household size of clients and experience of clients in agricultural enterprise were also identified.

Additionally, the demographic characters of clients based on age, sex, marital status, and level of education were also considered.

Items under Time Credits are made Available to Clients

The Likert-type scale definition of MOFA micro-credit clients' perception about "time credits are made available to clients" is agree (4.01), indicating high levels of influence of the item on the repayment of MOFA micro-credits.

In Table 43, the standard deviations less than 1.00 shown by most of the items imply that respondents do not vary greatly in their responses as to how they perceived the items to influence the repayment of MOFA micro-credits. The standard deviation of 1.13 shows that there were great variations in the responses on how respondents perceived the item to influence the repayment of MOFA micro-credits.

Table 43: Means and Standard Deviations of Items under Time Credits are made Available to Clients

Items	Mean	S D
Time spent on credit delivery is reasonable and encourages credit repayment	3.81	1.13
Timely credit disbursement allows for early acquisition of real inputs, hence credit repayment	4.12	0.82
Timely credit disbursement enables clients to meet production season leading to credit repayment	4.11	0.89

Overall Mean= 4.01 Overall Standard Deviation= 0.65

Scale: 1= strongly disagree 2= disagree 3=somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Type of Agricultural Activity Micro-credit Clients engaged in

In Table 44, the mean values of all the items are closer to the scale 4 which is "agree". These indicate high levels of influence of the items on the repayment of MOFA micro-credits. Items with standard deviations of 1.00 and less indicate that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits.

Table 44: Means and Standard Deviations of Items under Type of Agricultural Activity Micro-credit Clients engaged in

Items	Mean	S D
Crop farming is economical and can give farmer higher incomes to pay credit	4.28	0.87
Livestock/ poultry production is economical and can give farmer higher incomes to pay credit	3.98	1.00
Fish farming/ marine fishing is economical and can give farmer higher incomes to pay credit	4.13	0.85
Processing of agricultural produce is economical and can give farmer higher incomes to pay credit	3.72	1.34
Overall Mean= 3.86	Overall Standard Deviation= 0.98	

Scale: 1= strongly disagree 2= disagree 3=somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Adequacy of Credit

The mean values of most of the items under the factor "adequacy of credit" as mentioned in Table 45 are defined by "somewhat agree", indicating some levels of influence of the items on the repayment of MOFA micro-credits. The overall mean value of all the items is 3.07, which is "somewhat agree" on the scale.

Standard deviation of more than 1.00 shows that there were great variations in the responses on how respondents perceived the items to influence the repayment of MOFA micro-credits.

The implication for the items with standard deviation less than 1.00 is that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits. This confirms UPPAP (2000) assertion that farmers' needs are many and varied and thus credit must meet the priority needs of the client, which could be more than one.

Table 45: Means and Standard Deviations of Items under Adequacy of Credit

Items	Mean	S D
Adequacy of micro-credit obtained allows for efficiency in production, resulting in high incomes to enable credit repayment	4.09	1.01
Under financing leads to use of credit for intended purpose since levels of resources for production could be attained, which allows for effective repayment	2.30	1.11

Table 45 Continued

Multiple financing means obtaining more than one credit at the same time, which demands repayment at the same time hence better repayment	2.46	1.08
Provision of micro-credits exceeding capacity of client's enterprise results in efficiency in credit use leading to credit repayment	2.56	1.09
Transaction costs on credits are most often favourable and can lead to credit repayment	2.47	1.12
General cost of most agricultural credits is bearable and enables clients to produce enough to meet the cost and excess to pay debt	2.54	1.20
Favourable terms attached to credit sourcing allowed for flexibility in settling debts	4.16	0.71
Agricultural producers will accept and repay credit of low interest rate	4.44	0.66
Multiplicity of credit sources available to agricultural producers entice interested producers to contract multiple credits, hence efficiency leading to repayment	2.64	1.10

Overall Mean= 3.07 Overall Standard Deviation= 0.55

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Training for Micro-credit Clients on Agricultural Production and Business Development

The scale definition of agricultural micro-credit clients' perception about the items under the factor "training for micro-credit clients on agricultural production and business development" is "agree", as shown by the overall mean (4.13) in Table 46. This indicates a high level of influence of the factor on the repayment of MOFA micro-credits.

Table 46: Means and Standard Deviations of Items under Training for Micro-credit Clients on Agricultural Production and Business Development

Items	Mean	S D
Training for micro-credit clients prior to utilization of credit encourages better credit use and efficient loan repayment	4.32	0.60
Training for micro-credit clients during utilization of credit encourages better credit use and efficient loan repayment	4.35	0.67
Training for micro-credit clients after credit utilization encourages better credit use and efficient loan repayment	2.12	1.05
Training for micro-credit clients on business plan development encourages access to better credit and efficient loan repayment	4.25	0.67
Training for micro-credit clients on entrepreneur development in production skills encourages efficient		

Table 46 Continued

credit repayment	4.33	0.66
Training for micro-credit clients on business management ensures sound business contributing to efficient credit repayment	4.24	0.64
Adequate knowledge in use of improved agricultural technologies leads to increase in production hence high income to pay debt	4.32	0.57
Regular provision of agricultural extension services means capacity building in agricultural areas to generate enough income for credit repayment	4.31	0.62
Appropriate channels of receiving production recommendations most often lead to acceptance and use hence good yields and income for credit repayment	4.24	0.74
Appropriate sources of receiving micro-credit information most often lead to acceptance and use hence good yields and income for credit repayment	4.40	0.68
Appropriate channels of receiving instructions on micro -credit use contributes to credit repayment	4.35	0.66

Overall Mean= 4.11 Overall Standard Deviation= 0.28

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

All the items in Table 46 have standard deviations less than 1.00. The implication is that respondents do not vary greatly in their responses on how

they perceived the items under the factor to influence the repayment of MOFA micro-credits. The results of present study corroborates Johnson et al. (1997) observation that where alongside the credit delivery training is organized for credit beneficiaries on such aspects as business and skills development, economic activities are promoted, and also help develop credit beneficiaries management skills.

Items under Stability in Agricultural Production

The results indicate that the items under the factor "stability in agricultural production" show strong agreement with the repayment of MOFA micro-credits as indicated by the overall mean value of 4.47. IFAD (2000) asserts that when yields have been high due to favourable production conditions, interest on the part of the beneficiaries become strong, leading to high repayment on credit by such clients.

Table 47: Means and Standard Deviations of Items under Stability in Agricultural Production

Items	Mean	S D
Higher yields of agricultural produce due to favourable weather conditions lead to higher revenue generation to pay debt	4.45	0.61
Higher yields of agricultural produce due to adequate pests and disease prevention and control lead to higher income to pay debt	4.39	0.62

Table 47 Continued

Higher yields of agricultural produce due to adequate farm management/ husbandry practices lead to higher income to repay credit	4.50	0.64
Use of healthy planting materials/ breeds of animals/ species of fish for production contributes to high yields hence high income for repayment of credit	4.48	0.62
Use of appropriate agricultural production technologies leads to efficient production and better micro-credit repayment strategies	4.47	0.67
Peaceful co-existence in farm land ownership allows for efficient use of land to produce and generate enough income to settle debt	4.42	0.64
When agricultural inputs and other factors of production are available to producers in the right combination, higher production is assured culminating in incomes to pay debt	4.70	2.58
When agricultural inputs and other factors of production are accessible to producers, higher production is assured culminating in higher incomes to pay debt	4.38	0.73

Overall Mean= 4.47 Overall Standard Deviation= 0.44

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Market Opportunities for Produce

In Table 48, most of the items have mean values closer to the scale (4). Similarly, the result of the overall mean is "agree" (3.62), indicating a high level of influence of market opportunities for produce on the repayment of MOFA micro-credits. The overall standard deviation, with result less than 1.00, shows that the items mean values are not widespread from the overall mean. Based on the argument by IIRR (1994) that agricultural producers will be willing to increase their production if there is adequate market and market knowledge, the government and District Assemblies should improve market opportunities at the village, district and national (policy) levels.

Table 48: Means and Standard Deviations of Items under Market Opportunities for Produce

Items	Mean	S D
Adequate market outlets for agricultural produce encourages sales of agricultural produce for revenue generation to repay credit	4.45	0.59
Adequate market infrastructure sometimes promotes efficiency in marketing contributing to increase in sales hence credit repayment	4.36	0.65
The short shelf life of most agricultural produce compelproducers to sell produce at reasonable prices and earn enough to repay credit	2.66	0.97
Prices for agricultural produce on the market are generally good to enable agricultural producers		

Table 48 Continued

accumulate enough money to pay debt	2.32	0.96
Cost of marketing agricultural produce is within the reach of agricultural producer to derive adequate revenue to settle debt	2.55	1.02
Local and national government policies in marketing agricultural produce favour better sales hence credit repayment	3.74	1.01
Available markets for produce in a community with good prices enable credit clients generate enough money to pay debt	3.66	1.15
Other markets for produce in ones' district with good prices enable credit clients generate enough money to pay debt	4.26	1.26
Available markets for produce outside district with good prices enable credit clients generate enough money to pay debt	4.03	0.83
Available markets for produce outside the country with good prices enable credit clients generate enough money to pay debt	3.64	1.12

Overall Mean= 3.62 Overall Standard Deviation= 0.46

Scale: 1= strongly disagree 2= disagree 3= somewhat agree

4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Level of Income Generated when Credit was Used

Table 49 shows that all the items except "agricultural production to meet the cost of production normally lead to credit repayment" have mean values closer to the scale "agree". The result of the overall mean is "agree" (4.12), indicating a high level of influence of the factor "the level of income generated when credit was used" on the repayment of MOFA micro-credits.

All the items have standard deviations less than 1.00. The implication is that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits.

Table 49: Means and Standard Deviations of Items under Level of Income Generated when Credit was Used

Items	Mean	S D
Agricultural production to meet the cost of production normally lead to credit repayment	2.33	0.88
Agricultural production to meet cost of production and for household needs will allow for accumulation of money to pay debt	4.11	0.86
Agricultural production to meet cost of production and still higher profits allows for settlement of debts	4.42	0.56

Overall Mean= 4.12 Overall Standard Deviation= 0.43

Scale: 1= strongly disagree 2= disagree 3= somewhat agree

4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Supervision and Follow up of Credit Allocation and Use

Table 50 shows that all the items indicated under the factor "supervision and follow up of credit allocation and use" have mean values that define agricultural micro-credit clients' perception about the listed items on the scale of "agree", indicating high levels of influence of the items on the repayment of MOFA micro-credits. All the items have standard deviations less than 1.00. The implication is that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits.

Table 50: Means and Standard Deviations of Items under Supervision and Follow up of Credit Allocation and Use

Items	Mean	S D
Adequate follow up from sources of micro-credits in credit utilization contributes to credit repayment	4.14	0.67
Adequate follow up from sources of micro-credits in credit repayment contributes to efficient micro-credit repayment	4.07	0.74
Adequate monitoring of provision, allocation, use and repayment of micro-credits by Agricultural Extension Workers contributes to repayment of credits	4.14	0.71
Adequate internal supervision of use and repayment of micro-credits by credit clients increases confidence in repayment	4.12	0.69
Adequate monitoring and supervision records of clients credit repayment history provide informed decision on credit worthiness hence subsequent credit repayment	4.11	0.72

Table 50 Continued

Timely supervision and monitoring by Agricultural Extension Workers of provision, use and repayment of micro credits contribute to repayment plans	4.16	0.74
Overall Mean= 4.08	Overall Standard Deviation= 0.45	

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Repayment Duration of Micro-credits

Results in Table 51 show that all the items indicated under the factor "repayment duration of micro-credits" have mean values that show "agree" on the scale, indicating high levels of influence of the items on the repayment of MOFA micro-credits. The implication of standard deviations less than 1.00 is that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits.

Table 51: Means and Standard Deviations of Items under Repayment Duration of Micro-credits

Items	Mean	S D
Agreement on repayment of total credit at the end of production period contributes to full credit repayment	4.44	0.67
Agreement that allows for monthly repayment of credit until full debt recovery leads to efficiency in repayment	3.95	0.82
Agreement that allows for quarterly repayment of credit		

Table 51 Continued

until full debt recovery leads to efficiency in repayment	4.12	0.78
Agreement that allows for yearly repayment of credit until full debt recovery leads to efficiency in repayment	4.26	0.72

Overall Mean= 3.58 Overall Standard Deviation= 0.51

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Wealth Status of Credit Clients

The scale definition of MOFA micro-credit clients' perception about the factor "wealth status of credit clients", as shown by the overall mean is "agree" (3.57), indicating a high level of influence of the factor on the repayment of MOFA micro-credits, as shown in Table 52.

Table 52: Means and Standard Deviations of Items under Wealth Status of Credit Clients

Items	Mean	S D
Credit clients who owned household items with total cost less than GH¢500 could repay fully credit of GH¢1,000	2.46	1.06
Credit clients who owned household items with total cost in the range of GH¢501-1,000 could repay fully credit of GH¢1,000	2.97	1.11
Credit clients who owned household items		

Table 52 Continued

with total cost in the range of GH¢1,001-1,500 could repay fully credit of GH¢1,000	4.17	0.70
Credit clients who owned household items with total cost in the range of GH¢1,501-2,000 could repay fully credit of GH¢1,000	3.96	0.74
Credit clients who owned household items with total cost over GH¢2,000 could repay fully credit of GH¢1,000	4.22	1.23
Credit clients who owned a micro size agricultural Enterprise (cost less than GH¢100) could repay fully credit of GH¢1,000	2.90	2.34
Credit clients who owned a small size agricultural Enterprise (cost GH¢101 – 1,000) could repay fully credit of GH¢1,000	3.14	1.03
Credit clients who owned a medium size agricultural enterprise (cost GH¢1,001-5,000) could repay fully credit of GH¢1,000	4.11	0.76
Credit clients who owned a large size agricultural enterprise (cost over GH¢5,000) could repay fully credit of GH¢1,000	4.31	0.72

Overall Mean= 3.57 Overall Standard Deviation= 0.39

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Means and Standard Deviations of how Agricultural Extension Agents (AEAs) Perceived the Factors Influencing MOFA Micro-credit Repayment (N=60).

The micro-credit repayment factors were obtained from literature, and rated high by respondents. They include the time credits are made available to clients, type of agricultural activities engaged in by micro-credit clients, adequacy of credit, training for micro-credit clients on agricultural production and business development, stability in agricultural production, and marketing opportunities for produce. Other factors are the level of income generated when credit was used, supervision and follow-up of credit allocation and use, repayment duration of micro-credits, and wealth status of micro-credit clients. The rest are age of micro-credit clients, sex of micro-credit clients, marital status of micro-credit clients, level of education of micro-credit clients, household size of clients, and experience of clients in agricultural enterprise.

Items under Time Credits are made Available to Clients

In Table 53, the Likert-type scale definition of AEAs perception about the listed items is "agree", indicating high levels of influence of the items on the repayment of MOFA micro-credits. The mean of the means also shows an agreement (3.50). The standard deviations of more than 1.00 show that there were great variations in the responses on how respondents perceived the item to influence the repayment of MOFA micro-credits. Meanwhile, the composite standard deviation gave a value that was less than 1.00. The implication is that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits.

Table 53: Means and Standard Deviations of Items under Time Credits are made Available to Clients

Items	Mean	S D
Time spent on credit delivery is reasonable and encourages credit repayment	3.33	1.27
Timely credit disbursement allows for early acquisition of real inputs, hence credit repayment	3.47	1.06
Timely credit disbursement enables clients to meet production season leading to credit repayment	3.70	1.09
Overall Mean= 3.50	Overall Standard Deviation= 0.69	

Scale: 1= strongly disagree 2= disagree 3=somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Type of Agricultural Activity Clients engaged in

In Table 54, the AEAs' perceptions on all the items under the "type of agricultural activity micro-credit clients engaged in" and their influence on repayment of MOFA credit were rated "agree". The implication for the overall mean value of 3.52 and standard deviation of 0.76 is that the AEAs perceived the factor "type of agricultural activity micro-credit clients engaged in" to have a high level of influence on the repayment of MOFA micro-credits, and that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits.

Table 54: Means and Standard Deviations of Items under Type of Agricultural Activity Micro-credit Clients engaged in

Items	Mean	S D
Crop farming is economical and can give farmer higher incomes to pay credit	3.53	0.93
Livestock/ poultry production is economical and can give farmer higher incomes to pay credit	3.57	1.31
Fish farming/ marine fishing is economical and can give farmer higher incomes to pay credit	3.47	1.03
Processing of agricultural produce is economical and can give farmer higher incomes to pay credit	4.20	0.68
Overall Mean= 3.52	Overall Standard Deviation= 0.76	

Scale: 1= strongly disagree 2= disagree 3=somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Adequacy of Credit

The results show that the AEAs were not very sure of their level of agreement to the statement that the factor "adequacy of credit" has influence on the repayment of MOFA micro-credits. This was shown by the overall mean value of 3.39, which define agricultural micro-credit clients' perception about the items listed on the scale of "somewhat agree", as shown in Table 55.

Table 55: Means and Standard Deviations of Items under Adequacy of Credit

Items	Mean	S D
Adequacy of micro-credit obtained allows for efficiency in production, resulting in high incomes to enable credit repayment	2.25	0.75
Under financing leads to use of credit for intended purpose since levels of resources for production could be attained, which allows for effective repayment	2.83	1.01
Multiple financing means obtaining more than one credit at the same time, which demands repayment at the same time hence better repayment	2.78	0.84
Provision of micro-credits exceeding capacity of client's enterprise results in efficiency in credit use leading to credit repayment	3.28	0.82
Transaction costs on credits are most often favourable and can lead to credit repayment	3.47	0.83
General cost of most agricultural credits is bearable and enables clients to produce enough to meet the cost and excess to pay debt	4.38	0.67
Favourable terms attached to credit sourcing allowed for flexibility in settling debts	4.48	0.65
Agricultural producers will accept and repay credit of low interest rate	4.00	0.86
Multiplicity of credit sources available to agricultural		

Table 55 Continued

producers entice interested producers to contract multiple credits, hence efficiency leading to repayment	2.88	1.03

Overall Mean= 3.39 Overall Standard Deviation= 0.47

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Training for Micro-credit Clients on Agricultural Production and Business Development

The mean values of most of the items under the factor "training for micro-credit clients on agricultural production and business development" as mentioned in Table 56 are defined by "agree" (Overall mean of 4.01), indicating some levels of influence of the items on the repayment of MOFA micro-credits.

Table 56: Means and Standard Deviations of Items under Training for Micro-credit Clients on Agricultural Production and Business Development

Items	Mean	S D
Training for micro-credit clients prior to utilization of credit encourages better credit use and efficient loan repayment	4.18	0.72
Training for micro-credit clients during utilization		

Table 56 Continued

of credit encourages better credit use and efficient loan repayment	4.35	0.58
Training for micro-credit clients after credit utilization encourages better credit use and efficient loan repayment	2.44	0.75
Training of micro-credit clients on business plan development encourages access to better credit and efficient loan repayment	4.32	0.62
Training of micro-credit clients on entrepreneur development in production skills encourages efficient credit repayment	4.37	0.49
Training of credit clients on business management ensures sound business contributing to efficient credit repayment	3.97	0.61
Adequate knowledge in use of improved agricultural technologies leads to increase in production hence high income to pay debt	4.07	0.25
Regular provision of agricultural extension services means capacity building in agricultural areas to generate enough income for repayment	3.80	0.92
Appropriate channels of receiving production recommendations most often lead to acceptance and use hence good yields and income for credit repayment	4.30	0.72
Appropriate sources of receiving micro-credit information most often lead to acceptance and use hence good yields and income for credit repayment	4.18	0.65

Table 56 Continued

Appropriate channels of receiving instructions on micro -credit use contributes to credit repayment	4.08	0.85
Overall Mean= 4.01	Overall Standard Deviation= 0.29	

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Stability in Agricultural Production

In Table 57, the mean values of all the items are closer to the scale 4, which is "agree". These indicate high levels of influence of stability in agricultural production on the repayment of MOFA micro-credits.

Table 57: Means and Standard Deviations of Items under Stability in Agricultural Production

Items	Mean	S D
Higher yields of agricultural produce due to favourable weather conditions lead to higher revenue generation to pay debt	4.22	0.42
Higher yields of agricultural produce due to adequate pests and disease prevention and control lead to higher income to pay debt	4.42	0.56
Higher yields of agricultural produce due to adequate farm management/ husbandry practices lead to higher income to repay credit	4.62	0.61

Table 57 Continued

Use of healthy planting materials/ breeds of animals/ species of fish for production contributes to high yields hence high income for repayment of credit	4.33	0.68
Use of appropriate agricultural production technologies leads to efficient production and better micro-credit repayment strategies	4.37	0.69
Peaceful co-existence in farm land ownership allows for efficient use of land to produce and generate enough income to settle debt	4.47	0.57
When agricultural inputs and other factors of production are available to producers in the right combination, higher production is assured culminating in incomes to pay debt	4.50	0.54
When agricultural inputs and other factors of production are accessible to producers, higher production is assured culminating in higher incomes to pay debt	4.25	0.63

Overall Mean= 4.39 Overall Standard Deviation= 0.19

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Market Opportunities for Produce

The scale definition of AEAs' perception about the items under market opportunities for produce, as shown by the overall mean is "agree" (3.75).

This indicates high levels of influence of the items on the repayment of MOFA micro-credits as shown in Table 58.

Table 58: Means and Standard Deviations of Items under Market Opportunities for Produce

Items	Mean	S D
Adequate market outlets for agricultural produce encourages sales of agricultural produce for revenue generation to repay credit	4.28	0.52
Adequate market infrastructure sometimes promotes efficiency in marketing contributing to increase in sales hence credit repayment	4.32	0.62
The short shelf life of most agricultural produce compelproducers to sell produce at reasonable prices and earn enough to repay credit	3.02	0.75
Prices for agricultural produce on the market are generally good to enable agricultural producers accumulate enough money to pay debt	2.95	0.72
Cost of marketing agricultural produce is within the reach of agricultural producer to derive adequate revenue to settle debt	3.32	0.75
Local and national government policies in marketing agricultural produce favour better sales hence credit repayment	3.63	0.71

Table 58 Continued

Available markets for produce in a community with good prices enable credit clients generate enough money to pay debt	4.05	0.22
Other markets for produce in ones' district with good prices enable credit clients generate enough money to pay debt	4.10	0.57
Available markets for produce outside district with good prices enable credit clients generate enough money to pay debt	3.92	0.28
Available markets for produce outside the country with good prices enable credit clients generate enough money to pay debt	3.92	0.33

Overall Mean= 3.75 Overall Standard Deviation= 0.26

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Level of Income Generated when Credit was Used

Table 59 indicates that the total mean for the factor "level of income generated when credit was used" was perceived by respondents to have a high level of influence on the repayment of MOFA micro-credits, indicated by 3.64 on the scale.

Table 59: Means and Standard Deviations of Items under Level of Income Generated when Credit was Used

Items	Mean	S D
Agricultural production to meet the cost of production normally lead to credit repayment	2.52	0.50
Agricultural production to meet cost of production and for household needs will allow for accumulation of money to pay debt	4.00	0.69
Agricultural production to meet cost of production and still higher profits allows for settlement of debts	4.40	0.49

Overall Mean= 3.64 Overall Standard Deviation= 0.36

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Supervision and Follow up of Credit Allocation and Use

In Table 60, the mean values of all the items are closer to the scale 4, which is "agree". These indicate high levels of influence of the items on the repayment of MOFA micro-credits. The result of the overall mean indicates "agree" (4.13) on the scale. This implies that the supervision and follow up of credit allocation and use have an influence on the repayment of MOFA micro-credits. The implication for the items with standard deviation less than 1.00 is that respondents do not vary greatly in their responses on how they perceived the items to influence the repayment of MOFA micro-credits.

Table 60: Means and Standard Deviations of Items under Supervision and Follow up of Credit Allocation and Use

Items	Mean	S D
Adequate follow up from sources of micro-credits in credit utilization contributes to credit repayment	4.13	0.43
Adequate follow up from sources of micro-credits in credit repayment contributes to efficient micro-credit repayment	4.15	0.44
Adequate supervision of provision, allocation, use and repayment of micro-credits by Agricultural Extension Workers contributes to repayment of credits	4.02	0.57
Adequate internal supervision of use and repayment of micro-credits by credit clients increases confidence in repayment	4.15	0.55
Adequate monitoring and supervision records of clients credit repayment history provide informed decision on credit worthiness hence subsequent credit repayment	4.13	0.65
Timely supervision and monitoring by Agricultural Extension Workers of provision, use and repayment of micro-credits contribute to repayment plans	4.17	0.38
Overall Mean= 4.13	Overall Standard Deviation= 0.26	

Source: Field Survey Data, 2009

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Items under Repayment Duration of Micro-credits

Table 61 shows that all the items indicated under the factor "repayment duration of micro-credits" have mean values that define AEAs perception about the items listed on the scale of "agree", indicating high levels of influence of the items on the repayment of MOFA micro-credits. The result of the overall mean indicates "agree" (4.18).

Table 61: Means and Standard Deviations of Items under Repayment Duration of Micro-credits

Items	Mean	S D
Agreement on repayment of total credit at the end of production period contributes to full credit repayment	4.35	0.68
Agreement that allows for monthly repayment of credit until full debt recovery leads to efficiency in repayment	4.13	0.87
Agreement that allows for quarterly repayment of credit until full debt recovery leads to efficiency in repayment	4.03	0.76
Agreement that allows for yearly repayment of credit until full debt recovery leads to efficiency in repayment	4.20	0.66

Overall Mean= 4.18 Overall Standard Deviation= 0.39

Scale: 1= strongly disagree 2= disagree 3= somewhat agree 4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Wealth Status of Credit Clients

With an overall standard deviation of 0.40, respondents do not vary greatly in their responses on how they perceived the items under wealth status of credit clients to influence the repayment of MOFA micro-credits. The implication of the overall mean of 3.78 in Table 62 shows that wealth status of clients has an influence on the repayment of MOFA micro-credits.

Table 62: Means and Standard Deviations of Items under Wealth Status of Credit Clients

Items	Mean	S D
Credit clients who owned household items with total cost less than GH¢500 could repay fully credit of GH¢1,000	2.77	0.89
Credit clients who owned household items with total cost in the range of GH¢501-1,000 could repay fully credit of GH¢1,000	3.55	0.72
Credit clients who owned household items with total cost in the range of GH¢1,001-1,500 could repay fully credit of GH¢1,000	4.08	0.59
Credit clients who owned household items with total cost in the range of GH¢1,501-2,000 could repay fully credit of GH¢1,000	4.12	0.37
Credit clients who owned household items with total cost over GH¢2,000 could repay fully credit of GH¢1,000	4.25	0.44

Table 62 Continued

Credit clients who owned a micro size agricultural enterprise (cost less than GH¢100) could repay fully credit of GH¢1,000	3.20	1.13
Credit clients who owned a small size agricultural enterprise (cost GH¢101 – 1,000) could repay fully credit of GH¢1,000	3.52	0.85
Credit clients who owned a medium size agricultural enterprise (cost GH¢1,001-5,000) could repay fully credit of GH¢1,000	4.15	0.40
Credit clients who owned a large size agricultural enterprise (cost over GH¢5,000) could repay fully credit of GH¢1,000	4.37	0.49

Overall Mean= 3.78 Overall Standard Deviation= 0.40

Scale: 1= strongly disagree 2= disagree 3= somewhat agree

4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Household Size of Credit Clients

With an overall standard deviation of 0.41 respondents do not vary greatly in their responses on how they perceived the items under household size of credit clients to influence the repayment of MOFA micro-credits. The implication of the overall mean of 3.52 in Table 63 shows that household size of credit clients has an influence on the repayment of MOFA micro-credits.

Table 63: Means and Standard Deviations of Items under Household Size of Credit Clients

Items	Mean	S D
Client with one family size can repay credit fully	3.93	0.94
Client with two family size can repay credit fully	3.85	0.84
Client with three family size can repay credit fully	4.08	0.79
Client with four family size can repay credit fully	3.70	1.08
Client with five family size can repay credit fully	3.38	1.03
Client with six family size can repay credit fully	3.48	1.03
Client with seven family size can repay credit fully	3.22	1.11
Client with eight family size can repay credit fully	3.13	1.13
Client with nine family size can repay credit fully	3.20	0.95
Client with ten family size can repay credit fully	3.22	1.04
Client with over ten family size can pay fully credit	3.12	1.09

Overall Mean= 3.52 Overall Standard Deviation= 0.41

Scale: 1= strongly disagree 2= disagree 3= somewhat agree

4= agree 5= strongly agree

Source: Field Survey Data, 2009

Items under Experience of Clients in Agricultural Enterprise

Table 64 shows that all the items indicated under the factor "experience of clients in agricultural enterprise" have mean values that define AEAs perception about the items listed on the scale of "agree", indicating high levels of influence of the items on the repayment of MOFA micro-credits. The result of the overall mean indicates "agree" (3.63).

Table 64: Means and Standard Deviations of Items under Experience of Clients in Agricultural Enterprise

Items	Mean	S D
Client with 5years and less in agric can pay fully credit	3.12	1.09
Client with 6-10 years in agric can pay fully credit	3.33	1.16
Client with 11-15 years in agric can pay fully credit	3.55	1.09
Client with 15-20 years in agric can pay fully credit	3.73	1.18
Client with 21-25 years in agric can pay fully credit	3.85	0.97
Client with over 25 years in agric can pay fully credit	4.18	0.89

Overall Mean= 3.63 Overall Standard Deviation= 0.53

Scale: 1= strongly disagree 2= disagree 3= somewhat agree

4= agree 5= strongly agree

Source: Field Survey Data, 2009

Therefore, credit clients with higher and positive levels of the identified factors may have higher repayment rates.

Relationships among the Factors Influencing Repayment of MOFA Micro-credits by Clients

Objective five examined the relationship among the factors influencing repayment of Ministry of Food and Agriculture micro-credits.

The variables (factors) for determining how micro-credit clients and AEAs perceived repayment of MOFA micro-credits were derived from the extant literature and rated by the micro-credit clients and the AEAs. Table 65 shows the variables in the study, their levels of measurement, types of correlation employed and the ratings.

Table 65: Variables and Type of Correlation

Variable Symbol	Variable	Level of Measurement	Type of Correlation	Rating
Y	Repayment of MOFA micro-credit	Interval		Fair
X_1	Time credits are made available to clients	Interval	Pearson	Agree
X_2	Type of agricultural activities engaged in by clients	Interval	Pearson	Agree
X_3	Adequacy of credit	Interval	Pearson	Somewhat agree
X_4	Training for micro-credit clients	Interval	Pearson	Agree
X_5	Stability in agricultural production	Interval	Pearson	Agree
X_6	Marketing opportunities for produce	Interval	Pearson	Agree
X_7	Level of income generated when credit was used	Interval	Pearson	Agree
X_8	Supervision and follow up of credit allocation and use	Interval	Pearson	Agree
X_9	Repayment duration of micro-credits	Interval	Pearson	Agree
X_{10}	Wealth status of micro-credit clients	Interval	Pearson	Agree
X_{11}	Age of micro-credit clients	Ordinal (age range in years)	Spearman	
X_{12}	Sex of micro-credit clients	Nominal (0=female, 1=male)	Point Biserial	
X_{13}	Marital status of micro-credit clients	Nominal (0=unmarried, 1=married)	Point Biserial	
X_{14}	Level of education of micro-credit clients	Ordinal (0=no formal to 5=university)	Spearman	
X_{15}	Household size of micro-credit clients	Interval (numbers-1 to over 10)	Pearson	
X_{16}	Experience of clients in agricultural enterprise	Ordinal (year range)	Spearman	

Source: Field Survey Data, 2009

The discussions and interpretation of the strength of associations of the factors were based on Davies (1971) framework which has been conceptualized in Table 3 in Chapter 3. Davies (1971) convention correlation coefficient of 0.70 or higher denotes very strong association, 0.50 to 0.69 is substantial association, 0.30 to 0.49 is moderate association, 0.10 to 0.29 is low association, and 0.01 to 0.09 signifies negligible association. Significant levels were declared at alpha levels of 0.05 and 0.01.

Correlation Matrix of Perceptions of MOFA Micro-credit Clients about the Relationships between the repayment Factors and the Repayment of MOFA Micro-credits by Clients

The results of the correlation coefficients of the perception of MOFA micro-credit clients about the relationships between the repayment factors and the repayment of MOFA credits in Table 66 show positive and significant relationships between all the sixteen repayment factors and the repayment of MOFA micro-credits. The results indicate that repayment of MOFA micro-credits by clients has positive, very strong and significant relationships with adequacy of credit ($r=0.76$; $p<0.01$), stability in agricultural production ($r= 0.79$; $p<0.01$), supervision and follow-up of credit allocation and use ($r= 0.72$; $p<0.01$), and wealth status of clients ($r= 0.70$; $p<0.01$). The results then show positive, substantial and significant relationships between the repayment of MOFA micro-credits by clients and the time credits are made available to clients ($r= 0.57$; $p<0.01$), type of agricultural activities engaged in by micro-credit clients ($r= 0.68$; $p<0.01$), marketing opportunities for produce ($r= 0.66$; $p<0.01$), level of income generated when credit was used ($r= 0.59$; $p<0.01$), repayment duration of micro-credits ($r= 0.52$; $p<0.01$), and experience in agricultural enterprise ($r= 0.51$; $p<0.01$).

Table 66: Correlation Matrix of Perceptions of MOFA Micro-credit Clients about the Relationships between the Repayment Factors and the Repayment of MOFA Credits by Clients

Variables	*Y*
X_1	0.57**
X_2	0 .68**
X_3	0 .76**
X_4	0.39**
X_5	0.79**
X_6	0.66**
X_7	0.59**
X_8	0.72**
X_9	0.52**
X_{10}	0.70**
X_{11}	0.35**
X_{12}	0.13**
X_{13}	0.16**
X_{14}	0.31**
X_{15}	0.33**
X_{16}	0.51**

*= Sig. at 0.05 Alpha level **= Sig. at 0.01 Alpha level

Source: Field Survey Data, 2009

Results in Table 66 also show positive, moderate and significant relationships between repayment of MOFA micro-credits and training for micro-credit clients ($r= 0.39$; $p<0.01$), age of micro-credit clients ($r= 0.35$; $p<0.01$), level

of education of clients (r= 0.31; p<0.01) and household size of clients (r= 0.33; p<0.01). Meanwhile, there was positive, low and significant relationships with sex of clients (r= 0.13; p<0.01) and marital status of clients (r= 0.16; p<0.01).

Therefore, the more MOFA micro-credit clients perceived each of the factors to be effective, the more they perceived that each factor influenced repayment of MOFA micro-credits.

The implication of the relationships is that each of the factors was important in influencing repayment of MOFA micro-credits by clients. For example, when credits are targeted on an agricultural activity that can generate higher incomes, and are given at the right time with stable production conditions, and adequate training given to clients on production and business development, and adequate supervision and follow up is made on credit allocation and use, and favourable market conditions in terms of pricing are provided, and infrastructure and demands for produce are assured, and adequate repayment period is allowed, client would be able to fully generate sufficient incomes to repay the credit.

Some of the significantly correlated factors indicated in Table 66 are similar to the results of the correlation analysis by Bassem (2006), which revealed that loan repayment was found to be significantly and positively influenced by customer's age, wealth status and household size of client, length of repayment, and sector of activity.

In Table 66, relationships between all the repayment factors and repayment of MOFA micro-credits by clients were found to be significant (at 1% level of significance). The null hypotheses, which stated that "there are no significant relationships", are rejected. The alternative hypotheses were therefore accepted.

Table 67: Correlation Matrix of Perceptions of MOFA Micro-credit Clients about the Relationships among the Factors Influencing Repayment of MOFA Micro-credits by Clients

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}
X_1	1															
X_2	0 .63**															
X_3	0 .56**	0.64**														
X_4	0.25**	0.27**	0.40**													
X_5	0.50**	0.60**	0.72**	0.50**												
X_6	0.42**	0.45**	0.69**	0.30**	0.60**											
X_7	0.22**	0.37**	0.53**	0.35**	0.62**	0.47**										
X_8	0.50**	0.66**	0.61**	0.36**	0.68**	0.56**	0.49**									
X_9	0.27**	0.46**	0.45**	0.29**	0.49**	0.32**	0.41**	0.51**								
X_{10}	0.52**	0.55**	0.78**	0.36**	0.63**	0.61**	0.47**	-0.53**	0.48**							
X_{11}	0.02	0.03	0.13**	0.05	0.10*	0.13**	0.18**	0.12*	0.11*	0.14**						
X_{12}	-0.01	0.03	0.02	-0.02	0.01	-0.02	0.03	0.00	-0.02	0.04	0.30**					
X_{13}	0.08	0.09	0.11*	-0.06	-0.12*	0.11*	0.05	0.03	-0.02	0.12*	0.30**	-0.20**				
X_{14}	0.01	0.01	0.03	0.06	0.01	0.00	0.11*	0.02	-0.04	0.03	0.14**	0.20**	0.01			
X_{15}	-0.03	-0.00	-0.02	-0.14**	-0.00	-0.02	-0.09*	-0.02	-0.07	-0.03	0.00	0.01	0.00	0.38**		
X_{16}	-0.02	-0.01	-0.00	0.07	0.15**	0.10*	0.19**	0.16**	0.01	-0.02	0.12*	0.06	-0.02	0.02	0.38**	

Source: Field Survey Data, 2009 *= Sig. at 0.05 Alpha level **= Sig. at 0.01 Alpha level

The results in Table 67 show the relationships among the independent variables (the factors that influence the repayment of MOFA micro-credits).

The Correlation Matrix computed shows significant, positive and substantial relationships between the time credits are made available to clients and the type of agricultural activities engaged in by micro-credit clients ($r= 0.63$; $p<0.01$), adequacy of credit ($r= 0.56$; $p<0.01$), stability in agricultural production ($r= 0.50$; $p<0.01$), supervision and follow-up of credit allocation and use ($r= 0.50$; $p<0.01$), and wealth status of micro-credit clients ($r= 0.52$; $p<0.01$). The relationship was moderate with marketing opportunities for produce ($r= 0.42$; $p<0.01$) but low with training for micro-credit clients ($r= 0.25$; $p<0.01$), the level of income generated when credit was used ($r= 0.38$; $p<0.01$), and the repayment duration of micro-credits ($r= 27$; $p<0.01$).

The results also show significant, positive and substantial relationships between the type of agricultural activities engaged in by micro-credit clients and the adequacy of credit ($r= 0.64$; $p<0.01$), stability in agricultural production ($r= 0.60$; $p<0.01$), supervision and follow-up of credit allocation and use ($r= 0.66$; $p<0.01$), and the wealth status of micro-credit clients ($r= 0.55$; $p<0.01$). It also has significant, positive and moderate relationships with marketing opportunities for produce ($r= 0.45$; $p<0.01$), the level of income generated when credit was used ($r= 0.37$; $p<0.01$), and the repayment duration of micro-credits ($r= 46$; $p<0.01$), but low relationship with training for micro-credit clients ($r= 0.27$; $p<0.01$). The implication is that for any consideration made to the type of agricultural activities engaged in by micro-credit clients, similar considerations should be made to the adequacy of credit, stability in agricultural production, supervision and follow-up of credit allocation and use,

repayment duration of micro-credits, wealth status of clients, marketing opportunities for produce, training for clients, and level of income generated when credit was used.

Adequacy of credit has significant, positive and very strong relationships with stability in agricultural production ($r= 0.72$; $p<0.01$), and the wealth status of clients ($r= 0.78$; $p<0.01$). The relationship is substantial with marketing opportunities for produce ($r= 0.69$; $p<0.01$), the level of income generated when credit was used ($r= 0.53$; $p<0.01$,) and supervision and follow up of credit allocation and use ($r= 0.61$; $p<0.01$), but moderate with training for clients ($r= 0.40$; $p<0.01$), and the repayment duration of micro-credits ($r= 45$; $p<0.01$), low with age of clients ($r= 13$; $p<0.01$), and the marital status of clients ($r= 11$; $p<0.05$). These relationships suggest that for any attention paid to the adequacy of credit, there should be an equal attention paid to stability in agricultural production, supervision and follow up of credit allocation and use, the repayment duration of micro-credits, the wealth status of clients, marketing opportunities for produce, training for clients, the level of income generated when credit was used and the age and marital status of clients.

Training for micro-credit clients has significant, positive and substantial relationships with stability in agricultural production ($r= 0.50$; $p<0.01$), but moderate relationships with marketing opportunities for produce ($r= 0.30$; $p<0.01$), the level of income generated when credit was used ($r= 0.35$; $p<0.01$), supervision and follow up of credit allocation and use ($r= 0.36$; $p<0.01$), and the wealth status of clients ($r= 0.36$; $p<0.01$). Training for micro-credit clients has low relationship with the repayment duration of micro-

credits (r= 0.29; p<0.01) but negative, low and significant relationship with household size of clients (r= -0.14; p<0.01). The results show that for any attention paid to training for micro-credit clients, the same attention should be paid to stability in agricultural production, supervision and follow up of credit allocation and use, the repayment duration of micro-credits, the wealth status of clients, marketing opportunities for produce, the level of income generated when credit was used and the household size of clients.

Stability in agricultural production has significant, positive and substantial relationships with marketing opportunities for produce (r= 0.60; p<0.01), the level of income generated when credit was used (r= 0.62; p<0.01), supervision and follow up of credit allocation and use (r= 0.68; p<0.01), and the wealth status of micro-credit clients (r= 0.63; p<0.01). The relationship was moderate with the repayment duration of micro-credits (r= 0.49; p<0.01) but low, negative and significant with the marital status of clients (r= -0.12; p<0.05) and positive with the age (r=0.10; p<0.05) and farming experience (r= 0.15; p<0.01) of clients. The implication is that for any consideration made to stability in agricultural production there should be an equal consideration made to supervision and follow up of credit allocation and use, the repayment duration of micro-credits, the wealth status of micro-credit clients, marketing opportunities for produce, the level of income generated when credit was used, the age of clients, the marital status and the farming experience of clients.

Marketing opportunities for produce has significant, positive and substantial relationships with supervision and follow up of credit allocation and use (r= 0.56; p<0.01), and the wealth status of micro-credit clients (r=

0.61; p<0.01) and moderate relationships with the level of income generated when credit was used (r= 0.47; p<0.01), and the repayment duration of micro-credits (r= 32; p<0.01). It has low relationships with the age of clients (r= 0.13; p<0.01), the marital status of clients (r= 0.11; p<0.05), and clients' experience in agricultural enterprise (r= 0.10; p<0.05). These imply that for any attention paid to marketing opportunities for produce, the same attention should be paid to supervision and follow up of credit allocation and use, the repayment duration of micro-credits, the wealth status of micro-credit clients, the level of income generated when credit was used, the age and marital status of clients and the experience of clients in agriculture.

Level of income generated when credit was used has significant, positive and moderate relationships with supervision and follow up of credit allocation and use (r= 0.49; p<0.01), the repayment duration of micro-credits (r= 41; p<0.01), and the wealth status of clients (r= 0.47; p<0.01). The relationships were low with the age of clients (r= 18; p<0.01), the level of education of clients (r= 0.11; p<0.05), and the experience of clients in agriculture (r= 0.19; p<0.01): but negative and negligible with the household size of clients (r= -0.09; p<0.05). Therefore, for any consideration made to level of income generated when credit was used, the same should be done to supervision and follow up of credit allocation and use, the age of clients, the repayment duration of micro-credits, the wealth status of clients, the level of education of clients, clients' experience in agriculture and the household size of clients.

Supervision and follow up of credit allocation and use has significant, positive and substantial relationships with the repayment duration of micro-

credits (r= 0.51; p<0.01), but negative with the wealth status of micro-credit clients (r= -0.53; p<0.01). The relationship was low with the age of clients (r= 0.12; p<0.05), and experience of clients in agriculture production (r= 0.19; p<0.01). Therefore, for any attention paid to supervision and follow up of credit allocation and use, there should be an equal attention paid to the repayment duration of micro-credits, wealth status of micro-credit clients, age of clients, and experience of clients in agriculture.

Repayment duration of micro-credits has significant, positive and moderate relationships with the wealth status of micro-credit clients (r= 0.48; p<0.01), and low relationship with the age of clients (r= 0.11; p<0.05). Therefore, for any attention paid to the repayment duration of micro-credits, the same should be done to the wealth status and age of clients.

Wealth status of micro-credit clients has significant, positive and low relationships with the age of micro-credit clients (r= 0.14; p<0.01) and the marital status of clients (r= 0.12; p<0.05). The results show that for any attention paid to the wealth status of micro-credit clients it is important to pay the same attention to the age and marital status of clients.

Age of micro-credit clients has significant, moderate and positive relationships with the sex (r= 0.30; p<0.01) and marital status (r= 0.30; p<0.01) of clients, but low relationships with the level of education of clients (r=0.14; p<0.01) and experience of clients in agriculture (r= 0.12; p<0.05). The implication is that if age should be considered in credit repayment issues, then issues concerning the sex, marital status, level of education and agricultural experience of clients must be looked at.

Sex of micro-credit clients has low, positive and significant relationship with the level of education of clients ($r= 0.20$; $p<0.01$), and negative relationship with the marital status of clients ($r= -0.20$; $p<0.01$). Therefore, for any consideration made to the sex of clients, the same consideration should be given to their marital status and level of education.

Level of education of clients has moderate, positive and significant relationships with the household size of clients ($r= 0.38$; $p<0.01$). The result shows that the level of education and household size of clients should be given the same consideration.

Household size of clients has moderate, positive and significant relationships with the experience of clients in agriculture ($r= 0.38$; $p<0.01$). Therefore, for any consideration made to the household size of clients, the same consideration should be given to the experience of clients in agriculture.

The null hypotheses stated that there are no significant relationships between the factors influencing repayment of MOFA micro-credits. The coefficients of the correlation analysis indicate mostly positive and significant relationships between factors such as the time credits are made available to clients, type of agricultural activities engaged in by clients, adequacy of credit, stability in agricultural production, supervision and follow up of credit allocation and use, repayment duration of micro-credits, marketing opportunities for produce, training for clients, and level of income generated when credit was used, wealth status and age of clients. Most of the relationships are substantial and moderate. The null hypotheses are rejected at 0.01 alpha levels. The alternate hypotheses which stated that there are significant relationships among the factors are therefore accepted.

However, the correlation coefficients for factors like the sex of clients, marital status of clients, level of education of clients, household size of clients and experience of clients in agriculture show weak significant relationships, which are negatively and negligible among these factors and between the other 11 factors listed above. The null hypotheses based on these factors, are accepted.

Correlation Matrix of Perceptions of AEAs about the Relationships between the Repayment Factors and the Repayment of MOFA Micro-credits by Clients

Some of the significantly correlated factors indicated in Table 68 are similar to the results of the correlation analysis by (Oke et al., 2007; Olomola, 2001; Bhatt, 1994).

The Correlation coefficients presented in Table 68 on AEAs perception about relationships between the repayment factors and the repayment of MOFA credits show that there was substantial, positive and significant relationships between the repayment of MOFA micro-credits and the adequacy of credit ($r= 0.58$; $p<0.01$) and wealth status of clients ($r= 0.59$; $p<0.01$). The relationship was moderate, positive and significant with training for clients ($r= 0.35$; $p<0.01$), marketing opportunities for produce ($r= 46$; $p<0.01$), the level of income generated when credit was used ($r= 0.46$; $p<0.01$), the repayment duration of credits ($r= 0.30$; $p<0.05$), and the age of clients ($r= 0.37$; $p<0.01$). In addition, there was low relationships with the time credits are made available to clients ($r= 0.29$; $p<0.05$), sex of clients ($r= 0.28$; $p<0.05$) and household size of clients ($r= 0.28$; $p<0.05$).

Table 68: Correlation Matrix of Perceptions of AEAs about the Relationships between the Repayment Factors and the Repayment of MOFA Micro-credits by Clients

Variables	*Y*
X_1	0.29*
X_2	0 .08
X_3	0 .58**
X_4	0.35**
X_5	0.01
X_6	0.46**
X_7	0.46**
X_8	0.24
X_9	0.30*
X_{10}	0.59**
X_{11}	0.37**
X_{12}	0.28*
X_{13}	-0.03
X_{14}	0.25
X_{15}	0.28*
X_{16}	0.01

*= Sig. at 0.05 Alpha level **= Sig. at 0.01 Alpha level

Source: Field Survey Data, 2009

The implications of the relationships are as follows: timely delivery of adequate credits to male clients of certain wealth status, and of any age grouping, and who has a small family size, and are provided with adequate

and relevant training, and has good market opportunities for produce and acceptable repayment duration would ensure that such clients generate higher incomes to repay MOFA micro-credits. These factors were perceived by the AEAs to be relevant in influencing the repayment of MOFA micro-credits.

At 0.05 alpha level, the null hypotheses which stated that there are no significant relationships between the repayment factors (the time credits are made available to clients, the adequacy of credit, training for micro-credit clients, marketing opportunities for produce, the level of income generated when credit was used, the repayment duration of micro-credits, and the wealth status, age, sex and household size of clients) and repayment of MOFA micro-credits are rejected. The alternative hypotheses are therefore accepted.

Meanwhile, the null hypotheses which stated that there are no significant relationships between the repayment of MOFA micro-credits and the repayment factors, including the type of agricultural activity engaged in by clients, stability in agricultural production, supervision and follow up in credit allocation and use, as well as the marital status, level of education and experience of clients in agriculture enterprise are accepted.

Table 69: Correlation Matrix of Perceptions of AEAs about the Relationships among the Factors Influencing Repayment of MOFA Micro-credits by Clients

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}
X_1	1															
X_2	-0 .35**															
X_3	0 .13	-0.18														
X_4	0.33**	-0.35**	0.20													
X_5	0.03	-0.06	0.17	0.14												
X_6	0.01	0.06	0.50**	0.15	-0.06											
X_7	0.11	-0.25*	0.37**	0.20	0.13	0.17										
X_8	-0.09	-0.02	0.18	0.35**	-0.24	0.57**	-0.08									
X_9	-0.09	-0.04	0.11	0.25*	-0.16	0.38**	-0.03	0.55**								
X_{10}	-0.00	-0.05	0.52**	0.17	-0.30*	0.43**	0.45**	0.33**	0.27*							
X_{11}	0.27*	-0.01	0.19	0.33*	-0.03	0.23	0.21	0.16	0.11	0.09						
X_{12}	0.05	-0.15	0.06	0.02	-0.10	0.00	0.07	0.05	0.02	0.12	-0.09					
X_{13}	0.30*	0.14	-0.01	-0.13	0.01	-0.07	-0.13	-0.15	-0.15	-0.10	-0.04	-0.02				
X_{14}	0.26*	-0.05	-0.10	0.15	-0.07	-0.18	0.11	-0.21	-0.07	0.06	0.02	-0.06	0.26*			
X_{15}	0.21	-0.04	-0.03	-0.13	0.18	-0.08	0.00	-0.20	0.02	-0.13	0.02	0.09	-0.04	0.20		
X_{16}	-0.15	0.10	0.04	-0.51**	-0.07	-0.25*	0.08	-0.32*	-0.15	0.06	0.21	-0.32*	0.02	-0.00	0.21	

Source: Field Survey Data, 2009 *= Sig. at 0.05 Alpha level **= Sig. at 0.01 Alpha level

In Table 69 the coefficients of the repayment factors indicate that time credit was made available to clients had moderate, positive and significant relationships with training for clients (r= 0.33; p<0.01) and the marital status of clients (r= 0.30; p<0.05), and low relationships with the age (r= 0.27; p<0.05), and level of education (r= 0.26; p<0.05) of clients, but shows a negative relationship with the type of agricultural activity clients engaged in (r= -0.35; p<0.01).

Type of agricultural activity engaged in by clients had moderate, negative and significant relationship with training for clients (r= -0.35; p<0.01), and low relationship with level of income generated when credit was used (r= -0.25; p<0.05).

Adequacy of credit had substantial, positive and significant relationships with marketing opportunities for produce (r= 0.50; p<0.01) and the wealth status of clients (r= 0.52; p<0.01), and moderate relationship with the level of income generated when credit was used (r= 0.37; p<0.01).

Training for clients had substantial, negative and significant relationship with experience of clients in agriculture (r= -0.51; p<0.01). It shows positive, moderate and significant relationships with supervision and follow up of credit allocation and use (r= 0.35; p<0.01) and the age of clients (r= 0.33; p<0.05), but low relationship with the repayment duration of credits (r= 0.25; p<0.05).

Stability in agricultural production has negative, moderate and significant relationship at 5% significance with the wealth status of clients (r= 0.30).

Marketing opportunities for produce shows substantial, positive and significant relationship with supervision and follow up of credit allocation and use (r= 0.57) and moderate relationships with the repayment duration of credit (r= 0.38) and the wealth status of clients (r= 0.44), all at 0.01 alpha level; but negative and low relationships with the experience of clients in agriculture (r= -0.25) at 0.05 alpha level.

Income generated when credit was used has positive, moderate and significant relationship with the wealth status of clients (r= 0.45; $p<0.01$).

Supervision and follow up of credit allocation and use had positive, substantially significant relationships with the repayment duration of credits (r= 0.55; $p<0.01$) and moderate relationship with the marital status of clients (r= 0.33; $p<0.01$), but negative and moderate relationships with the experience of clients in agriculture (r= -0.32; $p<0.05$).

Repayment duration of credits shows positive, low and significant relationships with the wealth status of clients (r= 0.27; $p<0.05$). Sex of clients has moderate, negative and significant relationships with the experience of clients in agriculture (r= -0.32) at 0.05 alpha level. Marital status of clients shows low, positive and significant relationships with the level of education of clients (r=0.26; $p<0.05$).

The implication for the significant relationships among the factors based on the perceptions of respondents is that each of the factors was important in improving the repayment of MOFA micro-credit. Therefore, any attention directed to time credits are made available to clients, type of agricultural activities engaged in by clients, adequacy of credit, training for credit clients, stability in agricultural production, marketing opportunities for

produce, level of income generated when credit was used, supervision and follow up of credit allocation and use, repayment duration of micro-credits, sex and marital status of clients, the same attention should be given to the corresponding significant factors for a prompt and effective repayment of MOFA micro-credits.

The coefficients of the correlation analysis indicate mostly significant relationships among all the factors except the wealth status of clients, age of clients, household size of clients, and experience of clients in agricultural enterprise. The null hypotheses which stated that there are no significant relationships among the factors influencing the repayment of MOFA micro-credits are rejected. The alternative hypotheses, which stated that there are significant relationships among the factors, are accepted.

However, there were no significant relationships between the wealth status, age, household size, and experience of clients in agriculture with the other 12 factors. These 12 factors are the time credits are made available to clients, type of agricultural activities engaged in by credit clients, adequacy of credit, training for clients, stability in agricultural production, marketing opportunities for produce, level of income generated when credit was used, supervision and follow up of credit allocation and use, repayment duration of micro-credits, sex, marital status, and level of education of clients.

Therefore, the null hypotheses which stated that there are no significant relationships between the wealth status, age and household size of clients, and experience of clients in agriculture with the other 12 factors are accepted.

Prediction Model for the Factors Influencing Repayment of MOFA Micro-credit by Clients.

For objective six, the best predictors of the repayment of MOFA micro-credits by clients were determined through the use of stepwise multiple regression analysis. The process indicates how the significantly correlated variables are analysed to produce the best predictor variables for the repayment of MOFA micro-credits.

Regression Analysis of Perceptions of MOFA Micro-credit Clients of the Factors Influencing Repayment of MOFA Micro-credits

The correlation coefficients in Table 66 presented significant relationships between all the repayment factors and the repayment of MOFA micro-credits. The results of the regression analysis show that fifteen of the variables accounted significantly for the repayment of MOFA micro-credits. The fifteen variables are stability in agricultural production, the household size of clients, the adequacy of credit, the experience of clients in agricultural enterprise, supervision and follow up of credit allocation and use, and the level of education of clients. The rest are the wealth status of clients, the age of clients, the type of agricultural activities engaged in by clients, market opportunities for produce, the time credits are made available to clients, the level of income generated when credit was used, the repayment duration for credits, the sex of clients, and training of clients.

Table 70: Stepwise Regression of the Repayment Factors on Repayment of MOFA Micro-credits by Clients

Predictors	Step of Entry	Beta	R^2	R^2 adjusted	Adj. R^2 change	SEE	F	F. Sig*
Stability	1	0.243	0.626	0.625	0.626	0.284	667.27	0.000
Household	2	0.286	0.741	0.739	0.114	0.236	175.01	0.000
Financing	3	0.177	0.824	0.823	0.083	0.195	187.25	0.000
Experience	4	0.195	0.867	0.866	0.043	0.169	128.93	0.000
Supervision	5	0.172	0.897	0.896	0.030	0.149	114.05	0.000
Education	6	0.171	0.927	0.926	0.030	0.126	160.17	0.000
Wealth	7	0.199	0.944	0.943	0.017	0.111	116.32	0.000
Age	8	0.134	0.959	0.958	0.016	0.094	149.84	0.000
Activity	9	0.166	0.972	0.971	0.013	0.078	178.04	0.000
Income	10	0.106	0.978	0.977	0.006	0.070	96.50	0.000
Timing	11	0.128	0.984	0.984	0.007	0.059	163.59	0.000
Market	12	0.115	0.989	0.988	0.004	0.050	146.38	0.000
Duration	13	0.097	0.994	0.993	0.005	0.038	295.08	0.000
Sex	14	0.056	0.997	0.997	0.004	0.024	514.56	0.000
Training	15	0.055	0.999	0.999	0.002	0.014	686.71	0.000

N= 400 Sig @ 0.05 Alpha level Source: Field Survey Data, 2009

Where;

Dependent variable (Y) is repayment of MOFA micro-credits by clients.

Independent variables:

Stability(X_5) = Stability in agricultural production.

Household (X_{15}) = Household size of clients.

Financing (X_3) = Adequacy of credit.

Experience (X_{16}) = Experience of clients in agricultural enterprise.

Supervision (X_8) = Supervision and follow up of credit allocation and use.

Education (X_{14}) = Level of education of clients.

Wealth (X_{10}) = Wealth status of clients.

Age (X_{11}) = Age of clients.

Activity (X_2) = Type of agricultural activity engaged in by clients.

Income (X_7) = Level of income generated when credit was used.

Timing (X_1) = Time credits are made available to clients.

Market (X_6) = Market opportunities for produce.

Duration (X_9) = Repayment duration for credit.

Sex (X_{12}) = Sex of clients.

Training (X_4) = Training for clients on agricultural production and business development.

The criteria for entering or dropping a variable were $F \leq 0.050$ and $F \leq 0.100$ respectively. The regression model from unstandardised Beta could be stated as follows;

$$Y = a + b_5X + b_{15}X + b_3X + b_{16}X + b_8X + b_{14}X + b_{10}X + b_{11}X + b_2X + b_7X + b_1X + b_6X + b_9X + b_{12}X + b_4X$$

Where, 0.515 is a constant and represents regression estimate,

$$Y = 0.515 + 0.114X_5 + 0.057X_{15} + 0.105X_3 + 0.064X_{16} + 0.097X_8 + 0.068X_{14} + 0.103X_{10} + 0.072X_{11} + 0.082X_2 + 0.063X_7 + 0.64X_1 + 0.060X_6 + 0.073X_9 + 0.63X_{12} + 0.062X_4$$

When, $\beta_5 = \beta_{15} = \beta_3 = \beta_{16} = \beta_8 = \beta_{14} = \beta_{10} = \beta_{11} = \beta_2 = \beta_7 = \beta_1 = \beta_6 = \beta_9 = \beta_{12} = \beta_4 = 0$

The results show the 15 variables together accounting for a total of 99.9 percent of all the variance in MOFA micro-credit clients' perceptions of the repayment factors on the repayment of MOFA micro-credits, as shown in

the "Adjusted R^2" in Table 70. This means that the perceptions of MOFA micro-credit clients on the factors influencing the repayment of MOFA micro-credits could be explained by the perceptions clients hold about the 15 factors. All the variables conformed to theoretical expectations. The R^2 of 99.9 percent was high compared to 36 percent reported by Oke et al. (2007) for micro-credit repayment among farmer clients of NGOs in Southwestern Nigeria.

The overall best predictor, stability in agricultural production, accounted for 62.6 percent of the variance in clients' perception of the factors influencing the repayment of MOFA micro-credits. The coefficient for this variable is positive and significant. This shows that clients that have stable conditions during production will have higher probability to repay the credits as compared to those clients who will not experience stability in production. Akinleye et al. (2005) in his view said that reasons adduced to the absence of factors that stabilize agricultural production may lead to increasing incidence of low credit repayment rates. Factors that accounted for the poor repayment performance reported by Kashuliza (1993) are unfavourable weather and disasters like floods, drought, bush fires, pests and diseases outbreak and storms at sea. Bhatt (1994) identified crop loss, high cost of cultivation, non availability of real inputs to be responsible for poor credit repayment performance.

The result implies that availability and accessibility of agricultural resources such as land, labour, houses, breeding stocks, feeds, drugs, tools and equipment for animal production, canoe and other fishing resources, agro processing machinery and materials, and crop inputs such as planting materials, fertilizers, insecticides, weedicides, fungicides, machinery and

equipment become keen in decisions of agricultural producers. Securing production credits early enough provides the agricultural producer adequate time to take decisions on allocation and utilization of the credits to meet the season and at the end derive adequate yields. Fertile soils, dense and able to carry any agricultural commodity are essentials for decisions that lead to improvement in production. The advice to government and land owners is that complex and uncertain land tenure systems that hamper private investment in agriculture should be addressed, as directed by (Goldstein et al., 2008), and (Besley, 1995). Since credit is critical for investment in agricultural production, government intervention is to guarantee that credit is available and affordable. There is the realization that the stability in agricultural production can lead to high production and with favourable market conditions enough income can be generated for higher credit repayment rate as proposed by (Akinleye et al., 2005).

The second and third best predictors were household size of clients and adequacy of credits accounted for 11.4 percent and 8.3 percent respectively of the variance. The results of the study show the variable household size of clients to be positive and significant. This implies that the probability to repay credit is higher for households with smaller size than the larger sized households. The reason can be based on Gyekye (1989) which states that an individual with a large family size will have greater financial responsibility. Based on the observation of Phutrakul (1997) that the use of loans for other activities like welfare activities was highest among individual borrowers with high non-working age family members, it will be prudent for MOFA to target farm households with less family size with micro-credit financing. The

tendency and temptation to utilize part of the credit facility to attend to the family needs will be less for an individual and is possible to increase credit repayment by 11.4 percent. A case in point is given by Cowdhury et al. (1998), who explored the relationship between characteristics of women and patterns of loan utilization and repayment, and found that women with smaller families had highest loan utilization and repayment.

The coefficient for the variable adequacy of credit is positive and significant. The results suggest that in terms of amount of credit, the higher the credit amount, the higher the probability of credit repayment by clients. Based on the study of MOFA micro-credit repayment, significant portion of the borrowers indicate that the amount of credit given are small and insufficient, which resulted in their inability to generate enough income to repay credits. The 8.3 percent variance accounted for by adequacy of credits indicates that credit repayment will be higher when clients are supplied with adequate credit. The result supports the finding by Atengdem (2002), Njoku (1986) and Ojo (1986), who mentioned that the increasing incidence of loan default is directly related to lending to farmers with receipt of inadequate or excessive loans. Similarly, results of the regression analysis by Oke et al. (2007), Bassem (2006), and Oni (1999) show that loan repayment is significantly influenced by the loan size.

This situation implies that when a comprehensive programme is instituted by MOFA to improve upon the level of credit financing by involving credit users in decisions that affect credit sourcing, packaging, and delivery, clients could use the credits for the purpose it was meant for, undertake all activities required, attract the right markets, and obtain competitive and

optimal market prices for produce. Higher cost of production as a result of multiplicity of credit sources, at times become unbearable to clients, who are most often tempted to divert credits, especially cash, into non-agricultural activities or sell credits to obtain cash to be used for a different purpose. Adequate credit with favourable transaction costs, interest rates, low to moderate general cost of production and flexibility in agreements create that congenial atmosphere to allow clients to focus on the implementation of activities that could lead to achievement of objectives and consequently generation of enough income to repay credits. Based on the suggestion by Bhatt (1994), MOFA should have a lower limit to the amount of credit lend which should be calculated carefully, so that it is not too high as to exclude the people it set out to serve, yet not too high as to attract people who may not be able to repay.

The fourth best predictor being experience of clients in agriculture accounted for 4.3 percent of variance in explaining the repayment of MOFA credits. Results of the regression analysis support the finding by Bassem (2006), which indicates that loan repayment is significantly influenced by work experience of borrower. The result also relates with findings by Brynes (1978), who further added that farmers with adequate experience are generally more venturesome and receptive to call for change and willing to accept risk. The implication is that agricultural producers with more experience are most often acclimatized to production conditions prevailing at the area of production and can readily adjust to any unsuitable conditions. It is therefore possible to obtain good returns from production under unpredicted conditions.

In Table 70, the fifth best predictor, which accounted for 3.0 percent of variance in MOFA micro-credit repayment, was supervision and follow up of credit allocation and use as shown in step four of the point of entry and was directly related to MOFA micro-credit repayment. Similarly, reports by Goswami and Gogoi (1996), Bhatt (1994) and Swaminathan (1990) show that the shortcomings of credit programmes are lack of supervision and follow-up actions. This observation implies that the probability to repay credit is higher for clients who had supervision and follow up during credit allocation and use. Regular supervision and follow up on credit allocation and use is deemed necessary. Reasons include to be sure that clients adopted modern technologies in production, to be sure that clients use knowledge and skills in business development, to be sure that clients established links with financial institutions, and to advice, direct and encourage clients in their activities are relevant for effective and efficient credit allocation and use. Experience among micro-credit programmes has shown that close supervision of field staff by management is important, especially at the outset. This increases the morale among both field staff as well as borrowers (Yunus, 2006; Morshed, 1997). The consequence is the generation of enough income, and the subsequent allocation of monies to repay credits.

The sixth best predictor is the perceived level of education of clients, and the seventh predictor being the wealth status of clients, which accounted for only 3.0 percent and 1.7 percent respectively in explaining the variance in responses of micro-credit clients on the repayment of MOFA micro-credits. The coefficient for the variable level of education is positive and significant. This gives an indication that the probability to repay credit is for clients with

formal education. It has been documented that the personal characteristics of a farmer client in terms of education can influence whether or not a farmer will efficiently use credit to generate enough income to pay back credit (Colman et al., 1995). Farmers with higher levels of formal education are generally more venturesome and receptive to call for change and willing to accept risk. Therefore, credit facility that targets agricultural producers with a certain level of formal education assures that credit would be used efficiently to generate sufficient income to repay credit.

The wealth status of clients was positively related to MOFA micro-credit repayment. The result is similar to the result by Bassem (2006). This implies that the worthier the clients, the easier it is to repay MOFA micro-credit. Wealth status increases the rate of micro-credit repayment by clients in the area by1.7 percent. The implication is that the ownership of certain valuable properties shows the wealth status of an individual. These properties serve as collateral, whereby a micro-credit client can fall on in times of difficulty in raising monies to settle debt. Worthy clients most often readily accept modern production technologies that can improve their lot. They most often increase the level of production and generate more incomes, with the possibility of having reserves to pay for credit contracted. MOFA should therefore consider the recommendation made by Zeller, Wollni & Shaban (2002), and Henry et al. (2001) that comprehensive assessment be done on the wealth status of the target groups so that credit package and repayment conditions reconcile with the poverty status of target group.

The eighth best predictor was the age of clients, which accounted for 1.6 percent of the variance. The result support Bassem (2006) finding, which

revealed that loan repayment is significantly influenced by customer's age. For age, the findings by Brynes (1978) that young farmers are generally more venturesome and receptive to call for change and willing to accept risk while old people are conservative, localize and feel insecure sourcing and using innovations including credits because decisions they take do not affect them only but also their entire family are relevant. It has become necessary to target people in productive ages for micro-credit financing to improve the effectiveness of repayment.

The ninth best predictor is types of agricultural activities engaged in by micro-credit clients. This supports the results of Bassem's (2006) study, which revealed that loan repayment was significantly influenced by sector of activity. The coefficient of 0.68 is positive and significant. This situation means that an additional credit obtained will raise the repayment rate by 1.3 percent. Thus, more credit to clients for the productive agricultural enterprise will increase their productivity. The implication of the variable is that certain types of agricultural activities generate higher incomes than others. It is imperative to identify and put credits into these lucrative agricultural activity types. For example, Swaminathan (1990), in a survey in Bankura District and Onda Block, found that with the same amount of credit allocated to different agricultural enterprise, agricultural activities such as goat rearing and rice processing generated minimum income (less than Rs. 2000 annually) while fisheries, poultry farming and betel-vine cultivation generated relatively higher income (more than Rs. 4500 annually). The immediate policy direction of the Ministry of Food and Agriculture is a universal food security with a thought of improvement in incomes of farm families. One of the strategies to

achieve this objective is to strengthen the production activities of agricultural producers through the provision of credits. Activities such as crop production, animal rearing, fishing, and agro-processing are seen as lucrative agricultural business ventures to be considered.

Table 70 shows that the rest of the predictor variables, which accounted for only 0.6, 0.7, 0.4, 0.5, 0.4 and 0.2 percentages in the prediction were the level of income generated when credit was used, time credits are made available to clients, market opportunities for produce, repayment duration for credits, sex of clients and training for clients respectively. The positive value of 0.59 indicates a direct relationship between repayment and income of clients. This support findings by Oke et al. (2007), Chirwa (1997), MacIsaac (1996), and Bhatt (1994) which added that insufficient income generation contributes to low agricultural credit repayment. In the study, an increase in income of clients will increase repayment rate by 0.6 percent. Zeller et al. (2002), therefore, advise micro-credit clients to control consumption expenditure to allow for the availability of enough money for credit repayment, re-investment and further investment in other businesses.

The variable of the time credits are made available to clients was directly related to MOFA micro-credit repayment. Timely disbursement of credit increases the ability of clients to repay such loans and increases repayment rate by 0.7 percent. This conformed to the findings by Oke et al. (2007), Olomola (2001), and Oni (1999) that timely credit disbursement decreases delinquency in borrowers and increases repayment rate. Therefore, MOFA should take the advice of Akinleye et al. (2005) seriously to make the efforts to grant agricultural credits at the appropriate time to farmers who met

the conditions. Late release of credit to a farmer leads to credit diversion and misuse which has been established to be a major cause of poor credit repayment.

The coefficient for the variable market opportunities for agricultural produce is positive and significant at 0.01 alpha level. Studies by Oke et al. (2007), Chirwa (1997), and Kashuliza (1993) also show that marketing opportunities such as availability of market information and demand for products significantly influence repayment of micro-credits. The findings of Bhatt (1994) also support the result of the study that market fluctuations as a factor influences credit repayment. Market opportunities for produce, which involves availability of market information to clients on market conditions and pricing, favourable market outlets and market situations as well as when excess produce is stored and sold when prices for produce are relatively high are significant in providing enough income to clients. The results suggest that the availability of these market opportunities can lead to higher credit repayment within the credit repayment period.

The repayment duration for credits was directly related to MOFA micro-credit repayment as supported by the findings by Bassem (2006) and Ojo (1986). This gives an indication that the probability to repay is higher when credit repayment period is relatively longer. This observation supports the argument by Ledgerwood (1999) that cash flow in part determines the debt-servicing capacity of borrowers. For a shorter repayment period, produce from credit use may not be ready. This affects the generation of income to repay credit. However, repayment period that is longer than the project's business cycle can be detrimental. A borrower might be tempted to spend the

higher net income in the early months of the credit resulting in potential difficulty making credit repayment during the later months. Collective decisions by MOFA and clients on extending repayment durations based on the production period of a particular commodity can increase credit repayment by 0.5 percent.

For sex of clients, the correlation coefficient indicates a positive and significant relationship in favour of male clients. The finding did not conform to theoretical expectations that females mostly dominates in agricultural credit repayment (ADB, 2005; Adeyeye, 2003; Olomola, 2001; ADB, 2000; Adebayo, 1997; UNCDF, 1997).

The variable of training of clients was directly related to credit repayment. This finding supports the results of a study by Roslan et al. (2009), which mentioned that the probability for good credit repayment performance is influenced by the training of the borrowers on all that it takes to utilize credit efficiently. In the present study, having access to business related information will increase clients' loan repayment rate by 0.2 percent. Based on the findings by Yunus (2006), Iddrisu (2001), Freedom from Hunger (1998), OECD (1998), and Morshed (1997), it is suggested that MOFA organize regular technical training for the staff to train the clients, both initially and in stages over time. Training should include diverse topics such as time management, marketing, bookkeeping, business planning, credit use and management, and life improvement. This will enable the clients to utilize the micro-credit provided appropriately for increased productivity and consequently ensure prompt credit repayment.

The estimate of the average prediction error, the Standard Error of Estimate for the individual predictors, showed relatively high accuracy of prediction in the regression model.

Regression Analysis of Perceptions of AEAs about the Factors Influencing Repayment of MOFA Micro-credits by Clients

The criteria for entering or dropping a variable were F≤ 0.050 and F≤ 0.100 respectively. The regression model from unstandardised Beta could be stated as follows;

$Y = a + b_{10}X + b_{15}X + b_3X + b_4X + b_2X + b_{12}X + b_7X + b_1X + b_{11}X + b_9X$

Where 0.130 is a constant and represents regression estimate,

$Y = 1.141 + 0.088X_{10} + 0.077X_{15} + 0.080X_3 + 0.059X_4 + 0.075X_2 + 0.084X_{12} + 0.071X_7 + 0.068X_1 + 0.038X_{11} + 0.063X_9$

When, $\beta_{10} = \beta_{15} = \beta_3 = \beta_4 = \beta_2 = \beta_{12} = \beta_7 = \beta_1 = \beta_{11} = \beta_9 = 0$

Empirical results of the micro-credit repayment model based on AEAs perceptions in Table 71 shows the 10 variables that went into the micro-credit repayment regression. The F-value (15.96) was highly significant (p = 0.00), implying that the model was a good fit. The adjusted R^2 was 0.896 which implies that the variables in the model were able to explain 89.6 percent of the variability in MOFA micro-credit repayment. This R^2 was high compared to 20 percent reported by Oni (1999) for loan repayment among the smallholder clients of Nigerian Agricultural and Co-operative Bank and the Union Bank of Nigeria in Osun State.

Table 71: Stepwise Regression of the Repayment Factors on the Repayment of MOFA Micro-credits by Clients

Predictors	Step of Entry	Beta	R^2	R^2 adjusted	Adj. R^2 change	SEE	F	F. Sig*
Wealth	1	0.237	0.352	0.341	0.352	0.103	31.50	0.000
Household	2	0.246	0.485	0.467	0.133	0.092	14.76	0.000
Financing	3	0.295	0.579	0.556	0.093	0.084	12.40	0.000
Training	4	0.135	0.646	0.620	0.068	0.078	10.50	0.000
Activity	5	0.452	0.740	0.716	0.094	0.067	19.52	0.000
Sex	6	0.199	0.789	0.765	0.049	0.061	12.19	0.000
Income	7	0.201	0.818	0.794	0.029	0.057	8.42	0.000
Timing	8	0.372	0.846	0.821	0.027	0.053	9.06	0.000
Age	9	0.272	0.885	0.865	0.040	0.046	17.37	0.000
Duration	10	0.190	0.914	0.896	0.028	0.040	15.96	0.000

N= 60 Sig @ 0.05 Alpha level Source: Field Survey Data, 2009

Where;

Dependent variable (Y) is repayment of MOFA micro-credits by clients.

Independent variables:

Wealth (X_{10}) = Wealth status of clients.

Household (X_{15}) = Household size of clients.

Financing (X_3) = Adequacy of credit.

Training (X_4) = Training for micro-credit clients in agricultural production and business development.

Activity (X_2) = Type of agricultural activities engaged in by clients.

Sex (X_{12}) = Sex of clients

Income (X_7) = Income generated when credit was used.

Timing (X_1) = Time credits are made available to clients.

Age (X_{11}) = Age of clients.

Duration (X_9) = Repayment duration of credit.

The 10 variables were significant (p = 0.01). They are the wealth status, and household size of clients, adequacy of credit, training for micro-credit clients, type of agricultural activities engaged in by clients, sex of clients, income generated when credit was used, time credit made available to clients, age of clients, and repayment duration of credits.

The first overall best predictor which accounted for 35.2 percent explanation in the repayment of MOFA micro-credits was the wealth status of clients, as shown in Table 71. The coefficient for the variable wealth status of clients is positive and significant at 0.01 alpha level. The result suggest that the higher the wealth status, the higher the probability of credit repayment within the credit repayment period. The second best predictor was the household size of clients, and it accounted for 13.3 percent of variation. The coefficient of 0.28 is positive and significant at 0.05 alpha level. The result shows that the probability for credit repayment is influenced by the household size of clients. Therefore, the smaller the household size, the higher the credit repayment rate.

Adequacy of credit accounted for 9.3 percent of variance and is thus positively related to repayment. The coefficient implies that increase levels of credit will increase repayment rate by 1.29 per cent. The implication is that MOFA staff should consider screening clients for readiness to invest micro-credit in agriculture before granting their application. This result is an

indication of profitable use of micro-credit by clients. Therefore, MOFA should consider raising the current level of micro-credits given to their clients in the area so as to increase their business investment.

In Table 71, the fourth variable, training for micro-credit clients, accounted for 6.8 percent of the variance in the repayment of MOFA micro-credits. The coefficient of the training variable is positive and significant. This shows that clients who have training in relation to their business activity will have higher probability to repay credits compared to those clients who have no training. The provision of training together with the credits by MOFA can positively affects credit repayment. The fifth variable, the type of agricultural activities engaged in by clients accounted for 9.4 percent. The result suggest that in terms of type of agricultural activity clients engaged in, the more lucrative the activity, the higher the probability of credit repayment.

The sixth variable, sex of clients accounted for 4.9 percent of the variance. The result of the study shows the variable to be positive and significant at 0.05 alpha level. This implies that the probability to improve credit repayment performance is higher for male than for the female clients. The result is in variance with findings by ADB (2005), Amoah (2004), Siameh (2004), Adeyeye (2003), Olomola (2001), ADB (2000), Adebayo (1997), and UNCDF (1997), which indicate that female clients of microfinance improve on their credit repayment rate more than the male counterparts. Income generated when credit was used, the seventh variable, accounted for 2.9 percent of the variance in MOFA credit repayment. The result shows that the probability to repay credit is higher for clients who generated higher incomes from sale of agricultural produce.

The eighth, ninth and tenth best variables were the time credit was made available to clients, age of clients, and the repayment duration of credits, which accounted for 2.7 percent, 4.0 percent and 2.8 percent respectively. The implication is that these factors directly affect micro-credit repayment and attention paid to them consequently can improve MOFA micro-credit repayment.

Repayment Model Suitable for MOFA Micro-credit Repayment in the Central Region

For objective seven, a model was designed suitable for Ministry of Food and Agriculture micro-credit repayment in the Central Region of Ghana. The issues in the model are systematically arranged based on credit packaging, delivery, allocation, and utilization for prompt repayment as follows:

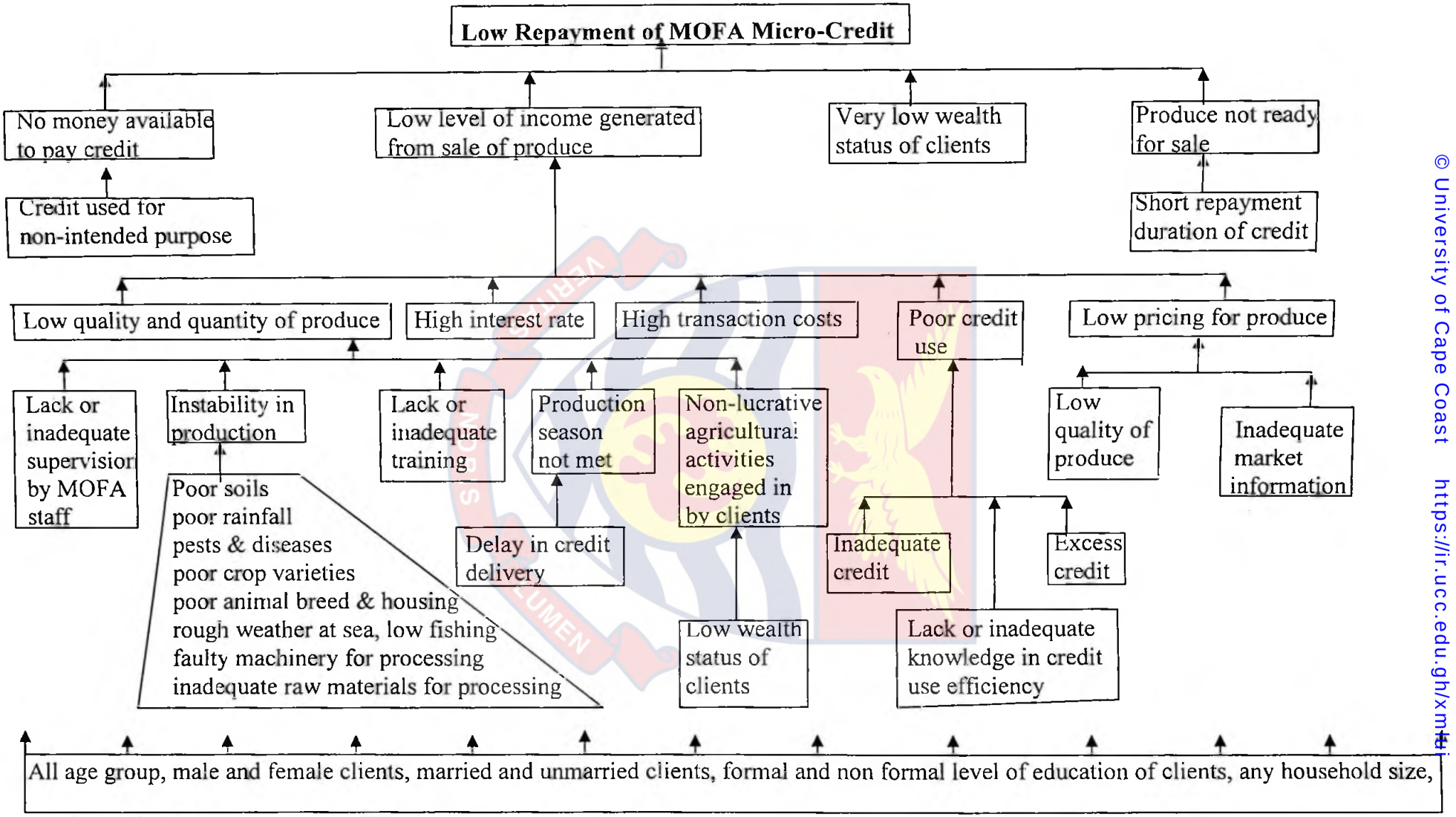
1. Application of problem tree in MOFA micro-credit repayment.
2. Application of solution tree in MOFA micro-credit repayment.
3. Inputs-transformation-output process in MOFA micro-credit repayment.

Introduction to Development of a Model for MOFA Micro-credit Repayment

Figures 3, 4 and 5 show the processes considered in developing a repayment model for MOFA micro-credit repayment in the Central Region.

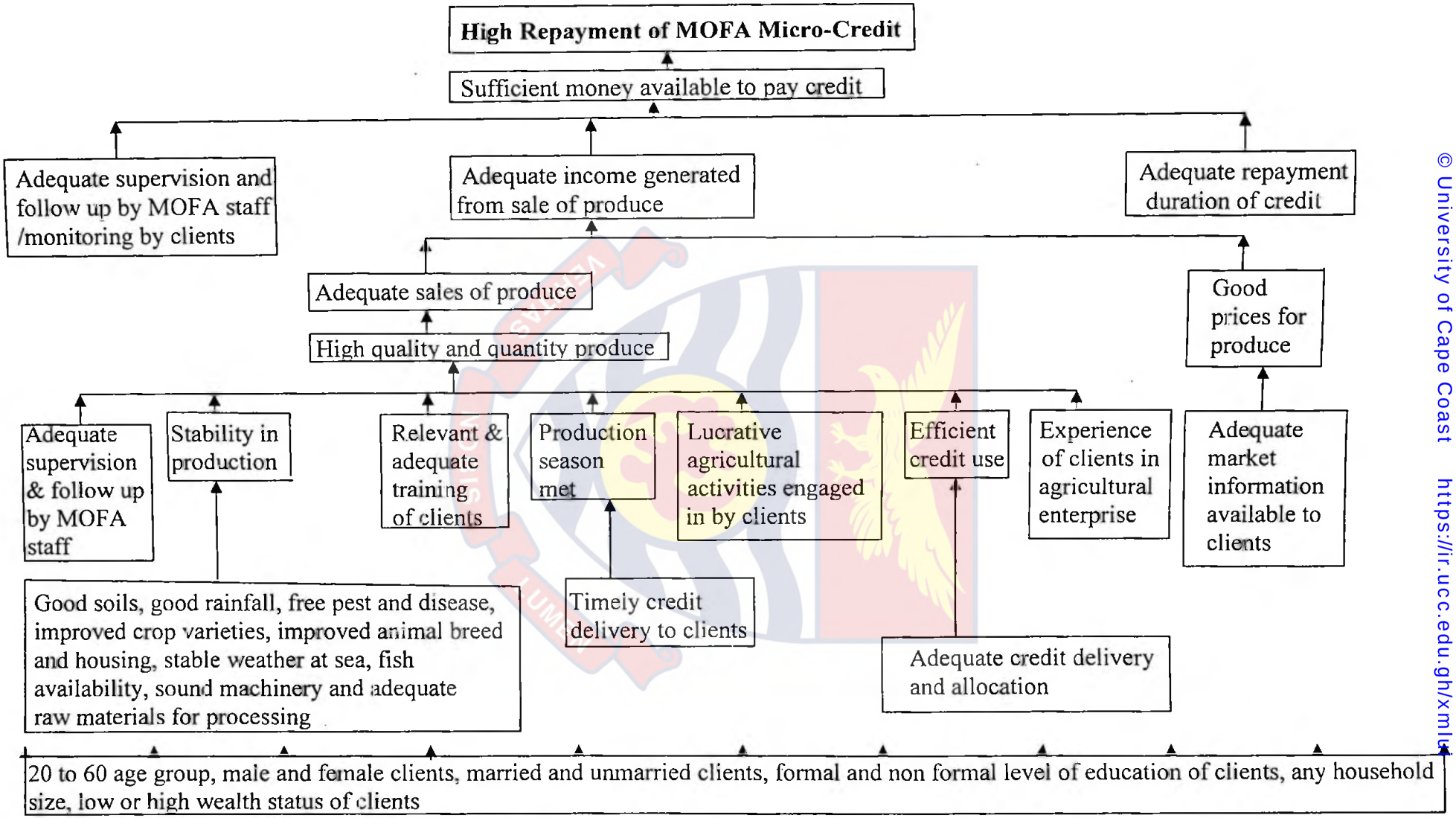
The results of the field survey provided suggestions from MOFA micro-credit clients and AEAs on measures to be taken to encourage the repayment of credits by clients. Also, findings from Roslan et al. (2009), Goldstein et al. (2008), Oke et al. (2007), Bassem (2006), Yunus (2006),

Akinyele et al. (2005), Zeller et al. (2002), Iddrisu (2001), Olomola (2001), Oni (1999), OECD (1998), Chirwa (1997), Morshed (1997), Phutrakul (1997), Aryeetey (1996), Bhatt (1994), Schmidt et al. (1994), Kashuliza (1993), Atengdem (1991), Gyekye (1989), Njoku (1986), Ojo (1986), Morss et al. (1975), and countries where micro-credit recovery were evaluated based on factors that favour prompt repayments had been adopted. These sources formed the basis for the model considered appropriate for packaging, delivery, allocation, utilization and possibly high repayment of MOFA micro-credits by clients.



Source: Author's Own Construct, 2009

Figure 3: Problem Tree for Low Repayment of MOFA Micro-credits in the Central Region



Source: Author's Own Construct, 2009

Figure 4: Solution Tree for High Repayment of MOFA Micro-credits in the Central Region

INPUTS	TRANSFORMATION	OUTPUTS
Funds; crop production inputs such as planting materials, weedicides, insecticides, fungicides, fertilizers, cutlass, and hoe. Animal production inputs including feeding and watering troughs, feed, drugs, vaccines, medications, breeds of animals, housing for animals. Fisheries inputs are fishing nets and outboard motors, fingerlings. Agro processing facilities including equipment, housing and raw materials for processing. Male and female of age 20-60 years, married and unmarried with no formal or formal education, with experience in agriculture, of any household size with low to high wealth status.	Timely delivery of credit, use credit for fruitful agricultural production type, stability in agricultural production, reduction in cost of agricultural production, training of clients on skills in agricultural production and business development. Also, there should be regular and effective credit use supervision and follow up, information sharing among clients, marketing opportunities and stability in market fluctuation. Adequate repayment duration of credit to allow clients sell produce before repayment, credit managers should go round to demand for credit repayment.	-High income generated from sale of produce. Sufficient money available for credit repayment. -High yield and quality produce for in-kind repayment of credit.

Source: Author's Own Construct, 2009

Figure 5: Input-Transformation-Output Process of the Model for Repayment of MOFA Micro-credits by Clients

Application of Problem and Solution Trees in MOFA Micro-credit Repayment

Farmers take a number of sequential decisions in accessing, allocating, using and repaying of credits. These include the content and size of credit, where credit is coming from, transaction and interest rate conditions, time of credit delivery and means of delivery, credit outcome and repayment conditions, and other support system attached to credit usage.

Three ways were considered in dealing with the repayment model. First, a problem tree on low repayment of MOFA micro-credit was defined. It started with several micro-credit repayment problems at the tips of several branches and end up in the root of the tree, the bigger problem of low MOFA micro-credit repayment. The second decision emerged when alternative solutions were required for solving the identified problems. The tips of several branches provided these solutions, which solved the immediate bigger problems until the core solution to the bigger problem embedded in the root was resolved. The third, but final step is when an input-transformation-output process was developed and used to indicate the effective and efficient means through which appropriate MOFA micro-credit could be allocated and used for prompt repayment.

Discussions on Problem Tree in MOFA Micro-credit Repayment

ISSER (2002) mentioned that agriculture is the economic stay of Ghana, and is the single sector with the highest employment: it has created jobs to more than 50% of the population. The majority of these agricultural producers are small-scale producers, who are using limited resources and low

technologies to produce at low yields of low quality (MOFA, 2005). The returns are most often low incomes. The low wealth status of most agricultural producers inevitably left them to engage in and use credit for non-lucrative types of agricultural activities (Gyekye, 1989).

For all categories of agricultural producers, delays in delivery of credits, in support of findings by Oke et al. (2007), Olomola (2001), and Oni (1999), is the initial draw back in meeting production seasons since agricultural production, particularly crop production, is generally seasonal. Lack of or inadequate training needs in production and business management, which were mentioned by Roslan et al. (2009) and Iddrisu (2001), as well as irregular and ineffective supervision and follow up regimes, as indicated by Bhatt (1994), on credit allocation and use are panacea for credit misallocation and misuse. Also, the singular or collective effects of poor soils, poor rainfall, pests and diseases, poor quality crop varieties and breeds of animals, poor housing for animals, rough weather at sea and depletion of fishes in the water bodies, faulty machinery for processing, and inadequate raw materials for processing contribute to instabilities in production (Kashuliza, 1993). The effects of these conditions are failure in production or low quality and or quantity of commodities produced as mentioned in (Akinleye et al., 2005; Bhatt, 1994).

The quest for more credits stemming from the thinking that multiple financing or over-financing can lead to more yields and more incomes to the client is at times not feasible. The capacity of poor agricultural producer improves gradually over time to match with increase in credit volume advanced them. Also, the supply of inadequate credit to clients will undermine

the effort of achieving high yields and incomes. The likely consequences include using credits for unintended purposes such as food, acquisition of household items, marriage, funerals and other social engagements (Oke et al., 2007; Bassem, 2006; Phutrakul, 1997; Njoku, 1986; Ojo, 1986). High interest rates charged on credit coupled with unbearable transaction cost imposed on credits are unfavourable credit conditions (Schmidt et al., 1994; Morss et al., 1975). Inadequate market information to client for informed decisions to be made on marketing and pricing of produce with unforeseen low product quality paved the ways for low prices to be tagged to produce due to low demands.

These undesirable actions, conditions and processes lead to low levels of income generated from sales of produce. Meanwhile, situations where produce are not ready for sale, but the repayment period is long overdue, and also when credit was used for unintended purposes mean no money is generated to repay credits. The end effect is no credit repayment or low repayment of MOFA micro-credit.

Discussions on Solution Tree and Inputs-Transformation-Output Process in MOFA Micro-credit Repayment

For crop production, it has been accepted that adequate micro-credit include improved planting materials, appropriate fertilizers, appropriate weedicides, insecticides and fungicides, and hoe and cutlass as well as fund to engage labour. The input requirement for animal production in general are feeding and watering troughs, feeds, drugs, vaccines and other medications, breeds of animals, housing for animals, and cutlass as well as cash to pay for

labour. The fishing sector covers fish farming and marine fishing. The resources suitable for economically viable fish farming covers funds for construction of fish ponds, lime for lining the bottom of ponds, fingerlings, feeds, cutlass, and cash for maintenance. The marine fishing will need fishing nets and outboard motors. Credit for agro-processing covers housing, small-scale processing machinery and equipment as well as raw materials.

The various types of agricultural production mentioned require availability of information on agricultural micro-credit sourcing. Credits are assigned to fruitful agricultural production activities. A basic example is assigning maize credit or livestock credit to maize or livestock production respectively. Others are assigning fisheries credit and agro-processing credit to fisheries and agro-processing respectively. It is assumed that the main criterion for micro-credit provision for agricultural producers is the low wealth status. Some are poor, and the poorest of the poor engage in farming as a means of livelihood (Ghana Statistical Service, 2006). For these reasons MOFA must direct support to these categories of farmers through advancing credits with flexible conditions including no or low transaction cost, low or no interest charged, and agreed terms in repayment duration. This supports finding by Zeller et al. (2002), which advice lending institutions, especially those concerned with poverty intervention programmes to minimize their transaction costs and interest rates on credit advanced to the resource poor clients.

Information on credit duration made available to clients is very important in influencing decisions on credit acceptance, utilization and probably repayment. Agricultural production, especially crop production, by

relying on rainfall, is seasonal and crops take some periods of time to reach maturity for harvest. Marine fishing reaches its climax between June and October, when there is abundant fish. Fish farming and animal production take a very long period to be matured and ready for the market. Based on the repayment remedial measures suggested by Ojo (1986), credit repayment periods that consider the length of time it takes to produce an agricultural commodity and is well understood and agreed upon by the clients can enable clients to repay credit within the agreed repayment duration.

It has been mentioned earlier that the production of agricultural commodities like crops (cereals, legumes, vegetables, some roots and tubers) and marine fishing are seasonal (MOFA, 2005). Crop production in the Central Region is rainfall dependent. The season spans from April to July. Any delay in delivery of credit inputs can lead to crop failure since it is likely that the rains may cease before the crop reaches the critical stage in development. Based on the findings by Oke et al. (2007), Akinleye et al. (2005), Olomola (2001), and Oni (1999), supply of inputs in time enables farmers to meet the beginning of the rains such that by the time the rains cease, the crops might have reached maturity.

For agriculture production to be stable, consideration should be made to favourable rainfall intensity and distribution, adequate fish resources, suitable soils for particular plant, effective control of pests and diseases, use of improved crop varieties and breeds of animals, and improved housing for animals (Bhatt, 1994; Kashuliza, 1993). Other production conditions include stable weather at sea, favourable land tenure arrangements as stated by Goldstein et al. (2008), accessibility and availability of various agricultural

inputs, good machinery for agro processing, favourable conditions attached to credits and favourable market outlets and market situations. All these factors mentioned and other specific ones in the right combinations allow for stability in agricultural production. Availability of market information to clients on market conditions and pricing, as well as when excess produce is stored and sold when prices for produce are relatively high are significant in providing enough income to clients, as reported by (Oke et al., 2007; Chirwa, 1997; Kashuliza, 1993).

In relation with the results from studies by Yunus (2006) and Morshed (1997), trainings for clients to acquire knowledge and skills in the type of agricultural production they planned to invest in, and for consideration of the enterprise as a full business to generate needed incomes to improve standard of living is called for. Such trainings are expected to be organized before production starts and continue through the production periods based on what is done at a particular time. These training sessions can be organized by the staff of MOFA or specialized organizatiosn or institutions contracted for the technical nature of the training topics as suggested by (OECD, 1998).

Based on findings by Yunus (2006), Morshed (1997), Aryeetey (1996), and Bhatt (1994), timely and adequate supervision and follow up of credit allocation and use by Agricultural Extension Workers can contribute to efficient micro-credit repayment. Timely and adequate internal supervision of credit allocation, use and repayment by clients can increase confidence in repayment. Adequate monitoring and supervision of clients' credit repayment history records can provide informed decision on credit worthiness of clients hence subsequent credit repayment. Supervision and follow up targeted

towards clients adoption of modern technologies in production; clients' use of knowledge and skills obtained from training in business development; ensuring that clients establish links with other input suppliers, processors or potential markets; and to advice, direct and encourage clients on their activities are necessary. Information exchange among clients should be encouraged.

Both male and female, as well as married and unmarried agricultural producers with different levels of education and in different age groups and wealth status with different household size are capable of accessing and repaying micro-credits provided credit was used for the intended purpose and utilized effectively. However, sufficiency in incomes should be able to settle all costs associated with production including cost of credits and is expected that excess incomes could be available for household use and for further investments into agriculture production. In order not to compel clients to travel long distances to settle debts, it is absolutely necessary to request the MOFA staff to intensify visits to clients and demand repayment of credit when the repayment time is due.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The study was carried out to identify factors that influence the repayment of MOFA micro-credit by agricultural producers in the Central Region of Ghana. This concluding chapter gives a summary of the report of the study, draws conclusions, and makes recommendations for MOFA, other institutions and organizations into agricultural micro-credit financing, as well as beneficiaries of the micro-credits.

Summary of the Study

The first chapter provided an introductory overview of the study. It covered the background of the study, which outlined the roles of agriculture in the economy of Ghana and the range of constraints of the sector. The chapter also looked at the introduction of micro-credit to the economy as a tool of rural development through the development of micro enterprises, and the role played by formal credit institutions and informal lending system. The statement of the problem showed the enormous injection of agricultural micro-credit by MOFA with the expectant growth in the food and agricultural sector. However, the sector still remains underdeveloped. Most of the clients failed to fully pay back credits or loans granted them by MOFA.

The chapter also covered the main and specific objectives of the study. The main objective was to examine the factors influencing repayment of MOFA micro-credits by agricultural producers in the Central Region of Ghana. The specific objectives specifically sought to:

1. examine the demographic and socio-economic characteristics of MOFA micro-credit clients on the repayment of MOFA micro-credit by clients in the Central Region. The characteristics are based on age, sex, marital status, level of education, household size, wealth status, type of agricultural activity engaged in and experience in agricultural enterprise.
2. investigate MOFA micro-credit sourcing, packaging, delivery, allocation, utilization, and repayment conditions on the repayment of the credits by clients in the Central Region.
3. measure the repayment of MOFA micro-credits based on the percentage of repayments made by clients in the Central Region.
4. identify the factors influencing the repayment of MOFA micro-credits by clients in the Central Region.
5. examine the relationships between the factors influencing repayment of MOFA micro-credits by clients in the Central Region.
6. determine the best predictors of the repayment of MOFA micro-credits by clients in the Central Region.
7. design a suitable model for the repayment of MOFA micro-credits in the Central Region.

Research questions based on the objectives of the study and hypotheses based on the variables for the study were stated.

Chapter two provides a review of literature related to the research topic and discusses the conceptual framework for the study. In chapter three, it was indicated that a descriptive-correlational survey research design was used for the study. The chapter gives a brief description of the proposed study area, the Central Region, where all the MOFA micro-credit clients have been considered as the population for the study. The sample for the study was made up of 400 micro-credit clients and 60 MOFA AEAs selected from 10 districts in the region. A multi-stage random sampling was used to obtain the samples. Validated interview schedules and questionnaires containing structured and semi-structured questions were used to collect data. Completed interview schedules and questionnaires were screened and coded. Data were entered into a computer and analysed using SPSS, based on the objectives of the study.

The statistical analyses employed included descriptive statistics indicating frequencies, percentages, means and standard deviations of the distribution of respondents. Chi square was also used to describe the rate of the repayment of credit based on specific characteristics. Relationships between the repayment factors and the repayment of MOFA micro-credit by clients were determined by correlation techniques and regression analyses.

Chapter four focuses on a detailed presentation of the results obtained from the data analysis. The discussion was based on the objectives and hypotheses outlined for the study.

Summary of Main Findings

Chapter four contains the results of the study as follows, the Chi-square tests indicated that there were significant ($p = 0.00$) differences

between male and female as well as married and unmarried clients on the repayment of MOFA micro-credits. However, the overall number of clients who had fully paid for credit was less than 30% for both males and females. Married respondents were 372 and unmarried respondents were 28. The results show that only 28.2% married and 25% unmarried clients had made full repayment of MOFA micro-credits. The null hypotheses which stated that there are no significant differences between male and female clients and married and unmarried clients on the rate of the repayment of MOFA micro-credit are therefore rejected and the alternative hypotheses are accepted.

Chi-square tests at 5% level of significance showed that there were significant (P =0.00) differences in the repayment of MOFA micro-credit and the following demographic and socio-economic characteristics of clients: age, level of education, size of clients household, cost of household's yearly feeding, household's yearly clothing, and ownership of houses. Others were size of agricultural enterprise owned, type of agricultural activities engaged in by clients and the experience of clients in agricultural enterprise.

The dominant age group in the distribution was 41-50 years. The number of clients who made full repayment on credits for all the age groups was less than 40%. Clients with formal education sourced for MOFA credits more than those without formal education. The mode of the household size was about 6 persons. Crop farming was the dominant agricultural enterprise engaged in by the majority (72.8%) of respondents. The respondents generally spent mostly 6-10 years, 11-15 years, and 16-20 years in agricultural activities.

The null hypotheses which stated that there are no significant differences between the demographic and the socio-economic characteristics

of clients on the repayment of MOFA micro-credit are therefore rejected and the alternative hypotheses are accepted.

Chi-square tests at 5% level of significance showed that there were significant (P =0.00) differences in the repayment of MOFA micro-credits and credit sourcing, packaging, delivery, allocation, utilization, and repayment conditions. The null hypotheses which stated that there are no significant differences between credit sourcing, packaging, delivery, allocation, utilization, and repayment conditions on the repayment of MOFA micro-credits are therefore rejected and the alternative hypotheses which stated that there are differences are accepted.

Only 28.0% out of a total of 400 respondents had fully paid the total credit cost. Other respondents paid a percentage range of 1 to 99, while 23.0% have not paid anything. Based on the percentage repayment made so far, it can be observed that the average repayment rate was fair.

Sixteen credit repayment factors were rated high by micro-credit clients and AEAs to influence the repayment of MOFA micro-credits. They included the time credits are made available to clients, the type of agricultural activities engaged in by clients, the training of clients on skills in business development and agricultural production, stability in agricultural production and supervision and follow up of credit allocation and use. Others were adequacy of credit, marketing opportunities for produce, the level of income generated when credit was used, the repayment duration of micro-credits, the wealth status of clients, the age of clients, the sex of clients, the marital status of clients, the level of education of clients, the household size of clients and the experience of clients in agricultural enterprise. The factors were rated

mostly by choosing the "agree" options on the questionnaire. Generally, the implication was that the factors have an influence on the repayment of MOFA micro-credits.

Results of the correlation matrixes of perceptions of MOFA micro-credit clients about the relationships between the factors and the repayment of MOFA micro-credits indicated that there were significant relationships with all the factors. The null hypotheses which stated that "there are no significant relationships" were rejected. The alternative hypotheses which stated that there are differences were therefore accepted.

The coefficients of the correlation analysis indicated mostly significant relationships among the credit repayment factors themselves except factors like the sex of clients, marital status of clients, level of education of clients, household size of clients and experience of clients in agriculture. However, the correlation matrixes of perceptions of AEAs about the relationships of the credit repayment factors on repayment of MOFA micro-credits indicated that there were significant relationships with the time credits are made available to clients, adequacy of credit, training for micro-credit clients, marketing opportunities for produce, level of income generated when credit was used, repayment duration of micro-credits, wealth status of clients, age of clients, sex of clients, and household size of clients . Meanwhile, among the credit repayment factors themselves, it was the wealth status of clients, age of clients, household size of clients, and experience of clients in agricultural enterprise which did not show any significant relationships with the other factors.

For objective six, the F-values of 686.71 and 15.96 indicated that the micro-credit repayment models had good fit ($p = 0.00$) with an adjusted R^2 of

0.999 and 0.896 for micro-credit clients and AEAs perceptions on MOFA micro-credit repayment respectively. Regression analysis on micro-credit clients' perceptions on the repayment of MOFA micro-credits shows that out of the 16 variables entered into the regression, only the marital status of clients was not a predictor. For the AEAs, the variables that significantly influenced credit repayment included the wealth status of clients, household size of clients, adequacy of credit, training for micro-credit clients, type of agricultural activities engaged in by clients, sex of clients, income generated when credit was used, time credit was made available to clients, age of clients, and repayment duration of credit.

Conclusions

The following conclusions have been drawn from the findings:

For objective one, chi-square tests at 5% level of significance showed that there was significant ($p = 0.00$) difference in the repayment of MOFA micro-credits and the demographic and socio-economic characteristics of clients.

Significant difference at 5% level was also shown in the chi square tests in the characteristics that describe micro-credit sourcing, packaging, delivery, allocation, utilization and repayment conditions on the repayment of MOFA micro-credits by clients for objective two.

The distributions show that less than 50% of clients in all categories made full repayment of the credits. The null hypotheses which stated that there are no significant differences between married and unmarried clients, male and female clients, and other demographic and socio-economic characteristics

on the repayment of MOFA micro-credits were therefore rejected. The null hypotheses which stated that there are no significant differences between micro-credit sourcing, packaging, delivery, allocation, utilization and repayment conditions on the repayment of MOFA micro-credits were also rejected.

With regards to objective three, the results on the measurement of the repayment of agricultural micro-credits indicated that 28.0% out of the total of 400 respondents who initiated repayment had actually paid total credit cost fully. The other respondents had paid between a percentage range of 1 to 99. Based on the percentage repayment made so far, it can be observed that the average repayment rate was fair.

On objective four, the following factors were rated high by MOFA credit clients and AEAs to influence the repayment of MOFA micro-credits in the Central Region: the time credits are made available to clients, type of agricultural activities engaged in by micro-credit clients, training for micro-credit clients on skills in business development and agricultural production, stability in agricultural production, and supervision and follow up of credit allocation and use. Others were the adequacy of credit, marketing opportunities for produce, level of income generated when credit was used, repayment duration of micro-credits, wealth status of micro-credit clients, age of clients, sex of clients, marital status of clients, level of education of clients, household size of clients and experience of clients in the enterprise of agriculture.

For objective five, results of the correlation matrixes of perceptions of MOFA micro-credit clients about the relationships between the credit repayment

factors and the repayment of MOFA micro-credits indicated that there were significant relationships with all the factors. The coefficients of the correlation analysis indicated mostly significant relationships among the credit repayment factors themselves except factors like the sex of clients, marital status of clients, level of education of clients, household size of clients and experience of clients in agriculture. However, the correlation matrixes of perceptions of AEAs on the relationships between the repayment factors and the repayment of MOFA micro-credits indicated that there were significant relationships with the time credits are made available to clients, adequacy of credit, training for micro-credit clients, marketing opportunities for produce, level of income generated when credit was used, repayment duration of micro-credits, wealth status of clients, age of clients, sex of clients, and household size of clients . Meanwhile, among the credit repayment factors themselves, it was the wealth status of clients, age of clients, household size of clients and experience of clients in agriculture which did not show any significant relationships with the other factors.

In the case of objective six, the F-values of 686.71 and 15.96 indicated that the micro-credit repayment models had a good fit ($p = 0.00$) with an adjusted R^2 of 0.999 and 0.896 for micro-credit clients and AEAs perceptions on the repayment of MOFA micro-credits respectively. Regression analysis on micro-credit clients' perceptions on the repayment of MOFA micro-credits shows that out of the 16 significant variables entered into the regression, only the marital status of clients was not a predictor. For the AEAs, the variables that significantly influenced repayment of MOFA micro-credits included the wealth status of clients, household size of clients, adequacy of credit, training

for micro-credit clients, type of agricultural activities engaged in by clients, sex of clients, income generated when credit was used, time credits are made available to clients, age of clients, and repayment duration of credits.

In response to objective seven, a suitable model for the repayment of MOFA micro-credits in the Central Region was based on credit packaging, delivery, allocation, and utilization for prompt repayment.

Recommendations

The following recommendations are made for the benefit of MOFA and other institutions and organizations, as well as for agricultural micro-credit clients.

1. MOFA credits should be advanced to any agricultural producer irrespective of age, sex, marital status, level of education and household size, provided that the agricultural producer is worthy of the credit.
2. MOFA micro-credits should be adequately packaged before delivery to clients.
3. The cost of credits from MOFA should be minimized by providing reasonable interest rates on loans and by reducing credit transaction costs.
4. MOFA should advance adequate credits to clients to meet their production levels.
5. MOFA should provide adequate repayment duration to clients, depending on the production period.

6. MOFA should target individual agricultural producers, who have moderate to high wealth status with credit, but resource poor agricultural producers should be in groups for credit programmes.
7. Training should be organized by MOFA staff for clients before production starts and continue through production periods, based on what is done at a particular time.
8. There should be adequate monitoring and supervision on the credit repayment history records of clients' by MOFA staff to provide informed decisions on the credit worthiness of clients.
9. MOFA staff should conduct timely and adequate supervision and follow up during credit allocation and use.
10. Regular and adequate internal monitoring of the use and repayment of micro-credits should be carried-out by clients to increase confidence in repayment.
11. The District Assemblies and development partners should establish potential markets within preferred distances in food and agriculture producing communities to overcome the high cost in transporting produce for long distances.

Suggested Areas for Further Studies

The following areas are suggested for further exploration by researchers:

1. The impact of MOFA micro-credit programmes on the improvement in agricultural production in the Central Region.
2. Factors that influence efficient utilization of MOFA micro-credits by clients.

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APPENDICES

Appendix I: Concept, Information and the Sources of Information

Main Concept	Information Required	Sources of Information	Methods of Data Collection
1. Micro-credit sourcing	Source of credit, Type of credit	Clients	Interview schedule, questionnaire (Closed/ Open-ended, partially close-ended questions)
2. Credit packaging	Single and multiple credit packages, type of transaction, transaction cost, interest rate charged, interest rate rating	Clients	Interview schedule, questionnaire (Partially close ended/ open-ended questions)
3. Credit delivery	Time of credit delivery, appropriateness of time, effect of disbursement time	Clients	Interview schedule, questionnaire (Closed/ partially closed/ Likert-type questions)

Appendix I Continued

4. Credit allocation and utilization	Training topics, relevance and adequacy of training, what credit was used for, production costs and production problems, end product of production, market for produce, pricing for produce, time from production to sale, income from produce, time for supervision, reason for supervision,	Clients	Interview schedule, questionnaire (Closed/ open-ended and partially close-ended questions)
5. Credit repayment	Repayment duration of credit, adequacy of credit repayment duration, repayment rate		Interview schedule, questionnaire (Closed, open-ended, partially close-ended, and Likert-type questions)

Appendix I Continued

6. Some repayment factors	agricultural activity clients engaged in, adequacy of credit, training for clients, stability in agricultural production, market opportunities for produce, income generated from credit use, supervision and follow up of credit allocation and use, repayment duration of credit, wealth status of clients	Clients and AEAs	Interview schedule, questionnaire (Likert- type questions)
7. Demographic and socioeconomic Characteristics of respondents	Age, sex, marital status, level of education, household size, type of agricultural activity clients engaged in, wealth status of clients, experience of clients in agricultural enterprise	Clients and AEAs	Interview schedule, questionnaire (Closed/ open- ended partially close-ended questions)

Source: Field Study, 2009

Appendix II: Interpretations of Likert-type Scales

Ratings	Interval	Rate of Repayment	Adequacy	Strength of Repayment
5	4.45-5.00	very high	highly adequate	strongly agree
4	3.45-4.44	high	adequate	agree
3	2.45-3.44	fair	somewhat adequate	somewhat agree
2	1.45-2.44	low	inadequate	disagree
1	1.00-1.44	very low	highly inadequate	strongly disagree

Source: Field Study, 2009

Appendix III: Schedule of Data Collection

Period	Activity	Location	Person Responsible
15th April-8th June, 2009	Drafting of questionnaires and interview schedules	Cape Coast	Student Researcher
19th June-22nd July, 2009	Discussions with supervisors	Cape Coast	Student Researcher and Supervisor
4th -31st August, 2009	Pretesting of interview schedules	Assin South District	Student Researcher and District Agricultural Extension Agents
8th-23rd September 2009	Amendment to questions in the interview schedules and questionnaires	Cape Coast	Student Researcher and Supervisors
1st –9th October, 2009	Selection and training of Research Assistants (AEAs) in data collection	Cape Coast, Assin Foso Agona Swedru, Apam Saltpond, Twifo Praso	Student Reseacher
12th-14th October, 2009	Final printing and duplication	Cape Coast	Student Researcher

Appendix III Continued

	of interview schedule and questionnaires		
16th October, 2009 to 18th January 2010	Distribution and completion of interview schedule and questionnaires	All the study areas	Student Researcher and Research Assistants
19th-24th January 2010	Screening and coding of data collected	Cape Coast	Student Researcher
26th January-15th February 2010	Data Entry into computer using SPSS application	Cape Coast	Student Researcher
16th Feb-18th March 2010	Analysis of data generated from computer using SPSS	Cape Coast	Student researcher

Source: Field Study, 2009

Appendix IV: Interview Schedule for Ministry of Food and Agriculture Micro-credit Clients

Research Topic: Factors Influencing Repayment of MOFA Micro-credits by Agricultural Producers in the Central Region of Ghana

Micro-credit is a financial innovation which enables impoverished people to engage in self-employment activities to generate income and make a living. In Central Region, Ministry of Food and Agriculture provided agricultural producers with diverse agricultural micro-credits. Unfortunately, many clients have failed to pay back. This study aims to collect information from MOFA micro-credit clients on reasons for such low repayment.

The research is purely for academic purposes and responses to the questions are confidential, and will not be attributed to you or your organization.

Your co-operation is needed and will greatly be appreciated.

Date:

Village/ Town:

District:

Section A: Information on micro-credit sourcing, packaging, delivery, allocation, utilization, repayment conditions and repayment

1. Name the sources of credit that you accessed credit from in Table (1)

Table (1)

No	Source of credit	Type of credit

2. If credit was obtained from one source, was it adequate for intended purpose? Yes ( ) No ( )

3. If credit was obtained from more than one source, did you use all the credit for one purpose? Yes ( ) No ( )

4. What were the challenges faced in single credit package? (a) inadequacy of credit to meet intended purpose (b) high cost of transaction cost (c) diversion of credit into other things (d) inadequate income generated to repay credit (e) Others, specify .....

5. What were the challenges faced in multiple credit package? (a) used credit for other purposes (b) high cost of credit (c) inefficiency in credit utilization (d) difficulty in repayment of credit when income generated was low (e) Others, specify .....

6. Indicate in Table (2) credit transaction cost incurred

Table (2)

No	Type of Transaction	Cost GH ¢
I	Transportation	
Ii	Paper work (processing fee)	
Iii	Commitment fee	
Iv	Time (man/ days spent)	
V	Others, specify	
	Total Cost	

7. What was the interest rate charged on the credit granted? .....

8. In your view how would you rate the interest rate? (a) very low (b) low (c) moderate (d) high (e) very high

9. How long did it take for credit to be made available to you? .....

10. Using the scale below, indicate your agreement on the following statement "time period for credit disbursement was reasonable" 1=highly disagree 2= disagree 3=somewhat agreed 4= agree 5=highly agree

11. How did time of disbursement affect the use of credit? (a) delay in acquisition of real inputs (b) failure to meet production season (c) required inputs not available (d) required inputs not accessible (e) Others, specify .....

12. Have you received any training during credit utilization? Yes ( ) No ( )

13. If no move to question (17), but if yes, who organized the training?

(a) MOFA staff from the district (b) MOFA staff from the Region

(c) NGOs (d) Financial Institutions (e) Others, specify .....

14. What was the topic treated? (a) Modern technologies in production

(b) Business development skills (c) Group formation and sustainability

(d) Credit sourcing and repayment (e) Others, specify .....

15. Using the scale below, indicate the relevance of training received

1=highly irrelevant 2=irrelevant 3=somewhat relevant 4=relevant 5=highly relevant

16. Using the scale below, indicate the adequacy of training received

1=highly inadequate 2=inadequate 3=somewhat adequate

4= adequate 5=highly adequate

17. Indicate what MOFA credit was used for: (a) agricultural production

(b) cloth (c) food, (d) television, radio, bicycle, car, computer etc

(e) building (f) funerals (g) marriage (h) medication (i) Others, specify .....

18. If credit was used in agricultural production what was the total amount spent? GH ¢.....

19. Did you experience any problem during production, which impeded repayment of credit? Yes ( ) No ( )

20. If no, move to question (21), but if yes, indicate problems (a) flood (b) drought (c) disease (d) pests (e) sickness (f) fire out break (g) high transportation cost (h) inadequate marketing opportunities (i) poor prices for produce (j) high cost of inputs (k) Others, specify .....

21. Have you sold your produce? Yes ( ) No ( )

22. If no move to question (34), but if yes what were the market outlets where produce were sold? (a) community market (b) markets outside community but in the district (c) market outside district but in the region (d) market in other regions (e) market outside country (f) Others, specify ...

23. In your view how do you rate the supply level of the produce sent to the market? (a) very low (b) low (c) moderate (d) high (e) very high

24. In your view how do you rate the demand level of the produce sent to the market? (a) very low (b) low (c) moderate (d) high (e) very high

25. What was the price of produce during low supply per specified unit? GH¢.

26. What was the price of produce during high supply per specified unit? GH¢

27. What was the price of produce during low demand per specified unit? GH¢

28. What was the price of produce during high demand per specified unit? GH¢ .....

29. What was the other factor(s) that contributed to the market fluctuation of the produce? (a) low quality (b) continuous rains (c) late arrivals of produce (d) inadequate storage facilities (e) inappropriate storage facilities (f) Others, specify .....

30. What was the end product of the production? .....

31. How long did you take to produce and sell your product? (a) less than 6 months (b) one year (c) two years (d) three years (e) Over three years

32. How much did you make from sales of produce when the entire credit was used? GH ¢ .....

33. Using the scale below, indicate the adequacy of income generated from sales of produce 1=highly inadequate 2=inadequate 3=somewhat adequate 4= adequate 5=highly adequate

34. Had you been supervised in the allocation, utilization and repayment of credit? Yes ( ) No ( )

35. If no, move to question (40), but if yes how often was the supervision?

(a) daily (b)weekly (c) fortnightly (d) monthly (e) Others, specify .....

36. Who were the supervisors? (a) MOFA staff from the district (b) MOFA staff from the Region (c) NGOs (d) Financial Institutions (e) Others, specify ..

37. What was the supervision about?

(a) To be sure clients adopted modern technologies in production

(b) To be sure clients made use of knowledge and skills obtained from training in business development

(c) To be sure clients established links with other sources like financial institutions, input suppliers, markets etc

(d) To advice, direct and encourage clients on their activities

(e) Others, specify .....

38. Using the scale below, indicate the relevance of supervision received

1=highly irrelevant 2=irrelevant 3=somewhat relevant 4=relevant 5=highly relevant

39. Using the scale below, indicate the adequacy of supervision received

1=highly inadequate 2=inadequate 3=somewhat adequate

4= adequate 5=highly adequate

40. What was the repayment duration of credit? (a) six month (b) one year (c) 2 years (d) 3 years (e) more than 3 years

41. Indicate the repayment rate (in percentage) made on the credit used .....

42. If no full payment was made, what are the reasons? (a) late release of credit (b) destruction of produce by rains (c) pests destruction (d) diseases (e) drought (f) sickness (g) credit used for unproductive activities (h) inadequate credit (i) unfavourable market conditions (j) short repayment duration (k) poor yields and debt was higher than income generated (l) Others, specify.....

43. Using the scale below, indicate the adequacy of repayment duration

1=highly inadequate 2=inadequate 3=somewhat adequate

4= adequate 5=highly adequate

44. Give your suggestions on what should be done to improve upon repayment of micro-credit provided to agricultural producers .....

Section B: Factors Influencing Repayment of MOFA Micro-credits

1. Using the scale below, indicate how you perceive the following factors in Table 3 to influence repayment of MOFA micro-credits. Please, indicate the relevant response based on the scale below.

1=strongly disagree, 2=disagree, 3=somewhat agree, 4=agree, 5=strongly agree.

Table 3: Factors influencing repayment of MOFA micro-credits

Items under time credits are made available to clients	**1**	**2**	**3**	**4**	**5**
Time spent on credit delivery is reasonable and encourages credit repayment					
Timely credit disbursement allows for early acquisition of real inputs, hence good credit repayment performance					
Timely credit disbursement enables clients to meet production season leading to credit repayment					
Items under type of agricultural activity micro-credit clients engaged in	**1**	**2**	**3**	**4**	**5**
Crop farming/ woodlot cultivation is economical and can give farmer higher incomes to pay credit					
Livestock/ poultry production is economical and can give farmer higher incomes to pay credit					
Fish farming/ marine fishing is economical and can give farmer higher incomes to pay credit					
Processing of agricultural produce is economical and can give farmer higher incomes to pay credit					
Items under adequacy of credit	**1**	**2**	**3**	**4**	**5**
Adequacy of micro-credit obtained allows for efficiency in production, resulting in high incomes to enable credit repayment					
Under financing leads to use of credit for intended purpose since levels of resources for production could be attained, which allows for effective repayment					
Multiple financing means obtaining more than one credit the same time, which demands repayment the same time hence better repayment					
Provision of micro credits exceeding capacity of client's enterprise results in efficiency in credit use leading to credit repayment					
Transaction costs (processing fees) on credits are most often					

favourable and can lead to credit repayment					
General cost of most agricultural credits is bearable and enables clients to produce enough to meet the cost and excess to pay debt					
Favourable terms attached to credit sourcing allowed for flexibility in settling debts					
Agricultural producers will accept and repay credit of low interest rate					
Multiplicity of credit sources available to agricultural producers entice interested producers to contract multiple credits which will be more than what the enterprise can hold at a time, hence efficiency leading to repayment					
Items under training for micro-credit clients	**1**	**2**	**3**	**4**	**5**
Training for micro-credit clients prior to utilization of credit encourages better credit use and efficient loan repayment					
Training for micro-credit clients during utilization of credit encourages better credit use and efficient loan repayment					
Training for micro-credit clients after credit utilization encourages better credit use and efficient loan repayment					
Training for micro-credit clients on business plan development encourages access to better credit and efficient loan repayment					
Training for micro-credit clients on entrepreneur development in production skills encourages efficient credit repayment					
Training for micro-credit clients on business management ensures sound business contributing to efficient credit repayment					
Adequate knowledge in use of improved agricultural technologies leads to increase in production hence high income to pay debt					
Regular provision of agricultural extension services to clients means capacity building in agricultural areas to generate enough income for credit repayment					
Appropriate channels of receiving production					

recommendations most often lead to acceptance and use hence good yields and income for repayment					
Appropriate sources of receiving micro-credit information most often lead to acceptance and use hence good yields and income for repayment					
Appropriate channels of receiving instructions on micro-credit use contributes to credit repayment					
Items under stability in agricultural production	**1**	**2**	**3**	**4**	**5**
Higher yields of agricultural produce due to favourable weather conditions lead to higher revenue generation to pay debt					
Higher yields of agricultural produce due to adequate pests and disease prevention and control lead to higher income to pay debt					
Higher yields of agricultural produce due to adequate farm management/ husbandry practices leads to higher income to repay credit					
Use of healthy planting materials/ breeds of animals/ species of fish for production contributes to high yields hence high income for repayment of credit					
Use of appropriate agricultural production technologies leads to efficient production and better micro-credit repayment strategies					
Peaceful co-existence in farm land ownership allows for efficient use of land to produce and generate enough income to settle debt					
When agricultural inputs and other factors of production are available to producers in the right combination, higher production is assured culminating in incomes to pay debt					
When agricultural inputs and other factors of production are accessible to producers, higher production is assured culminating in higher incomes to pay debt					

Items under market opportunities for produce	**1**	**2**	**3**	**4**	**5**
Adequate market outlets for agricultural produce encourages sales of agricultural produce for revenue generation to repay credit					
Adequate market infrastructure sometimes promotes efficiency in marketing contributing to increase in sales hence credit repayment					
The short shelf life of most agricultural produce compel producers to sell produce at reasonable prices and earn enough to repay credit					
Prices for agricultural produce on the market are generally good to enable agricultural producers accumulate enough money to pay debt					
Cost of marketing agricultural produce is within the reach of agricultural producer to derive adequate revenue to settle debt					
Local and national government policies in marketing agricultural produce favour better sales hence credit repayment					
Available markets for produce in a community with good prices enable credit clients generate enough money to pay debt					
Other markets for produce in ones' district with good prices enable credit clients generate enough money to pay debt					
Available markets for produce outside district with good prices enable credit clients generate enough money to pay debt					
Available markets for produce outside the country with good prices enable credit clients generate enough money to pay debt					
Items under level of income generated when credit was used	**1**	**2**	**3**	**4**	**5**
Agricultural production to meet the cost of production normally lead to credit repayment					
Agricultural production to meet cost of production and for household needs will allow for accumulation of money to pay debt					

Agricultural production to meet cost of production and still higher profits allows for settlement of debts					
Items under supervision and follow up of credit allocation and use	**1**	**2**	**3**	**4**	**5**
Adequate follow up from sources of micro-credits in credit allocation and utilization contributes to credit repayment					
Adequate follow up from sources of micro-credits in credit repayment contributes to efficient micro credit repayment					
Adequate supervision of provision, use and repayment of micro-credits by Agricultural Extension Workers contributes to repayment of credits					
Adequate internal supervision of use and repayment of micro-credits by credit clients increases confidence in repayment					
Adequate monitoring and supervision records of clients credit repayment history provide informed decision on credit worthiness hence subsequent credit repayment					
Timely supervision and monitoring by Agricultural Extension Workers of provision, use and repayment of micro-credits contribute to repayment plans					
Items under repayment duration of micro-credits	**1**	**2**	**3**	**4**	**5**
Agreement on repayment of total credit at the end of production period contributes to full credit repayment					
Agreement that allows for monthly repayment of credit until full debt recovery leads to efficiency in repayment					
Agreement that allows for quarterly repayment of credit until full debt recovery leads to efficiency in repayment					
Agreement that allows for yearly repayment of credit until full debt recovery leads to efficiency in repayment					
Items under wealth status of credit clients	**1**	**2**	**3**	**4**	**5**
Credit client who owned most house hold items with total cost in the range of GH¢1- 500 can repay fully credit of GH¢1,000					
Credit client who owned most house hold items with total cost					

in the range of GH¢501-1,000 can repay fully credit of GH¢1,000					
Credit client who owned most house hold items with total cost in the range of GH¢1,001-1,500 can repay fully credit of GH¢1,000					
Credit client who owned most house hold items with total cost in the range of GH¢1,501-2,000 can repay fully credit of GH¢1,000					
Credit client who owned most house hold items with total cost over GH¢2,000 can repay fully credit of GH¢1,000					
Credit client who owned a micro size agricultural enterprise (cost less than GH¢100) can repay fully credit of GH¢1,000					
Credit client who owned a small size agricultural enterprise (cost GH¢101 – 1,000) can repay fully credit of GH¢1,000					
Credit client who owned a medium size agricultural enterprise (cost GH¢1,001-5,000) can repay fully credit of GH¢1,000					
Credit client who owned a large size agricultural enterprise (cost over GH¢5,000) can repay fully credit of GH¢1,000					

Section C: Characteristics of MOFA Micro-credit Clients

1.Age: .....

2. Sex: Male ( ) Female ( )

3. Marital Status: Married ( ) Not Married ( )

4. Please indicate your level of education (a) No formal education

(b) Primary school (c) Junior secondary school/ Middle school

(d) Secondary school/ Technical/ Business/ Vocational school (e) Diploma institution/ Agric, Teacher Training/ Nursing colleges (f) University/ Higher National Diploma (g) Others, specify.....

5. Indicate size of household .....

6. Kindly provide the information requested on you in Table 4

Table (4)

No	Item	Amount GH ¢
I	Household yearly feeding	
Ii	Household clothing in a year	

7. Ownership of housing; (a) Rented (b) Owned (c) Rent free

(d) Others, specify……..

8. Did you have any of the listed items in Table (5)?

Table (5)

No	Item	Tick	Cost GH ¢
i.	Television		
ii.	Radio		
iii.	Refrigeration		
iv.	Video deck		
v.	Car		
vi.	Motor cycle		
vii.	Bicycle		
viii.	Cash at home		
ix.	Cash at bank		
x.	Shares/ insurance policy/ treasury bill etc		
xi.	Others, specify		

9. Indicate agricultural enterprise(s) owned when credit was used:

(a) Crop farming/ woodlot cultivation (b) Livestock/ poultry production

(c) Fish farming/ marine fishing (d) Processing of agricultural produce

(e) others, specify……..

10. Indicate the size of your agricultural enterprise (a) Micro size (cost less than GH¢100) (b) Small size (cost GH¢101 – 1,000) (c) Medium size (cost GH¢1,001-5,000) (d) Large size (cost over GH¢5,000)

11. How long did you engage in the agricultural enterprise? ……

Appendix V: Questionnaire for Ministry of Food and Agriculture Agricultural Extension Agents (AEAs)

Research Topic: Factors Influencing Repayment of MOFA Micro-credits by Agricultural Producers in the Central Region of Ghana

Micro-credit is a financial innovation which enables impoverished people to engage in self-employment activities to generate income and make a living. In Central Region, the Ministry of Food and Agriculture provided agricultural producers with diverse agricultural micro-credits. Unfortunately, many clients have failed to pay back. This study aims to collect information from MOFA Agricultural Extension Agents on factors influencing repayment of MOFA micro-credits by clients. The research is purely for academic purposes and responses to the questions are confidential, and will not be attributed to you or your organization.

Your co-operation is needed and will greatly be appreciated.

Date:

Operational Area:

District:

Section A: Characteristics of MOFA AEAs

1.Age: .....

2. Sex: Male ( ) Female ( )

3. Marital Status: Married ( ) Not Married ( )

4. Please indicate your level of education (a) No formal education

(b) Primary school (c) Junior secondary school/ Middle school

(d) Secondary school/ Technical/ Business/ Vocational school (e) Diploma institution/ Agric, Teacher Training/ Nursing colleges (f) University/ Higher National Diploma (g) Others, specify.....

Section B: Factors Influencing Repayment of MOFA Micro-credits by Clients

1. Using the scale below, indicate how you perceive the following factors in Table 1 to influence repayment of MOFA micro-credits by clients. Please, indicate the relevant response based on the scale below.

1=strongly disagree, 2=disagree, 3=somewhat agree, 4=agree, 5=strongly agree.

Table 1: Factors influencing repayment of MOFA micro-credits by clients

Items under time credits are made available to clients	**1**	**2**	**3**	**4**	**5**
Time spent on credit delivery is reasonable and encourages credit repayment					
Timely credit disbursement allows for early acquisition of real inputs, hence good credit repayment performance					
Timely credit disbursement enables clients to meet production season leading to credit repayment					
Items under type of agricultural activity micro-credit clients engaged in	**1**	**2**	**3**	**4**	**5**
Crop farming/ woodlot cultivation is economical and can give farmer higher incomes to pay credit					
Livestock/ poultry production is economical and can give farmer higher incomes to pay credit					
Fish farming/ marine fishing is economical and can give farmer higher incomes to pay credit					
Processing of agricultural produce is economical and can give farmer higher incomes to pay credit					

Items under adequacy of credit	**1**	**2**	**3**	**4**	**5**
Adequacy of micro-credit obtained allows for efficiency in production, resulting in high incomes to enable credit repayment					
Under financing leads to use of credit for intended purpose since levels of resources for production could be attained, which allows for effective repayment					
Multiple financing means obtaining more than one credit the same time, which demands repayment the same time hence better repayment					
Provision of micro-credits exceeding capacity of client's enterprise results in efficiency in credit use leading to credit repayment					
Transaction costs (processing fees) on credits are most often favourable and can lead to credit repayment					
General cost of most agricultural credits is bearable and enables clients to produce enough to meet the cost and excess to pay debt					
Favourable terms attached to credit sourcing allowed for flexibility in settling debts					
Agricultural producers will accept and repay credit of low interest rate					
Multiplicity of credit sources available to agricultural producers entice interested producers to contract multiple credits which will be more than what the enterprise can hold at a time, hence efficiency leading to repayment					
Items under training for micro-credit beneficiaries	**1**	**2**	**3**	**4**	**5**
Training for micro-credit clients prior to utilization of credit encourages better credit use and efficient loan repayment					
Training for micro-credit clients during utilization of credit encourages better credit use and efficient loan repayment					
Training for micro-credit clients after credit utilization encourages better credit use and efficient loan repayment					

Training for micro-credit clients on business plan development encourages access to better credit and efficient loan repayment					
Training for micro-credit clients on entrepreneur development in production skills encourages efficient credit repayment					
Training for micro-credit clients on business management ensures sound business contributing to efficient credit repayment					
Adequate knowledge in use of improved agricultural technologies leads to increase in production hence high income to pay debt					
Regular provision of agricultural extension services to clients means capacity building in agricultural areas to generate enough income for credit repayment					
Appropriate channels of receiving production recommendations most often lead to acceptance and use hence good yields and income for repayment					
Appropriate sources of receiving micro-credit information most often lead to acceptance and use hence good yields and income for repayment					
Appropriate channels of receiving instructions on micro-credit use contributes to credit repayment					
Items under stability in agricultural production	**1**	**2**	**3**	**4**	**5**
Higher yields of agricultural produce due to favourable weather conditions lead to higher revenue generation to pay debt					
Higher yields of agricultural produce due to adequate pests and disease prevention and control lead to higher income to pay debt					
Higher yields of agricultural produce due to adequate farm management/ husbandry practices leads to higher income to repay credit					
Use of healthy planting materials/ breeds of animals/ species of fish for production contributes to high yields hence high					

income for repayment of credit					
Use of appropriate agricultural production technologies leads to efficient production and better micro-credit repayment strategies					
Peaceful co-existence in farm land ownership allows for efficient use of land to produce and generate enough income to settle debt					
When agricultural inputs and other factors of production are available to producers in the right combination, higher production is assured culminating in incomes to pay debt					
When agricultural inputs and other factors of production are accessible to producers, higher production is assured culminating in higher incomes to pay debt					
Items under market opportunities for produce	**1**	**2**	**3**	**4**	**5**
Adequate market outlets for agricultural produce encourages sales of agricultural produce for revenue generation to repay credit					
Adequate market infrastructure sometimes promotes efficiency in marketing contributing to increase in sales hence credit repayment					
The short shelf life of most agricultural produce compel producers to sell produce at reasonable prices and earn enough to repay credit					
Prices for agricultural produce on the market are generally good to enable agricultural producers accumulate enough money to pay debt					
Cost of marketing agricultural produce is within the reach of agricultural producer to derive adequate revenue to settle debt					
Local and national government policies in marketing agricultural produce favour better sales hence credit repayment					
Available markets for produce in a community with good prices enable credit clients generate enough money to pay debt					

Other markets for produce in ones' district with good prices enable credit clients generate enough money to pay debt					
Available markets for produce outside district with good prices enable credit clients generate enough money to pay debt					
Available markets for produce outside the country with good prices enable credit clients generate enough money to pay debt					
Items under level of income generated when credit was used	**1**	**2**	**3**	**4**	**5**
Agricultural production to meet the cost of production normally lead to credit repayment					
Agricultural production to meet cost of production and for household needs will allow for accumulation of money to pay debt					
Agricultural production to meet cost of production and still higher profits allows for settlement of debts					
Items under supervision and follow up of credit allocation and use	**1**	**2**	**3**	**4**	**5**
Adequate follow up from sources of micro-credits in credit allocation and utilization contributes to credit repayment					
Adequate follow up from sources of micro-credits in credit repayment contributes to efficient micro credit repayment					
Adequate supervision of provision, use and repayment of micro-credits by Agricultural Extension Workers contributes to repayment of credits					
Adequate internal supervision of use and repayment of micro-credits by credit clients increases confidence in repayment					
Adequate monitoring and supervision records of clients credit repayment history provide informed decision on credit worthiness hence subsequent credit repayment					
Timely supervision and monitoring by Agricultural Extension Workers of provision, use and repayment of micro-credits contribute to repayment plans					

Items under repayment duration of micro-credits	**1**	**2**	**3**	**4**	**5**
Agreement on repayment of total credit at the end of production period contributes to full credit repayment					
Agreement that allows for monthly repayment of credit until full debt recovery leads to efficiency in repayment					
Agreement that allows for quarterly repayment of credit until full debt recovery leads to efficiency in repayment					
Agreement that allows for yearly repayment of credit until full debt recovery leads to efficiency in repayment					
Items under wealth status of credit clients	**1**	**2**	**3**	**4**	**5**
Credit client who owned most house hold items with total cost in the range of GH¢1- 500 can repay fully credit of GH¢1,000					
Credit client who owned most house hold items with total cost in the range of GH¢501-1,000 can repay fully credit of GH¢1,000					
Credit client who owned most house hold items with total cost in the range of GH¢1,001-1,500 can repay fully credit of GH¢1,000					
Credit client who owned most house hold items with total cost in the range of GH¢1,501-2,000 can repay fully credit of GH¢1,000.					
Credit client who owned most house hold items with total cost over GH¢2,000 can repay fully credit of GH¢1,000					
Credit client who owned a micro size agricultural enterprise (cost less than GH¢100) can repay fully credit of GH¢1,000					
Credit client who owned a small size agricultural enterprise (cost GH¢101 – 1,000) can repay fully credit of GH¢1,000					
Credit client who owned a medium size agricultural enterprise (cost GH¢1,001-5,000) can repay fully credit of GH¢1,000					
Credit client who owned a large size agricultural enterprise					

(cost over GH¢5,000) can repay fully credit of GH¢1,000					
Items under household size of credit clients	**1**	**2**	**3**	**4**	**5**
Client with one family size can repay credit fully					
Client with two family size can repay credit fully					
Client with three family size can repay credit fully					
Client with four family size can repay credit fully					
Client with five family size can repay credit fully					
Client with six family size can repay credit fully					
Client with seven family size can repay credit fully					
Client with eight family size can repay credit fully					
Client with nine family size can repay credit fully					
Client with ten family size can repay credit fully					
Client with over ten family size can pay fully credit					
Items under experience of clients in agricultural enterprise	**1**	**2**	**3**	**4**	**5**
Client with 5years and less in agric can pay fully credit					
Client with 6-10 years in agric can pay fully credit					
Client with 11-15 years in agric can pay fully credit					
Client with 15-20 years in agric can pay fully credit					
Client with 21-25 years in agric can pay fully credit					
Client with over 25 years in agric can pay fully credit					

Appendix VI: Other Micro-credit Repayment Factors Considered but have no influence on Repayment of MOFA Micro-credits

1. Land holding status of micro-credit clients.
2. Aspirations of micro-credit clients.
3. Level of confidence of micro-credit clients.
4. Mass media contact.
5. Attitude towards credit.
6. Being cosmopolitan.
7. Political interference.
8. Willful default.
9. Lack of knowledge of credit source
10. Increased working hours.
11. Legal status of enterprise.
12. Availability of guarantor.
13. Ratio of debt to sales turnover.
14. Credit rationing.
15. Presence of other loan sources.
16. Type of micro-credit institution.
17. Degree of diversification of loan investment.
18. Group membership.
19. Group size.
20. Number of days micro-credit group members meet in a month.
21. Distance between the dwelling unit of client and the lender.
22. Expenses on socio-cultural activities.