



**EFFECT OF RURAL FINANCE SUPPORT PROGRAMME ON
SMALLHOLDER FARMERS' PRODUCTIVITY AND
WELFARE IN IRINGA REGION OF TANZANIA**

Final Report By:

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JULY 2018

Table of Contents

List of Figures.....	4
List of Tables	5
List of Abbreviations	6
Acknowledgment	7
EXECUTIVE SUMMARY	8
CHAPTER ONE.....	10
INTRODUCTION	10
1.1 Background to the Study.....	10
1.1.1 Marketing Infrastructure Value Addition and Rural Finance Support Programme (MIVARF) as an Intervention.....	12
1.2 Problem Statement	15
1.3 Justification of the Study.....	17
1.4 Research Questions	17
1.5 Objectives of the Study	17
1.5.1 Analysis of objectives of the study	18
1.6 Research Hypotheses	19
1.7 Definition of Concepts	20
CHAPTER TWO	22
THEORETICAL FRAMEWORK AND LITERATURE REVIEW	22
2.1 Review of Theory and Conceptual Framework.....	22
2.1.1 Review of Theory.....	22
2.1.1.1 Rostow Development Theory	22
2.1.1.2 The High Payoff Input Model.....	23
2.1.2 Conceptual Framework	25
2.1.2.1 Overview of Smallholder Farming in Tanzania.....	25
2.1.2.2 The Need to Improve Smallholder Farmers’ Access to Bank Financing.....	26
2.1.2.3 Access to Credit and Agricultural Productivity Linkage	27
2.2 Review of Methodology.....	29
2.3 Review of Empirical Studies.....	33
CHAPTER THREE	35
METHODOLOGY	35
3.1 Study Area.....	35
3.1.1 Description of the Study Area.....	35
3.2 Nature and Sources of Data.....	36
3.3 Method of Data Collection	37
3.4 Analytical Methods/Techniques.....	37
3.5 Reliability of Instrument	37
CHAPTER FOUR	38
RESULTS AND DISCUSSION	38
4.1 SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS	38
4.1.1. Gender of the Respondent.....	38
4.1.2. Age of Respondents	38
4.1.3 Education Level	39
4.1.5 Land Ownership for Agricultural Purposes.....	40
4.2 Effect of Financial Products on Use of Improved Inputs by Smallholder Farmers in the Study Areas	40
4.3 Effect of Use of Improved Inputs and Technologies by Smallholder Farmers’ Productivity and Wellbeing in the Study Areas.....	42
4.4 Financial Products Available to Smallholder Farmers in the Study Area	44
4.5 Awareness of Credit Facility.....	45
4.6 Credit from other Sources	46
4.7 Income Adequacy for Agricultural Production	46
4.8 Moderating Effect of Improved Input Usage on Relationship between Credit Facilities and Productivity and Wellbeing of Smallholder Farmers in the Study Areas.....	47

CHAPTER FIVE	47
SUMMARY, CONCLUSION AND RECOMMENDATIONS	47
5.1 Summary of Findings	47
5.2 Conclusion	52
5.2 Recommendations	52
REFERENCES	53
APPENDIXES	57

List of Figures

Figure 1: Conceptual Framework of the Study as developed by the Researcher	25
Figure 2: Map of Tanzania showing the Study Area	36
Figure 3: Gender of Respondents	38
Figure 4: Age of Respondents.....	39
Figure 5: Educational Level of Respondents	40
Figure 10: Inputs used in the last farming season by Borrowers and Non-Borrowers.....	42
Figure 11: Average production/kg in the last farming season	43
Figure 12: Average produce sales/kg in the last farming season	43
Figure 13: Other services rendered to borrowers apart from loan	44
Figure 7: Awareness of Credit Facilities.....	45
Figure 8: Credit from other Sources	46
Figure 9: Income Adequacy for Agricultural Production	46

List of Tables

Table 1: Analysis of objectives of the study	18
Table 2: Review of Methodologies in Related Articles	31
Table 3: Education Level of Respondents	39
Table 4: Land Ownership for Agricultural Purposes	40
Table 5: Effect of Financial Products on Use of Improved Inputs by Smallholder Farmers in the Study Areas	41

List of Abbreviations

IFAD:	International Fund for Agricultural Development
AfDB:	African Development Bank
GoT:	Government of Tanzania
IMF:	International Monetary Fund
MFI:	Micro Finance Institution
NGO:	Non-Governmental Organization
SACCOS:	Savings and Credit Cooperative Society
VICOBA	Village Community Bank
CB	Credit Borrower
NCB	Non- Credit Borrower
MUCOBA	Mufindi Community Bank
URT	United Republic of Tanzania
GoT	Government of Tanzania
MIVARF	Market Infrastructure Value Addition and Rural Finance Support
BoT	Bank of Tanzania
RCT	Randomized Control Trial

Acknowledgments

I wish to first of all thank Almighty Allah (SWT) for sparing my life, sustaining me and enabling me to fully realize my dream. I would like to express my special appreciation and thanks to my supervisors: Optat Elias Shedehwa, Olawale Olayide (PhD) for their patience, professional guidance and excellent supervision throughout my internship and beyond. I thank them both for encouraging my research, allowing me to grow as a research scientist, and for teaching me the art of research and scholarly writing. My Institution supervisor, Dr. Olawale Olayide, is a great teacher and a model of scholarship and excellence. He reposed confidence and trust in me that I possess a high level of academic independence. And Optat Elias Shedehwa is best described as a “compassionate leader” whose magnanimity will forever remain green in my memory.

I also wish to express my sincere appreciation to MDP Global Office and IFAD under the auspices of the graduate Win-Win Field Practicum Grant, not only for providing the funding but also for enabling a collaboration which offered me the platform to embark on this research. And also to Dr. Lucia Rodriguez of the Earth Institute, Columbia University, United States of America for her unflinching support throughout the programme.

I am also indebted to Management and staff of MIVARF at the coordinating office in Arusha (Mr. Leonard Muhoni, Mr. Thomas Mgimba, Julius Kallambo, Jacob Mwambene, Bernard Ulaya.....) for their support from the beginning of the programme up till date. Also, to all management and staff of MUCOBA Plc (Mr. Ben Maahenge, Mr. Yoely Sangana, Mr. Saidi, Madam Neema and her husband Mr. John Tonga, Kelvin, Konba, Ancet, and others), MIVARF staff in Iringa office (Mr. Adolf Kibasa, Mr. Paul Mwangimba and others) for their unflinching support throughout the programme.

My sincere gratitude and heartfelt appreciation also goes to my loving wife, Zainab Aduke and my lovely children, Fatimah, AbdulAzeez and Hafsoh for their unwavering support throughout this study. My research and other demanding commitments have obviously denied them the joy of my attention for so long. I thank you for your patience and I promise to make it up to you.

I also wish to appreciate the efforts of my parents for always been supportive both in kind and cash, my siblings (Baliqees, Sukurat and Aminat) for always been there for me whenever I needed their assistance. Also, to Dr. Jibril Adewale Bamgbade who has been sources of inspiration to me.

My appreciation also goes to the Director, Centre for Sustainable Development (CESDEV), Prof. Olanrewaju Olaniyan, and entire staff of CESDEV, University of Ibadan. Finally, to my classmates and friends, thank you all for always been there.

EXECUTIVE SUMMARY

Marketing Infrastructure, Value Addition and Rural Finance Support Programme (MIVARF) is a programme jointly financed by International Fund for Agricultural Development (IFAD) in collaboration with African Development Bank (AfDB), and Government of Tanzania. The primary goal of the programme is to reduce rural poverty and accelerate economic growth on a sustainable basis which is in line with the goal of IFAD of increasing food security, improving the nutrition of their families and increase their incomes.

The programme components include: (i) Marketing Infrastructure and Systems; and (ii) Rural Finance. The Rural Finance has two sub-components: (a) grassroots financial services and (b) rural financial systems development. The programme developed research topics one of which is effect of rural finance support programme on smallholder farmers' productivity and welfare in Iringa Region of Tanzania, which was advertised and won. Therefore this study aimed at measuring the effect of rural finance support programme on smallholder farmers' productivity and welfare in Iringa Region of Tanzania.

In Tanzania just like in any other developing part of Africa, lack of finance remains the leading hindrance to productivity growth of smallholder farmers, Yet, the banks are wary in facilitating access to input and production financial services. This study assessed the effect of rural finance support programme on smallholder farmers' productivity and welfare in Iringa Region of Tanzania. The framework developed in this study provides a link between rural financial services, inputs usage and farmers' productivity and welfare using Rostow development theory and high-payoff input model to underpin these relationships.

Qualitative and quantitative research approaches were utilized in the study. A well-structured questionnaire was used to collect data from 420 smallholder farmers (those having access to credit facility and those that do not have access to credit facility) in Iringa Region with the aid of koBoCollect survey data collection tool. Likewise, members of staff of MUCOBA Bank Plc (being the foremost community bank in Tanzania) were interviewed as part of key informants, in examining accessibility of bank credit to smallholder farmers and its impact on their productivity and wellbeing, while descriptive statistics was employed for the analysis.

The study revealed that, CB realized high agricultural productivity compared to the NCB respondents. This is partly because the CB were relatively better in accessing markets for agricultural commodities, use of inputs and adoption of improved farming technologies. Also, lack of vital bank information, proximity to banks and high interest rates were some among the major obstacles hindering smallholder farmers' accessibility to bank credit.

The findings of this research provides information for developing strategies to improve access to finance thereby reducing poverty and eliminating hunger among the rural dwellers.

Keyword: *Rural finance, Smallholder farmers, Productivity, Welfare, Iringa*

CHAPTER ONE INTRODUCTION

1.1 Background to the Study

Agricultural development is critical to achieving the Sustainable Development Goal of reducing poverty and hunger. With an estimated 850 million people worldwide, who are undernourished and a growing global population, it is expected that the demand for food will continue to increase. At the same time, food price spikes in recent years have intensified global concerns about current levels of agricultural production (Food and Agriculture Organization of the United Nations (FAO) 2013). These trends have resulted in a spotlight on food security and agricultural development—and on the role of financial institutions in increasing agricultural producers' access to finance. An estimated 500 million agricultural smallholder's farm up to two hectares of land, with 2 billion to 2.5 billion people living in these smallholders' households worldwide (Hazell 2011 and Christen and Anderson 2013). These farms feed a great number of the rural poor. According to IFC (2011), of the three quarters of the world's poor that live in rural areas, 80 percent depend on agriculture as their main source of income and employment. These smallholders also play a key role in increasing food supply, more so than large farms in poor countries, and increasingly supply large conglomerates and corporations with inputs for their products (Carroll et al. 2012). Despite their socioeconomic importance, smallholders tend to have little or no access to formal credit, which limits their capacity to invest in the technologies and inputs they need to increase their yields and incomes and reduce hunger and poverty, both their own and that of others.

The spectrum of financial institutions involved in financing agriculture is broad, and seemingly reflects the farmers' segmentation as the importance of banks diminishes, as the farmer clientele becomes smaller in scale, and as value chains become less defined. Input suppliers and buyers are perceived to become more relevant as financing channels for commercial and semi-commercial smallholders, along with cooperatives and MFIs (IFC 2012). The relative importance of different channels for different segments, however, is for the most part unknown. In particular, the evidence of MFI involvement in financing commercial and semi-commercial smallholders remains anecdotal and lacks specifics on what makes MFI lending to these segments feasible, and what restricts their reach and effectiveness. At the same time, MFIs that

do not distinguish agricultural clients or activities may run risks in their portfolio and miss opportunities in their business.

The past twenty years have witnessed varied efforts from different stakeholders including donor community, international organizations, government and non-government organizations (NGOs) towards promoting a vibrant microfinance sector. The promise of microfinance lies in its ability to empower people to work on their own to eradicate poverty while avoiding dependency. Microfinance institutions were introduced and viewed as alternative source of financial services in rural areas. It is believed that microfinance will enable smallholder farmers to easily access to credit facilities without collateral (IFAD, 2003a). In 2007, more than 100 million of the world's poorest families received a microloan worldwide (Daley, 2009). In Tanzania, MUCOBA Bank Plc, Savings and Credit Cooperative Societies (SACCOS), VICOBA's are some of the main providers of microfinance services in the rural areas (Triodo-Facet, 2007). In December 2006, there were over 3,500 SACCOS registered with the Ministry of Agriculture, Food Security and Cooperatives, with approximately 420,000 members. Currently, the country is estimated to have more than 5000 MFI. As the number of MFI has increased across the country, there is growing interest in understanding the nature of MFI and how they are impacting on the credit beneficiaries.

Despite the significance of the agricultural sector to poverty reduction and overall development, the sector is characterized by low production and poorly functioning markets for outputs. Small holder farmers rely on rudimentary methods and technology and they have limited skills and inputs such as improved seeds that would increase yields (FAO, 2009). Peasant and subsistence farming with the use of rudimentary technologies have been very predominant in the agricultural sector of Tanzania, resulting in low levels of production. Although the sector contributes significantly to the Gross Domestic Product of the country, its per capita contribution is very insignificant; thus, the overall production has not been up to the level that will ensure that the sector makes the needed impact (FAO, 2011).

Smallholder farms (with an average farm size of less than 1.2 hectares) which account for 80 percent of total agricultural production in Tanzania is mainly rain-fed and traditional methods of production tend to dominate with very small farmer tractor ratio. Again, it was noted that, the

average food crop farmer has limited contact with the product market and is unlikely to use fertilizers, insecticides, high yielding seed varieties or irrigated-based techniques of production. It was also noted that only 20 percent of the households use fertilizer. Fertilizer use is estimated at 8kg per hectare compared to an average for developed countries of 60kg per hectare.

The gross effect of the situation described above is that, most of these farmers lack economies of scale as a result of the small-scale production, resulting in a high per capita cost and generally low production levels. Finance or capital has been identified as been inadequate to expand production in the sector especially by the low- income earners or farmers who hold small farms (Tanzania Ministry of Finance, 2008). It helps very poor households meet basic needs and protects against risks; it is associated with improvements in household economic welfare; and it helps to empower women by supporting their economic participation and so promotes gender equity.

1.1.1 Marketing Infrastructure Value Addition and Rural Finance Support Programme (MIVARF) as an Intervention

In Tanzania, agriculture is a significant driver for growth and a major source of income, employment and food security for the rural population. In Mainland Tanzania, for instance, agriculture employed 76% of the labour force and contributed 24% to the country's total GDP in 2008, next to the services sector that accounted for 47.8%. However, major constraints to full exploitation of agricultural potential are limited access to financial services by smallholder rural producers and traders, poor rural market infrastructure and inadequate value addition in agricultural produce. As part of the endeavour to address these constraints, the Tanzania government has designed the Marketing Infrastructure Value Addition and Rural Finance Support Programme (MIVARF) to be implemented in 29 regions of Tanzania.

Implementation of MIVARF is aligned with other national development strategies including the 2001 Agricultural Sector Development Strategy (ASDS) which envisaged an agricultural sector that, by 2025, is modernized and commercial, highly productive and profitable, and utilizes natural resources in a sustainable manner.

The rationale for the Programme is to upscale some of the successful activities implemented under Rural Finance Services Programme (RFSP) and Agricultural Marketing Systems Development Programme (AMSDP). Activities being implemented will deepen and help improve access to financial services and rural markets infrastructure development. The Programme is also focusing on improving access to financial and marketing services of the rural economically active poor. MIVARF emphasis is on financial and commercial viability and sustainability in the support for the beneficiaries. The Programme is also up-scaling the Warehouse Receipt System (WRS) model that was pioneered by AMSDP. Programme activities are being implemented in all the 29 regions of the country (24 regions on the Mainland and five (5) regions in Zanzibar).

Implementation of MIVARF activities are governed by *demand-driven and competition for resources* approach. Districts/Local Government Authorities (LGAs) have qualified to participate in the Programme upon meeting specified eligibility criteria. In this strategy, resource allocations to the districts/LGAs are transparent, based on eligibility criteria that include among others willingness to contribute to the cost of the priority activities for the district. This approach signals and puts into practice the best practices and lessons learned from the previous programmes (AMSDP and RFSP). The approach was devised as a mechanism to induce ownership, commitment and eventually sustainability of the Programme activities after the Programme direct intervention comes to an end.

The Programme *overall goal* is to enhance incomes and food security of the target group on a sustainable basis while the development objective of the Programme is to support sustainable and profitable linkage to markets. The intermediate objective of the Programme is to ensure beneficiaries derive profits from production and value addition undertakings. The Programme is comprised of three components that serve as basis for the implementation of its activities. These include; (i) the Marketing Infrastructure and Systems Component; (ii) the Rural Finance Component; and (iii) the Programme Coordination Component. Key Programme activities are clustered within the above components as follows:

Marketing Infrastructure and Systems which has *three* Sub-Components: -

Marketing Infrastructure is aimed at the establishment and sustainable maintenance of improved marketing infrastructure;

Value Addition focusing on the Institutionalization of post-harvest technologies (tools & skills) to groups of smallholder producers/processors in the Regions and Districts, as well as the Rehabilitation and resourcing of 13 Post Harvest (PH) training centres.

Producer Empowerment and Market Linkages is aimed at providing the necessary capacity building to producers and marketing groups, facilitating the establishment of sustainable market linkages through a public-private partnership (PPP) based on market information system, supporting these groups in making optimum use of the warehouses and market infrastructures promoted under sub-component 1, and facilitating their access to finance in order to implement warehouse receipt systems (WRS).

Rural Finance; has two sub-components: -

The Grassroots Financial Services sub-component provides specific support to different financial institutions; including informal financial institutions (IFIs), rural Saving and Credit Cooperative Societies (SACCOS), Microfinance Institutions (MFIs) and community/cooperative banks to increasing rural outreach. Support is also extended to the Tanzania Cooperative Development Commission (TCDC), the Department of Cooperatives in Zanzibar (DOC) and the Moshi Cooperative University (MoCU) to support Rural SACCOS capacity building. Apex institutions are supported to strengthen their capacity to provide effective services to members as well as performance monitoring of the members;

Rural Financial Systems subcomponent aims at enhancing the risk appetite of commercial banks by providing credit fund to increase agricultural lending along the value chain, promote innovation and test new approaches and methods in financial services delivery, financial products and value addition activities in agriculture value chain in rural areas. Under the subcomponent the Ministry of Finance (MOF) and the Bank of Tanzania (BOT) are providing support to review the National Microfinance Policy (NMP) and prepare NMP Bill and the Ministry of Finance Zanzibar (MOFZ) to finalize the microfinance policy for Zanzibar and DOC

and TCDC to improve cooperative Act and SACCOS regulations. This sub-component is also instrumental to develop a Smallholder Credit Guarantee Scheme (SCGS) and Rural Innovation Fund (RIF) to test and implement new/innovative approaches, methods and services in rural areas for the benefit of rural population, in general and the *Programme's* target group, in particular

Programme Coordination

The role of Programme coordination is to ensure efficient and effective Programme management including compliance of MIVARF activities with technical, financial and regulatory standards. The component is central for planning, monitoring and evaluation (PME), establishment of implementation targets, monitor implementation processes and performance, and assess outputs and outcomes. In addition, the coordination unit is responsible for knowledge management (KM), to document and share knowledge and support knowledge-based decision making and policy dialogue.

The design of the Programme recognizes that while the target population is the rural active poor, its selection and support strategies for grassroots financial institutions as well as producer/trader/processing groups is market-based. The main focus is on Smallholder farmers, herders and fishers, small rural-based entrepreneurs, traders and artisans, grassroots microfinance institutions (MFIs) and primary societies/associations involved in processing and marketing.

1.2 Problem Statement

Agriculture continues to be a fundamental instrument for sustainable development and poverty reduction; yet, financial constraints in the sector remain pervasive, agriculture remains costly and finances inequitably distributed, severely limiting smallholders' ability to compete (Miller and Jones, 2010; Miller et al, 2010; Salami et al, 2011; Bee, 2007; World Bank, 2013). The role of credit in agricultural economy cannot be overemphasized as it has been put forward as a tool for agricultural development. Credit for smallholder farmers is gaining relevance in many parts of the world in response to the needs of less privileged entrepreneurs with limited capital base in the sector (Obisesan, 2013).

Gaisina (2010) reported lack of credit as one of the major reasons for minimal investment in agriculture. This in turn creates a situation where farmers are unable to ensure optimal distribution of resources in the short-term (profit - liquidity effect), thus resulting in a decline of long-term investment in land and equipment (investment demand effect). Commercial institutions particularly banks are the major suppliers of finance to business enterprises and agricultural sectors in other countries. It is reported that loans from United Kingdom (UK) banks provide funding for around two thirds of her businesses and they are also the largest source for over 25 percent of firms (Irwin, 2006). Although bank financing is considered helpful in other countries however, the situation is different in Tanzania especially in her agricultural sector.

According to Salami et al (2011) the share of commercial banks' loans to agriculture has been very low compared to loans issued to manufacturing, trade, and other service sectors hampering expansion and technology adoption. Access to formal credit in Tanzania is mainly confined to large urban centers, where collateral requirements are high and less attention has been paid to agribusiness due to the fact that a huge number of activities in the sectors are conducted in rural areas by smallholder farmers. In an effort to boost agricultural production and productivity, smallholder farmers have to use improved agricultural technologies however, the adoption of these technologies is relatively expensive and yet small holder farmers cannot afford to self-finance it (Obisesan, 2013). Enhanced provision of rural credit would therefore accelerate agricultural production and productivity.

Although there have been a number of studies to assess the impact of microfinance on rural development, a high proportion of them have been focusing on poverty eradication e.g children's education, improving health outcomes for women and children, and empowering women by participation in microfinance programs see (MkNelly and Christopher, 1999; Khandker, 2005). In contrast, there is inadequate empirical evidence to assess the impact of community banks on agricultural productivity in rural areas where majority of the low income and subsistence farmers exist. This justifies the need for more research case by case to inform policy initiatives on the impact of cooperative and community banks to small holders farmers assessed in terms of access to financial services, usage, and products and then the effects to the

agriculture activities, production and productivity, use and adoption of technology and post-harvest handling including non-farm enterprises

1.3 Justification of the Study

Although there have been a number of studies to assess the impact of microfinance on rural development, a high proportion of them have been focusing on poverty eradication e.g children's education, improving health outcomes for women and children, and empowering women by participation in microfinance programs see (MkNelly and Christopher, 1999; Khandker, 2005). In contrast, there is inadequate empirical evidence to assess the impact of community on agricultural productivity in rural areas where majority of the low income and subsistence farmers exist. This justifies the need for more research case by case to inform policy initiatives on the impact of cooperative/community banks to smallholders' farmers assessed in terms of access to financial services, usage, and products and then the effects to the agriculture activities, production and productivity, use and adoption of technology and post-harvest handling including non-farm enterprises

1.4 Research Questions

1. What are the effect of financial products on use of improved inputs by smallholder farmers in the study areas?
2. What are the effect of use of improved inputs and technologies by smallholder farmers on their productivity and wellbeing in the study areas?
3. What is moderating effect of improved input usage on relationship between credit facilities and productivity and wellbeing of smallholder farmers in the study areas?
4. What are the financial products available to smallholder farmers in the study area?

1.5 Objectives of the Study

The main objective of this study is to assess the impact of credit facilities on smallholder farmers' productivity and wellbeing

Specific objectives are:

1. To examine the effect of financial products on use of improved inputs by smallholder farmers in the study areas
2. To examine the effect of use of improved inputs and technologies by smallholder farmers on their productivity and wellbeing in the study areas
3. To examine moderating effect of improved input usage on relationship between credit facilities and productivity and wellbeing of smallholder farmers in the study areas
4. To identify the financial products available to smallholder farmers in the study area

1.5.1 Analysis of objectives of the study

Table 1: Analysis of objectives of the study

S/N	Objectives	Data Required	Analytical Techniques
1.	To examine the effect of financial products on use of improved inputs by smallholder farmers in the study areas	<ul style="list-style-type: none"> ✚ Types and nature of credit facilities ✚ Duration of payback ✚ Types and nature of inputs like fertilizers, Technology, seeds and seedling, ✚ Type of labour (family or hired) 	Descriptive (frequency distribution, mean)
2.	To examine the effect of use of improved inputs and technologies by smallholder farmers' productivity and wellbeing in the study areas	<ul style="list-style-type: none"> ✚ Types and nature of inputs like fertilizers, Technology, seeds and seedling, ✚ Type of labour (family or hired) ✚ Household's income ✚ Farm Yield ✚ Access to market ✚ Produce cost ✚ Access to health care 	Descriptive (frequency distribution, mean)
3.	To examine the moderating	<ul style="list-style-type: none"> ✚ Types and nature of inputs 	Descriptive (frequency

	role of credit facilities on smallholder farmers' productivity and wellbeing in the study areas	<p>like fertilizers, Technology, seeds and seedling,</p> <ul style="list-style-type: none"> ✚ Type of labour (family or hired) ✚ Types and nature of credit facilities ✚ Duration of payback ✚ Household's income ✚ Farm Yield ✚ Access to market ✚ Produce cost ✚ Access to health care 	distribution, mean) and inferential statistics (regression and T-test)
4.	To identify the financial products available to smallholder farmers in the study area	<ul style="list-style-type: none"> ✚ Types and nature of financial product render by bank ✚ ✚ Farm Yield ✚ Access to market ✚ Produce cost ✚ Socio-demographic characteristics ✚ Types and nature of credit facilities ✚ Duration of payback 	Descriptive (frequency distribution, mean) and inferential statistics (regression and T-test)

1.6 Research Hypotheses

1. **H₀:** Financial products does not have significant effect on improved inputs by smallholder farmers in the study areas
2. **H₀:** There is no relationship between improved inputs and smallholder farmers productivity and welfare in the study areas
3. **H₀:** Relationship do not exist between improved input usage and productivity and

welfare of smallholder farmers in the study areas

1.7 Definition of Concepts

Rural Finance: It comprises the full range of financial services - loans, savings, insurance, and payment and money transfer services - needed, offered, or used in rural areas by household and enterprises. The term encompasses agricultural finance. Rural finance is an umbrella term, which comprises a broad range of financial vehicles, including but not limited to; loans, savings, insurance, money transfer and payment services which are offered to be used by the rural individuals, households, and small enterprises. In African countries, the term mostly encompasses various agricultural finances which relates to the financial services including short-term and long-term loans for farming and livestock, covering the full agricultural value chain as; input supply, production, distribution, wholesaling, processing, marketing, and also insurance to the agricultural and livestock products and resources. The rural financing is usually offered by formal (government) and informal (mostly private) financial institutes as well based on the financial arrangements inside the agricultural value chain itself.

Smallholder Farmers: Smallholder farmers are also defined as those farmers owning small-based plots of land on which they grow subsistence crops and one or two cash crops relying almost exclusively on family labour. Smallholder farmer rely mainly on family labour and is the backbone of agricultural production in developing countries (Dercon, 2009). According to the United nation Food and Agriculture Organization (FAO), four-fifths of the developing world's food is a product of small-sized farms (FAO, 2011). Small family-run farms are also home to majority of people living in absolute poverty, and half of the world's undernourished people (FAO, 2011).

Productivity: it describes various measures of the efficiency of production. A productivity measure is expressed as the ratio of output to inputs used in a production process, i.e. output per unit of input. The concept of productivity is a relative term and sometimes it is considered to be an overall efficiency and effectiveness of productive units or as a ratio of output to the corresponding inputs used. Though all these definitions are apparently conflicting to each other but their different interpretations have common characteristics i.e. productivity is someone's

ability to produce more economically and efficiently (Mohammad, 1992). In this study therefore, agricultural productivity could be defined as ratio of output to inputs in relation to fertilizers, improved seeds, labour and technology (tractor and ox-plough) employed in agriculture.

Iringa: Iringa is one of Tanzania's 31 administrative regions. The regional capital is Iringa. The region's population is 941,238. It is primarily agricultural and boasts the second-highest per-capita GDP in the country. Iringa Region is home to Ruaha National Park, Tanzania's second largest park, which has an abundance of wildlife. Iringa region has a total area of 35,743 square kilometres (13,800 sq mi) (NBS, 2016). It is surrounded by Singida and Dodoma in the north, Morogoro to its east, Mbeya to its west and Njombe towards the south (NBS, 2016).

CHAPTER TWO

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Review of Theory and Conceptual Framework

2.1.1 Review of Theory

Agriculture finance is guided by various theory and model explain that developing country with low saving rate, the rate of needed GDP growth can be plugged by loan/credit. It further reviews the theory that explain impact of rural finance to smallholder famers, the limiting factors and give the details on how it can improve smallholder famers' productivity. Therefore, the underpinning theories used to explain this study's research framework include: Rostow Development Theory and The High-Payoff Input Model

2.1.1.1 Rostow Development Theory

Rostow's theory of development suggests that, development requires substantial investment in capital equipment. To foster growth in developing national the right condition for such investment would have to be created.

Saving and capital formation accumulation are central to the process of growth, hence development. The key to develop is to mobilize savings to generate the investment, to set in motion self-generating economic growth. Development can stall at take off stage for lack of saving. If 15-20% of GDP growth is required and domestic saving rate is 5% then international aid/loan must total 10-15% in order to plug the saving gap. Resultant investment means a move to a stage 4 drive to maturity and self-generating economic growth

Strength. Rostow suggest that in order to move from take of stage, which is the stage most the developing countries are, to maturity stage loan or aid is needed to plug saving to the rate of needed growth rate of GDP. According to Rostow the different between the rate of growth needed in the economy and the saving rate is the financial gap that the loan (microfinance in this case) is expected to fill in.

Weakness. Rostow explain the necessity of loan (microfinance) to shift up the economy, but he didn't consider the accessibility of that loan as a limiting factor for filling gap and the problem associate with loans, especially in developing countries. Generally, Rostow does not explain the experience of country with different culture and traditional e.g. sub-Saharan countries which

have experienced little economic development. He considered development experience of western countries (Todaro and Smith, (2009).

2.1.1.2 The High Payoff Input Model

The inadequacy of policies based on the conservation, urban-industrial impact, and diffusion models led, in the 1960s, to a new perspective that the key to transforming a traditional agricultural sector into a productive source of economic growth is investment designed (Schultz, 1964) to make modern high payoff inputs available to farmers in poor countries. Peasants, in traditional agricultural systems, were viewed as rational, efficient resource allocators. They remained poor because, in most poor countries, there were only limited technical and economic opportunities to which they could respond.

The new, high payoff inputs, as identified by Schultz (1964), can be classified into three categories: (a) the capacity of public and private sector research institutions to produce new technical knowledge; (b) the capacity of the industrial sector to develop, produce, and market new technical inputs; and (c) the capacity of farmers to acquire new knowledge and use new inputs effectively. The enthusiasm with which the high payoff input model has been accepted and translated into an economic doctrine has been due in substantial part to the Success of efforts to develop new high-productivity grain varieties suitable for the tropics (Brown, 1970; Kennedy, 1967 & Schultz, 1964).

New high-yielding wheat and corn varieties were developed in Mexico, beginning in the 1950s, and new high-yielding rice varieties in the Philippines in the 1960s. These varieties were highly responsive to industrial inputs, such as fertilizer and other chemicals, and to more effective soil and water management. The high returns associated with the adoption of the new varieties and the associated technical inputs and management practices have led to rapid diffusion of the new varieties among farmers in several countries in Asia, Africa, and Latin America. The impact on farm production and income has been sufficiently dramatic to be heralded as a "green revolution."

The significance of the high payoff input model is that policies based on the model appear capable of generating a sufficiently high rate of agricultural growth to provide a basis for overall economic development consistent with modern population and income growth requirements. As interpreted generally, the model is sufficiently inclusive to embrace the central concepts of the conservation, urban-industrial impact, and diffusion models of agricultural development. The unique implications of the model for agricultural development policy are the emphasis placed on accelerating the process of development and propagation of new inputs or techniques through public investment in scientific research and education.

The high payoff input model, as developed by Schultz (1964), remains incomplete as a theory of agricultural development, however. Typically, education and research are public goods not traded through the market place. The mechanism by which resources are allocated among education, research, and other alternative public and private sector economic activities is not fully incorporated into the Schultz model. The model does treat investment in research as the source of new high-payoff techniques. It does not explain how economic conditions induce the development and adaption of an efficient set of technologies for a particular society. Nor does it attempt to specify the processes by which factor and product price relationships induce investment in research in a particular direction.

Strength. The model explains that developing countries lack economic opportunities that they can respond to. He generally views that financial services to the farmers is low because of lack of opportunities. That the microfinance is still performing low to fill the financial needs of the poor. In his model he views the developing country as “poor but efficient”.

Weakness. The high-payoff input model remains incomplete as a theory of agricultural development. The mechanism by which resources are allocated among education, research, and other public and private sector economic activities was not fully incorporated into the model.

2.1.2 Conceptual Framework

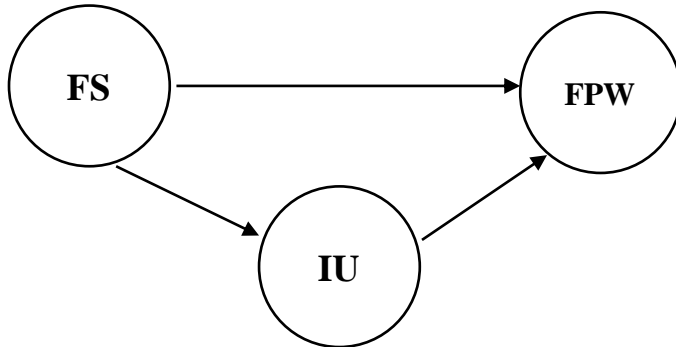


Figure 1: Conceptual Framework of the Study as developed by the Researcher

FS: Financial Services

IU: Inputs Usage

FPW: Farmers' Productivity and Welfare

2.1.2.1 Overview of Smallholder Farming in Tanzania

The economy of the United Republic of Tanzania (URT) is predominantly rural-based with relatively low levels of manufacturing and value addition to commodities produced. Agriculture is a major contributor to the economy and provides livelihoods for the majority of the population. Primary production plays an important part in maintaining the country's food security, while the industrial and horticultural crops subsectors are important foreign exchange earners. An estimated 55 percent of the land in the URT could be used for agriculture and more than 51 percent for pasture. However, approximately 23 percent of the vast agricultural land is cultivated and yet the practice of shifting cultivation causes deforestation and land degradation on pastoral land (MAFAP, 2013).

The agriculture sector is the dominant source of livelihood in Africa especially in low-income rural areas. About 70% of the population is directly employed in the sector and it accounts for approximately 30% of the region's gross domestic product (GDP) (Faye et al, 2013). According to MAFAP (2013), the weight of Tanzania's agriculture sector in total GDP decreased from 50

percent in 2000 and further decelerated to 28 percent in 2010 and is forecast to decline further to 18 percent by 2025.

Recently, the agriculture and agribusiness sector in Africa has been challenged by mining and hydrocarbons as the latter two continue to attract the interest of foreign investors. The sector is reported to have boosted Foreign Direct Investment (FDI) inflows to Africa. Faye et al (2013) detailed that FDI inflows in Africa went from about United State Dollar (USD) 1 billion in 1990 to over USD 43 billion in 2011. In the second half of the last decade, the share of FDI going to the agribusiness sector in Africa is reported to have increased from approximately USD 2 billion in 2011 to about USD 5 billion in 2005 in spite of the sector being relatively small.

Smallholder farming involves producing agricultural yields on relatively small plots of land, where smallholder farmers cultivate land less than five hectares predominantly located in rural provinces (Jari, 2009). It involves direct operation by the farmer and the employment of family labour although they are sometimes supplemented by temporary employees. Smallholder farming in Tanzania involves the production of agricultural activities such fiber (sisal and cotton), beverages (coffee and tea), sugarcanes, grains (a diverse range of cereals and legumes), horticulture (temperate and tropical fruits, vegetables and flowers) and edible oils (InfoDev, 2012).

In Africa and Tanzania in particular, the production process of the agribusiness sector is largely conducted by poor household's majority of who are located in rural areas. According to Kimathi et al, (2008), rural areas are characterized by higher transaction costs for both the financial institutions and their clients, higher systemic risks, more volatile cash flows; as well as lower risk-bearing ability and higher vulnerability due to higher incidences as well wide spread and depth of poverty. Therefore, while a large majority of the poorest households are directly linked to agriculture in many ways, agricultural lending remains mostly an uncharted territory for development finance.

2.1.2.2 The Need to Improve Smallholder Farmers' Access to Bank Financing

Limited access to finance for agribusiness firms is one of the main barriers to increased competitiveness in the sector. Despite the number of challenges facing the sector including

access to finance, the agricultural sector as well as the agribusiness sector have continually been cited as the driving force for income generation, job creation, and as a backbone of most economies (Miller et al, 2010; Salami et al, 2011; Bee, 2007; World Bank, 2013). According to MAFAP (2013), the sectors' role in providing employment in Tanzania is forecast to remain close to 50 percent until 2025. Therefore, easing the sectors' access to finance implies an increase in the level of employment and consequently increased income generation for the vast majority of people.

The agricultural sector continues to play a vital role for economic growth and sustainable development and it is widely acknowledged that the development of the agricultural sector is an effective instrument to alleviating poverty and enhanced food security (Miller et al, 2010; Louw et al, 2008). Kimathi et al, (2008) state that enhanced access to financing triggers real incomes that will increase substantially across poor communities, value chain players and market players. Therefore, growth in agricultural productivity is likely to directly impact on economic growth with strong effects on poverty.

On the other hand, access to finance will enable producers in the agriculture sector to dispose of the surplus realized to neighboring countries. Market is one of the major obstacles facing producers in the agribusiness sector resulting to the spoilage of the surpluses blamed on insufficient capital to afford quality and standard package materials. Easing access to finance will enable producers to pack their produce in standard packages so as to export them to other countries and hence earn foreign currency.

2.1.2.3 Access to Credit and Agricultural Productivity Linkage

The importance of access to credit in agricultural production cannot be overemphasized. According to Carter and Weibe (1990), Farmers need both ex-ante and ex-post access to capital. Ex-ante capital access is required in order to finance vital production costs such as labour and purchase inputs which needed to be paid ex-ante, that is, prior to the actual realization of production. On the other hands, access to capital after the realization of the production process, that is ex-post capital access, is of particular importance when there is no insurance as it's often the case in low income agrarian economies. Thus, in case of annual fluctuation in production, ex-

post access to capital is highly essential for the stabilization of households' consumption from year to year

This implies that access to credit may not have a direct impact on productivity, but it could have a positive and significant indirect impact through its positive influence on agricultural technologies adoption, increased capital for farm investment, hired labor, and improved household welfare through improved health care and better nutrition. In addition, Feder *et al.* (1990) posit that credit allows farmers to satisfy the cash needs induced by the production cycle which characterize agriculture; land preparation, planting, cultivation, and harvesting are typically done over a period of several months in which very little cash revenue is earned, while expenditure on materials, purchased inputs, and consumption need to be made in cash. Thus, access to credit may affect farm productivity because farmers facing binding capital constraints would tend to use lower levels of inputs in their production activities compared to those not constrained (Feder *et al.*, 1989; Petrick, 2004).

Agricultural production is strongly conditioned by the fact that inputs are transformed into outputs with considerable time lags (Conning and Udry, 2005), causing the rural household to balance its budget during the season when expenditure is high for input purchases and consumption and revenue is small. With limited access to credit, the budget balance within the year can become a constraint to agricultural production. When liquidity is a binding constraint, the amounts and combinations of inputs used by a farmer may deviate from optimal levels that in turn limit optimum production or consumption choices. Economic theory suggests that farmers facing binding capital constraints would tend to use lower levels and combinations of inputs than those whose production activities are not limited by capital constraints (Freeman *et al.*, 1998). The implication of this is that access to credit could increase rural poor households' willingness to adopt new technologies that raise both mean levels and riskiness of income (Rosenzweig and Binswanger, 1993; Carter, 1984).

Although, it is noted that good planting material improves cassava productivity and enhances varietal yield stability and the type of planting material plays a significant role in determining the quantity of roots at harvest, a review of factors that affect technology adoption carried out by

Feder and Umali (1993) and Cornejo and McBride (2002) highlight access to credit as a key determinant of adoption of most agricultural innovations. It is believed that access to credit promotes the adoption of risky agricultural technologies through the relaxation of the liquidity constraint as well as through the boosting of household's risk bearing ability. With an option of borrowing, a household can do away with risk reducing, but inefficient income diversification strategies and concentrate on more risky but efficient investments (Eswaran and Kotwal, 1990). In the case of cassava production in Nigeria, credit constraint has been singled out as a major factor militating against adoption of modern cassava production techniques such as herbicides, hybrid cassava stake, insecticides, inorganic fertilizer, tractor, appropriate spacing, planting date and tillage practice (Nweke et al., 2002). Yet, many findings in the literature (Iyanda et al., 2014) have pointed to the immense role of adoption of these technologies in enhancing productivity, poverty eradication and attainment of food security in developing countries like Nigeria.

More importantly, according to Freeman *et al.* (1998), farmers' access to credit is also very crucial in the sense that it can facilitate the levels of input use closer to their potential levels when capital is not a constraint, consequently leading to higher levels of output per farm and productivity, given fixed resources such as land. This implies that the marginal contribution of credit brings input levels closer to the optimal levels, thereby increasing output and productivity (Feder *et al.*, 1990). Additionally, access to credit is also considered to be an important tool for smoothing consumption and promoting production especially for poor households (e.g. Swain *et al.*, 2008; Conning and Udry, 2005; Armendariz and Morduch, 2005; Robinson, 2001; Zeller *et al.*, 1997). This means that access to credit can significantly increase the ability of households with no or few savings to meet their financial needs for agricultural inputs; especially those that are highly necessary for weed, pest, and disease control and productive investments. Furthermore, easy availability and access to credit enables farmers and entrepreneurs to diversify by undertaking new investment.

2.2 Review of Methodology

Adebayo, Sanni, & Baiyegunhi (2012) used propensity score matching to study the impacts of access to the United Nations Development Program microcredit scheme among smallholder farmers in Kaduna State, Nigeria. Ashraf, Giné, & Karlan (2009) conducted a randomized

control trial (RCT) of an intervention among smallholder farmer groups in Kenya that was designed to encourage cultivation and marketing of export crops.

Through a randomized control trial in Zambia, Fink, Jack, & Masiye (2014) evaluated whether relaxing credit constraints through in-kind loans influenced the decisions of smallholder agricultural households to sell their labor off-farm, a strategy commonly used to smooth consumption during seasonal fluctuations in income.

In a randomized control trial that offered group-liability loans due after harvest to rural women over two agricultural seasons in Mali was conducted by Beaman, et al. (2014). In an unpublished study, Burke (2014) conducted an experiment among One Acre Fund farmers in Kenya to test whether a cash loan offered at harvest would allow farmers to delay maize sales until prices were higher.

In another development, Awunyo-Vitor, Abankwah, & Kwansah (2012) studied businesswomen's participation in microcredit in rural central Ghana using propensity score matching. Crépon, et al. (2014) conducted a randomized control trial in a rural area of Morocco dominated by smallholder agriculture. The intervention provided group-liability loans for animal husbandry and non-farm businesses.

Also, in another randomized control trial in rural Ethiopia, Tarozzi, Desai, & Johnson (2015) provided group-liability business loans which were bundled in some cases with family planning programs. Kim, et al. (2009) conducted a combined microfinance and health education intervention through a randomized control trial in South Africa. They measured economic wellbeing using nine indicators and found that businesswomen in villages receiving the microfinance-only and microfinance plus training interventions both had higher levels of economic well-being than women in control villages.

Ali, Deininger, & Duponchel (2014) measured the impacts of semi-formal credit provided by cooperatives, input suppliers, microfinance institutions, and NGOs in rural Rwanda using econometric methods. Using a four-panel dataset from northern Ethiopia covering a 10-year period, Berhane & Gardebroek (2011, 2012) evaluated the effects of a range of formal credit

products, including group-liability loans and microenterprise loans on rural poverty. They used fixed effects and random trend models.

Owuor (2009) used propensity score matching to evaluate the effects of group-liability loans on smallholder farmers in Kenya, finding that participation increased household incomes by USD 200-260 in a single production period, and over the course of a year by USD 478-641, depending on the matching method. In a randomized control trial of farmers' clubs participating in a savings intervention conducted in partnership with the Opportunity Bank of Malawi, Brune, et al. (2014) found positive impacts of ownership of savings accounts on several measures of production and income.

Bandara, Dehejia, & Lavie-Rouse (2014) examined the relationship between access to financial services and the ability of households to cope with agricultural shocks. The authors considered the effect of having a bank account and access to credit on use of child labor, which is a common coping strategy in sub-Saharan Africa. Annan, et al. (2013) conducted a randomized impact evaluation of an intervention to establish 80 village savings and loan associations (VSLAs) in Burundi.

Having reviewed different methodologies used in related articles by different authors across the globe, ranging from Propensity Score Matching, Randomized Control Trial (RCT), and Econometric Analysis. Although Randomized Control Trial (RCT) was widely used by most African authors, but not widely used by most authors in Tanzania in related articles. In view of that, RCT will be adopted as the methodology to be used in this study.

Table 2: Review of Methodologies in Related Articles

Citation	Methodology	Sample size	Country	Product	Liability	Production	Income/ Wealth	Consumption/ Food Security	Resilience	others
Adebayo, et al. (2012)	Propensity Score Matching	222 individuals	Nigeria	Loan + training	Any	NS		NS		
Ashraf, et al. (2009)	RCT	726 farmers (36 farmer groups)	Kenya	Loan + training	Group	+	NS			+
Beaman, et al. (2014)	RCT	7200 households	Mali	Balloon loan	Group	+				

		(198 villages)								
Burke (2014)	RCT	1589 farmers (17 locations)	Kenya	Balloon loan	Individual		NS	NS		+
Fink, et al. (2014)	RCT	439 households (40 villages)	Zambia	Maize flour on credit	Individual		+	M	+	
Awunyo- Vitor, et al. (2012)	Propensity Score Matching	300 individuals	Ghana	Loan	Unspecifie d		+			
Crépon, et al. (2014)	RCT	5551 households (162 villages)	Morocco	Loan	Group		M	NS		NS
Kim, et al. (2009)	RCT	1409 individuals (12 villages)	South Africa	Loan + training	Group			M		+
Tarozzi, et al. (2015)	RCT	6412 households (133 peasant associations)	Ethiopia	Loan	Group		NS	-		M
Ali, Deininger & Duponchel (2014)	Econometric Analysis	3600 individuals	Rwanda	Semiform al loan	Unspecifie d	+	+			
Bandara, et al. 2014	Econometric Analysis	3755 children and youth	Tanzania	Access to credit	Any				+	+
Berhane & Gardebroek (2011)	Econometric Analysis	351 households	Ethiopia	Loan	Any			+		
Berhane & Gardebroek (2012)	Propensity Score Matching	351 households	Ethiopia	Loan	Any			+	+	+
Boni & Dia Zira (2010)	Econometric Analysis	103 individuals	Nigeria	Loan	Unspecifie d	+				
Diagne (2002)	Econometric Analysis	404 individuals	Malawi	Access to credit	Any	M				
Doocy et al. (2005)	Cross- sectional survey	819 individuals	Ethiopia	Loan	Group			M	M	
Owuor (2009)	Propensity Score Matching	400 farmers	Kenya	Loan	Group		+			
Sackey (2005)	Econometric Analysis	13512 individuals	Ghana	Access to formal credit	Any			+		
Sharma & Buchenrieder (2002)	Review of Impact Evaluations	N/A	Multiple	Microfina nce	Any	+	M	M		M

Note: +, Positive Impact; -, Negative Impact; M, Mixed: Captures any combination of Positive, Negative and/or Non-Significant Impacts but in practice, no studies reported both positive and negative results so M represents mixes of positive and non-significant results and in a few cases positive results but characterized by authors as potentially spurious. NS, No Significant Impact. A blank cell indicates the study did not measure the outcomes. All significant results are significant at the 5% level or higher. “Other outcome measures” are those not covered by the four main outcome areas, including health, education, social and empowerment outcomes, among others.

2.3 Review of Empirical Studies

Kimaro *at al.* (2012), assessed Micro-Finance Services in Agricultural Sector Development in Tanzania, and conclude that high interest rates were significant barriers to borrowing decisions, which limit accessibility to microfinance in which the ultimate result being failure to fill financial gap. He further said that women tend to own no land therefore the possibility of having large scale is low thus have high possibility of covering their financial gap.

Harper (2005) conducted a study in developing countries with the aim to find out if there are critical mismatch between farm credit and microfinance. His study found that, microfinance services is very limited since there are very few MFIs that ventured into farm credit and their loans are used mainly for consumption of off-farm investment. In his study he further concluded that the rate of return from the investment is lower than the interest rate in most microfinance institutions.

Moreover, the study conducted by Irou and Onyeneke (2012), used regression analysis to analyze social economic effect of microfinance on small poultry production in Imo state Nigeria. The study found that age of the respondent, education level, volume of loan obtained and member of cooperation society has significance influence on poultry production.

Likewise, Karlan and Zinman (2006) conducted a study in South Africa, their result show that recipients of micro credit are better off than non-beneficiaries. Khan and Rahaman (2007) in the Chittagong district in Bangladesh reported that recipients of microfinance facilities improved their livelihoods and moved out of poverty therefore they empowered themselves and become very active participants in the economy.

Alam (1988) made a study to measure the productivity growth of the Grameen Bank members. His study was confined within comparing the agricultural productivity alone. His findings suggest that the small and marginal farmers as a result of participating in the Grameen Bank

programs can allocate a higher percentage of their land for the cultivation of high-yielding varieties (HYV) and have improved their agricultural productivity. His studies showed that the users of microfinance can bring 81.5% of their cultivable land under HYV Boro production compared to 76% of the non-users. Yield of the users of microfinance for HYV Boro was 47.6 maunad per hectare while it was 38.2 for the non-users.

Islam & Tenaw (2009) study rural financial services, and effect of microfinance on agriculture, they revealed that micro credit had marginal impact on the agriculture sector as microfinance institutions (MFIs), limit their lending to those possessing less than half an acre of land (the functionally landless). As a result, marginal and small farmers are frequently termed as "missing middle." So, their conclusion was people who possess low scale tend to miss out financial services from microfinance. He further found that government subsidy, have positive impact on agriculture productivity and point high interest rates as a limiting factor to access financial services.

CHAPTER THREE

METHODOLOGY

3.1 Study Area

The study was conducted in Iringa region. Iringa was preferred because is among the biggest regional in the country that specialize in farming activities, thus it was definitely easy to get sufficient and reliable data. Also, the region forms part of the southern highland zone of Tanzania, characterized by pleasant climate and high rainfall, therefore financial crisis was presumed to be the major causes for lower performance of agriculture in the area studied.

3.1.1 Description of the Study Area

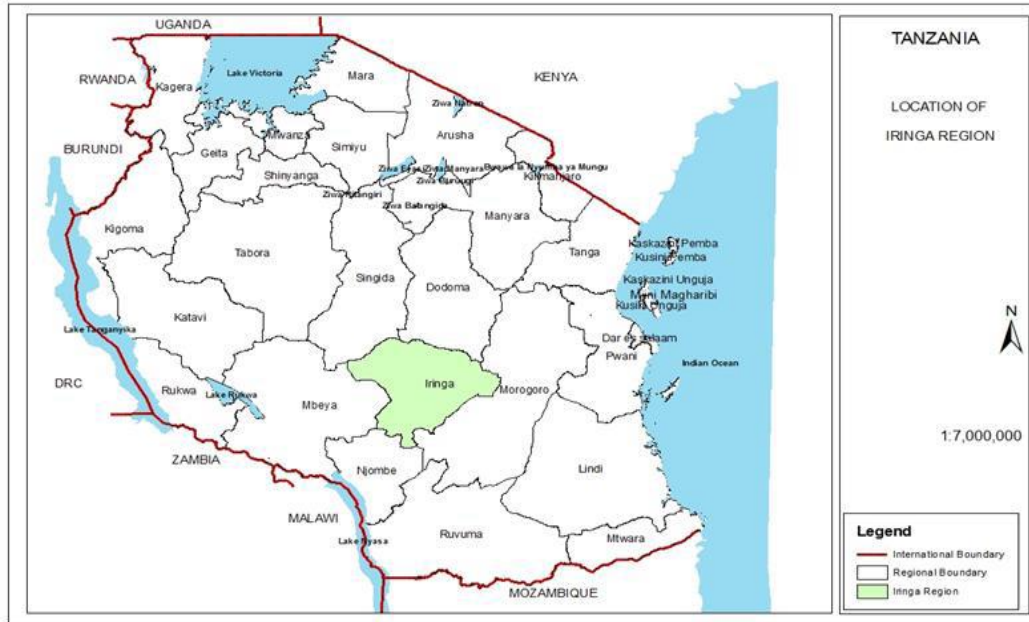
Iringa is one of Tanzania's 31 administrative regions. The regional capital is Iringa. The region's population is 941,238. It is primarily agricultural and boasts the second-highest per-capita GDP in the country. It is located in the southern highlands zone of Tanzania, below the equator and between latitudes 60 55" and 90 00". Longitudinally the region is situated between 330 45" and 360 55" east of Greenwich. To the north, it shares borders with Singida and Dodoma Regions; Morogoro Region to the east, Mbeya Region to the west while Njombe Region lies on the south as indicated in the map below. Geographically Iringa is in the southern highlands of Tanzania Mainland. It boards five regions namely Morogoro Region in the East, Njombe Region in the South, Dodoma and Singida Regions in the North and Mbeya Region in the West.

Iringa region has the fifth largest GDP out of the 30 regions in Tanzania. On a per-capita basis, Iringa's 2012 figure of about TSh 1,400,000 ranks it second only to Dar es Salaam Region which includes the capital of Tanzania (UNDP, 2015).

Agriculture is the mainstay of Iringa's economy accounting for 85% of its GDP (NBS, 2013). Between 2008 and 2011, an average 345,000 hectares (1,330 sq mi) of land was planted with food crops annually. Maize is the dominant cereal with about 245,000 hectares (950 sq mi) of land devoted to it. Beans are second most important food crop being grown on 56,000 hectares

(220 sq mi). Cash crops take about 56,000 hectares with sunflower being the major output (NBS, 2013).

Figure 2: Map of Tanzania showing the Study Area



Source: National Bureau of Statistics, GIS unit, 2013

3.2 Nature and Sources of Data

Both Qualitative survey method (Key Informant Interviews (KIIs) and quantitative survey method (well-structured questionnaire) were used in carrying out the study. Types of data collected include: socio-economic data, welfare data, and information on the disbursement of credits by the MFIs and application of credits by famers. Both secondary and primary data were used in this study. The primary data were collected through the use of well-structured questionnaires and administered by well-trained enumerators in the study area. Secondary data were obtained from the records made available by the MIVARF administrative centre in Arusha, Tanzania through relevant reviews and publications, text books and publications of the Bank of Tanzania

3.3 Method of Data Collection

This study used farmers' group as a sampling framework. Households was categorized into Credit Beneficiaries and Non- Credit Beneficiaries. Primary data were collected with the aid well-structured questionnaire by using *KoBoCollect* v1.140a application (part of KoBoToolbox). Five enumerators were trained on the use of application and they were all deployed to field for the data collection. Also, some notable members of the farmers' group and top management staff of the bank were interviewed. Proportional random sampling was used to select two hundred and ten (210) credit beneficiaries (experiment) smallholder's farmers and another two hundred and ten (210) non- credit beneficiaries (control) smallholder's farmers. So, 70 questionnaires were administered in each of the district (Iringa Rural, Mufinidi and Kilolo) for both experiment and control respondents.

3.4 Analytical Methods/Techniques

The collected dataset was subjected to assumptions like Common Method Variance (VMV), linearity, normality and Multicollinearity (Hair, Black, Rabin, Anderson & Tatham, 2010) to screen the data. Once these assumptions were satisfied, the main data analysis was carried out with the aid of SPSS version 21.

3.5 Reliability of Instrument

The questionnaire employed for the primary data in this study was pre-tested at Mufindi District and found very reliable. It led to rework before the main study was conducted. Although the respondents may be subjective, the questionnaire is still able to capture relevant and needed information based on their opinions.

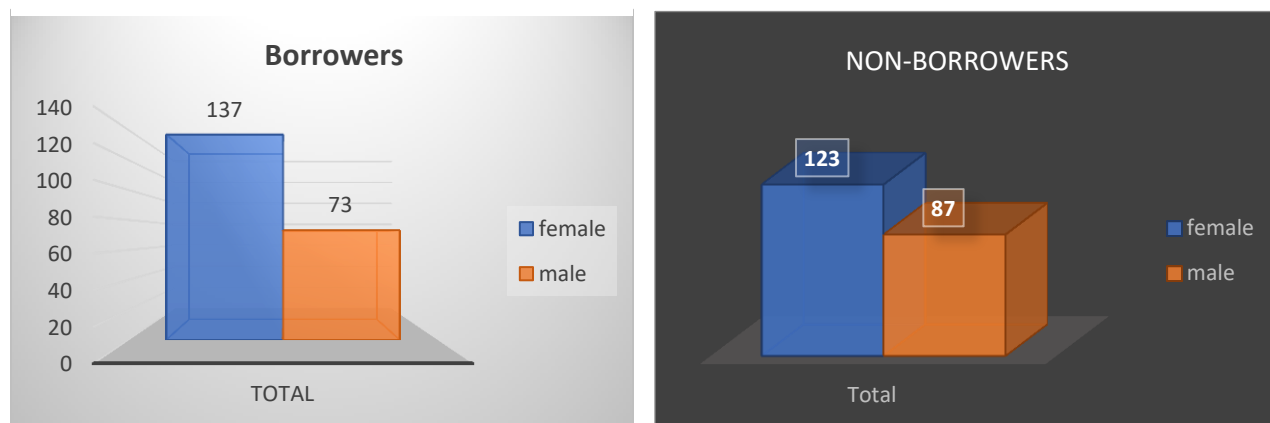
CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

4.1.1. Gender of the Respondent

The figures 3 and 4 show that majority of respondents are female (65% for the beneficiaries 59% for the non-beneficiaries). This is because females are more involved in practicing agriculture than male. This was also affirmed by National agriculture and livestock policy 1997, ratio of male to female farmers involved in the agricultural sector in the country to be 1:1.5. And they also found that women in Tanzania produce about 70% of the food crops and also bear substantial responsibilities for many aspects of export crops and livestock production. (Agriculture and Livestock Policy, 1997)

Figure 3: Gender of Respondents

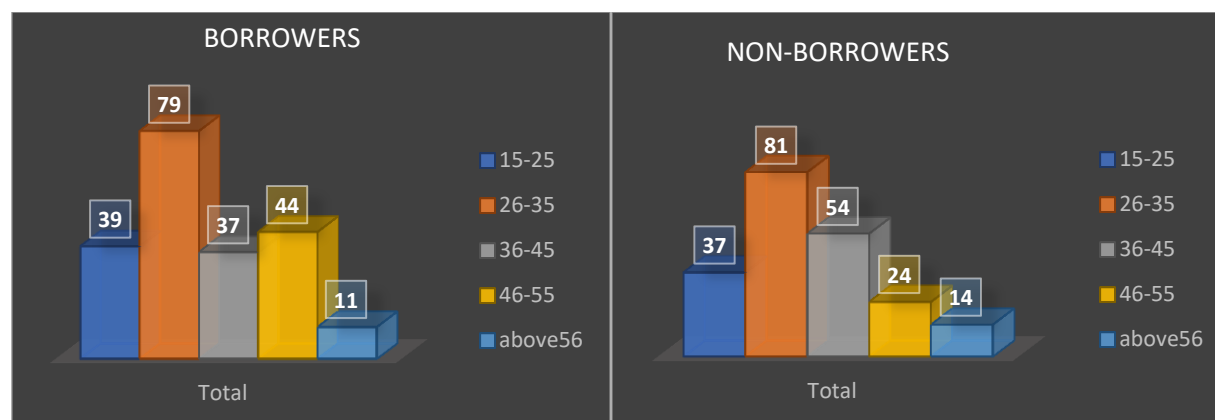


Source: Field Survey, 2018

4.1.2. Age of Respondents

The age median class is 26 – 35 for both borrowers and non-borrowers, this implies that majority of the respondent fall in the age of 26 – 35 with the total of 79 and 8 frequency respectively. It also shows majority of the respondents are old enough to be able to identify the financial cost of farming, so they are full aware of how much credit they need to borrow to cover their financial gap.

Figure 4: Age of Respondents



Source: Field Survey, 2018

4.1.3 Education Level

The results from the Table 3 show that majority of respondents (162 and 155 respectively for borrowers and non-borrowers) have primary education. At least those with primary education were regarded as literates because they can read and write in their national language (Swahili). Only few respondents with total cumulative frequency of 11 and 12 for borrowers and non-borrowers respectively as shown above. So, the cumulative frequency of those who attend primary, secondary and university level (literates) were 199 (94%) and 194 (92%). Thus, implies majority of the respondents have education level necessary enough for seeking out bank services, including filling up loan application form, and able to read and understand the loan procedure, which will ease their accessibility of bank's financial services.

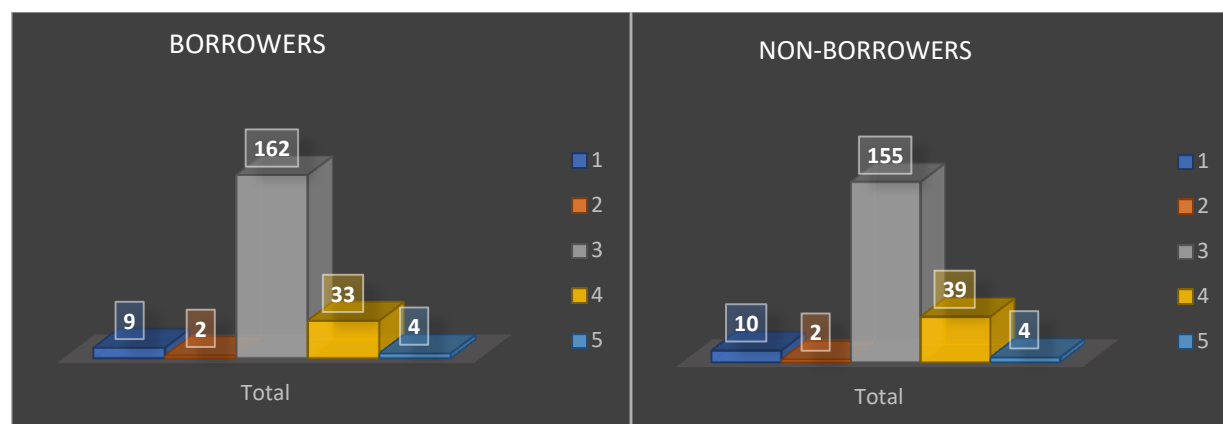
Table 3: Education Level of Respondents

Education Status	Code	Borrowers		Non- Borrowers	
		Frequency	Percentage	Frequency	Percentage
No formal Education	1	9	4	10	5
Adult Education	2	2	1	2	1
Primary Education	3	162	77	155	73
Secondary Education	4	33	16	39	19
Higher Education	5	4	2	4	2

Total	210	100	201	100
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Source: Field Survey, 2018

Figure 5: Educational Level of Respondents



Source: Field Survey, 2018

4.1.5 Land Ownership for Agricultural Purposes

The results from the Table 4 show that borrowers' respondents have access to land ownership. Although majority of them, 161 (77%) and 148 (71) respectively for borrowers and non-borrowers) own their farmland for agricultural purposes

Table 4: Land Ownership for Agricultural Purposes

	Borrowers		Non-Borrowers	
	Frequency	Percentage	Frequency	Percentage
Own	161	77	148	71
Rent	45	21	57	27
Rent + Own	4	2	5	2
Total	210	100	210	100

Source: Field Survey, 2018

4.2 Effect of Financial Products on Use of Improved Inputs by Smallholder Farmers in the Study Areas

With access to credit facilities and other financial services, the borrower respondents from the above chart, shows that they rely less on family labour, have access to better inputs like

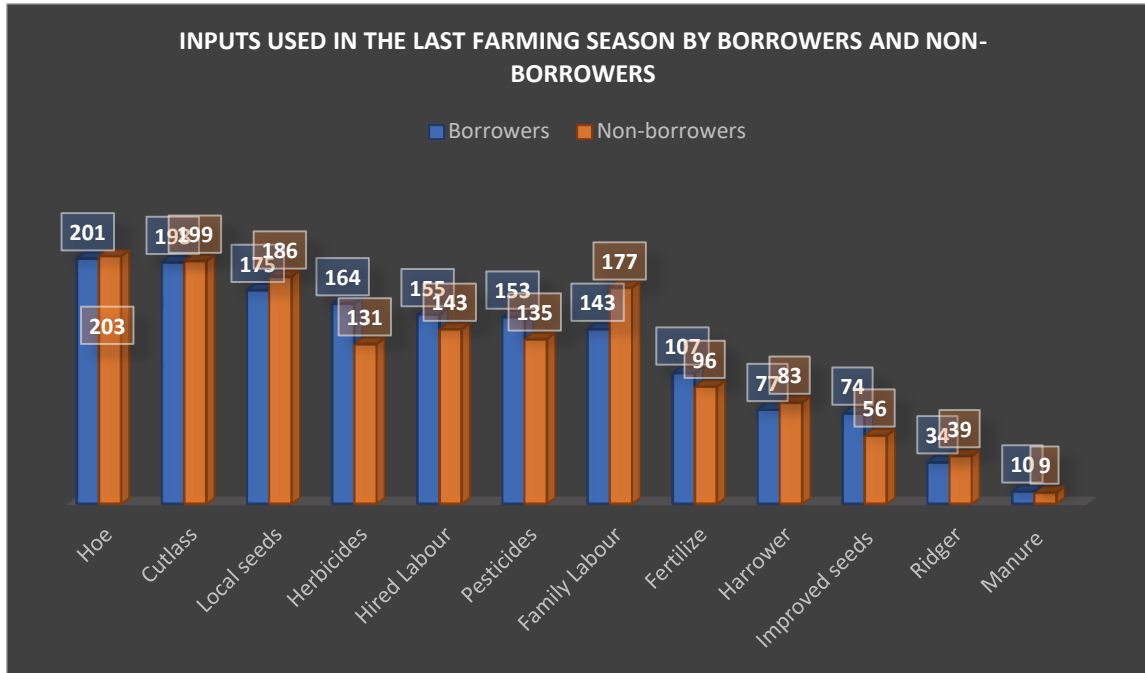
fertilizers, improved seeds, pesticides, herbicides. Although this is still a subject of how long they have been enjoying the services.

Table 5: Effect of Financial Products on Use of Improved Inputs by Smallholder Farmers in the Study Areas

Inputs	Borrowers		Non-borrowers	
	Frequency	Percentage	Frequency	Percentage
Hoe	201	96	203	97
Cutlass	198	94	199	95
Local seeds	175	83	186	89
3Herbicides	164	78	131	62
Hired Labour	155	74	143	68
Pesticides	153	73	135	64
Family Labour	143	68	177	84
Fertilize	107	51	96	46
Harrower	77	37	83	40
Improved seeds	74	35	56	27
Ridger	34	16	39	20
Manure	10	5	9	4

Source: Field Survey, 2018

Figure 6: Inputs used in the last farming season by Borrowers and Non-Borrowers



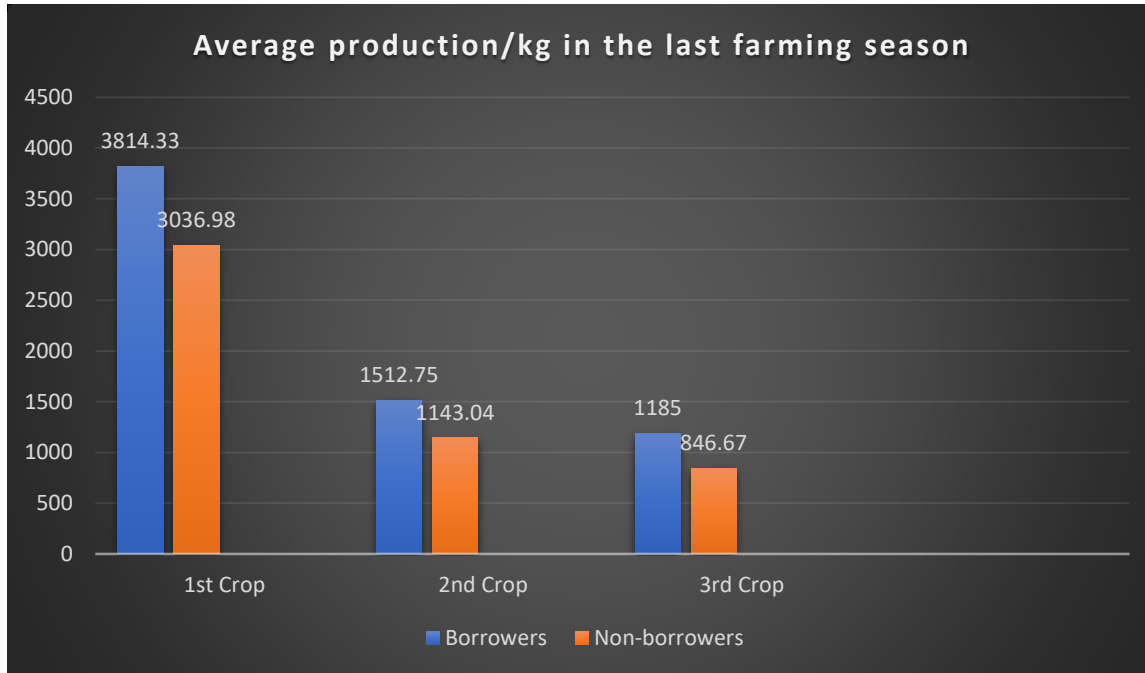
Source: Field Survey, 2018

4.3 Effect of Use of Improved Inputs and Technologies by Smallholder Farmers' Productivity and Wellbeing in the Study Areas

From the above figure 4.4a, it shows that average production from the last farming season for the borrowers were more than that of non-borrowers for all the crop produced. This is as a result of access to credit facilities.

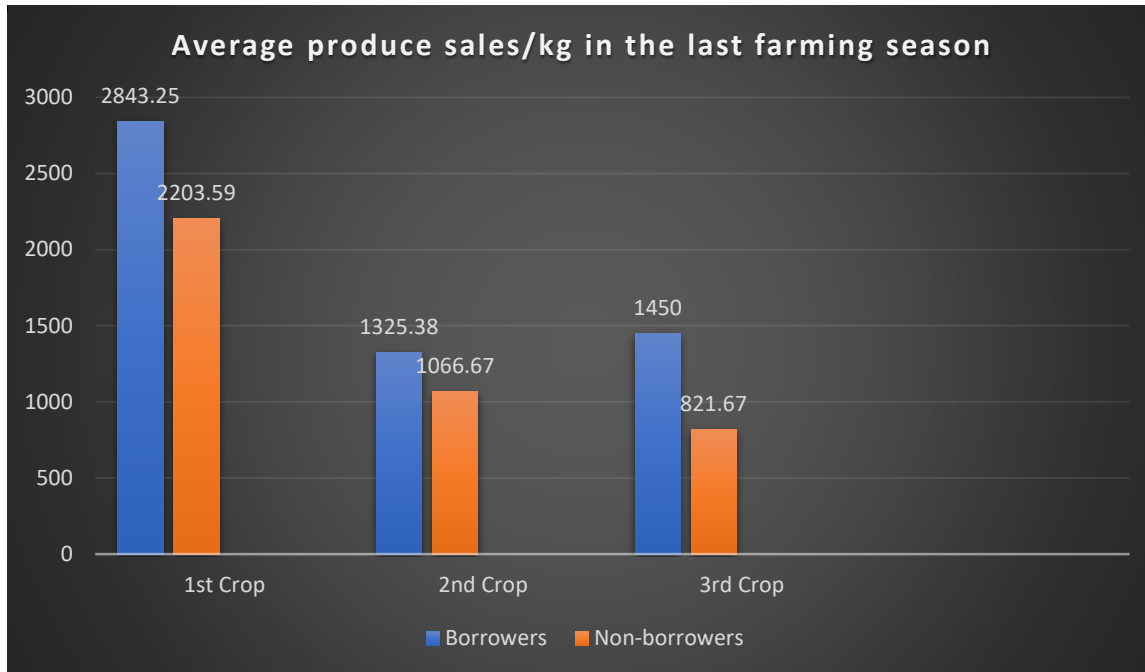
From the above figure 4.3b, it shows that average produce sales/kg from the last farming season for the borrowers were more than that of non-borrowers for all the crop produced. This is as a result of access to credit facilities. They (borrowers) could afford to sell more than what they consumed compared with non-borrowers because they have access to credit which they could use to take care of their daily needs before harvesting.

Figure 7: Average production/kg in the last farming season



Source: Field Survey, 2018

Figure 8: Average produce sales/kg in the last farming season

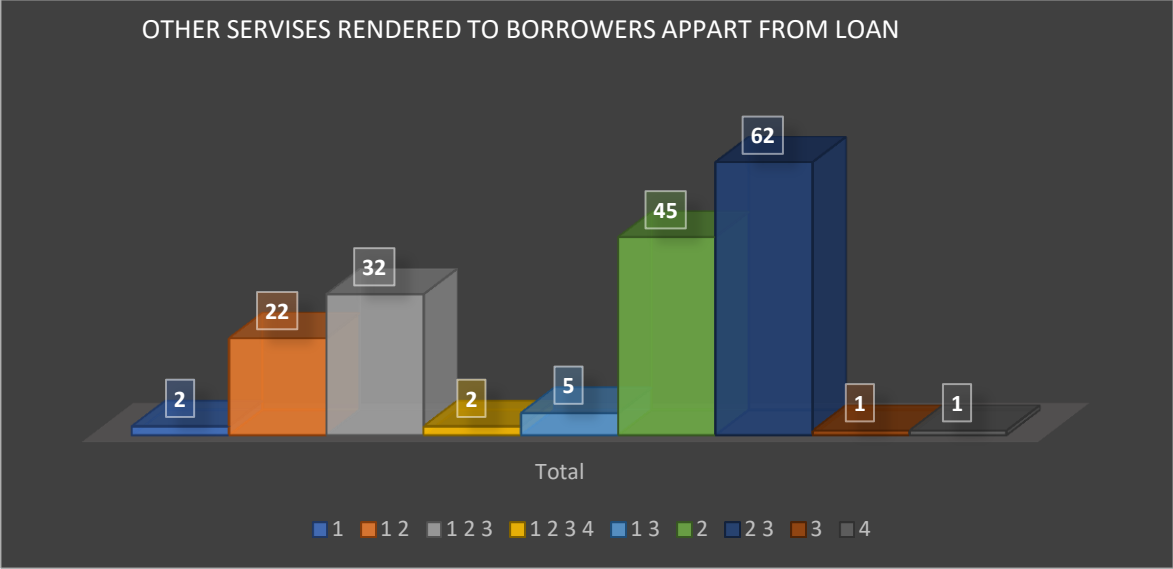


Source: Field Survey, 2018

4.4 Financial Products Available to Smallholder Farmers in the Study Area

Other services enjoyed by borrower from MUCOBA bank Plc are 1. Insurance, 2. Savings Deposit, 3. Money Transfer, and 4 Others (Like ATM card etc). From the figure 4.2 above, it shows that majority of respondents (62, 30%) enjoyed savings deposit and money transfer apart from loan which is the main reason why they initiated service with MUCOBA. This is followed by savings deposit only which is enjoyed by only 21% (45) of borrower respondents. From the above chart, all borrower respondents enjoyed at least one service apart from the usual loan. Non-borrower respondents operating with some formal and informal micro-finance institutions like AMCOS, SACOSS, and VICOBA due not enjoy these kinds of services especially insurance, money transfer and ATM card.

Figure 9: Other services rendered to borrowers apart from loan



Source: Field Survey, 2018

Note: 1: Insurance, 2: Savings Deposit, 3: Money Transfer (M-Pesa) 4: Other (Like ATM Card etc)

4.5 Awareness of Credit Facility

From the figure above, it shows that majority of non-borrower respondents (66%) were not aware of availability of credit facilities from MUCOBA bank and other microfinance institutes. Only 91 (34b%) were aware but were afraid of taking loan due to one or two factors as shown in the figure 4.1.5b above. Majority (34%) of them cited high interest rate and high risk as reason for not taken loan while 19% of them cited lack of security.

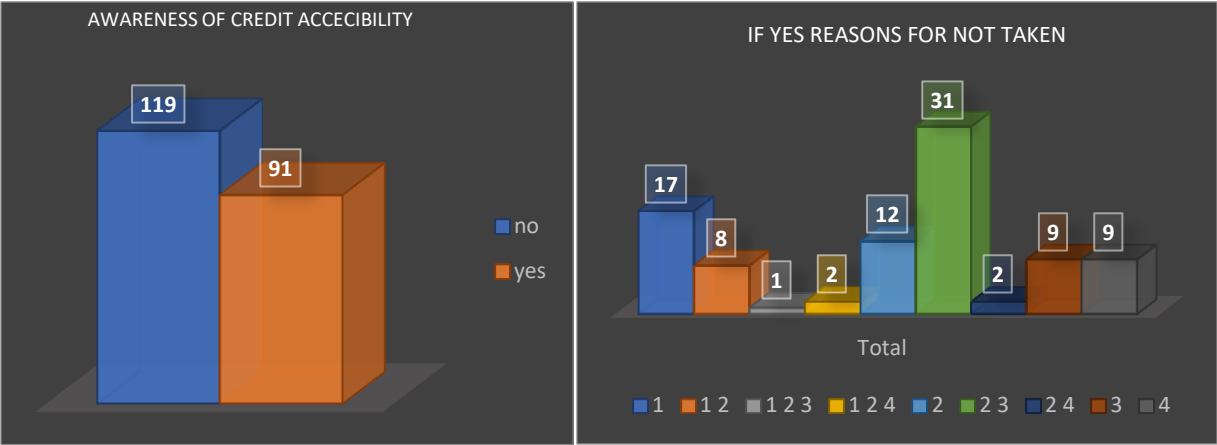


Figure 10: Awareness of Credit Facilities

Note: 1: lack of Security, 2: High Interest rate, 3: High Risk 4: Not Needed

4.6 Credit from other Sources

Despite reservations from taking loan from MUCOBA, some of the non-borrower respondents still took loan from other microfinance institutions like SACCOSs (20%), VICOBA (20%), Other Banks (0.8%)

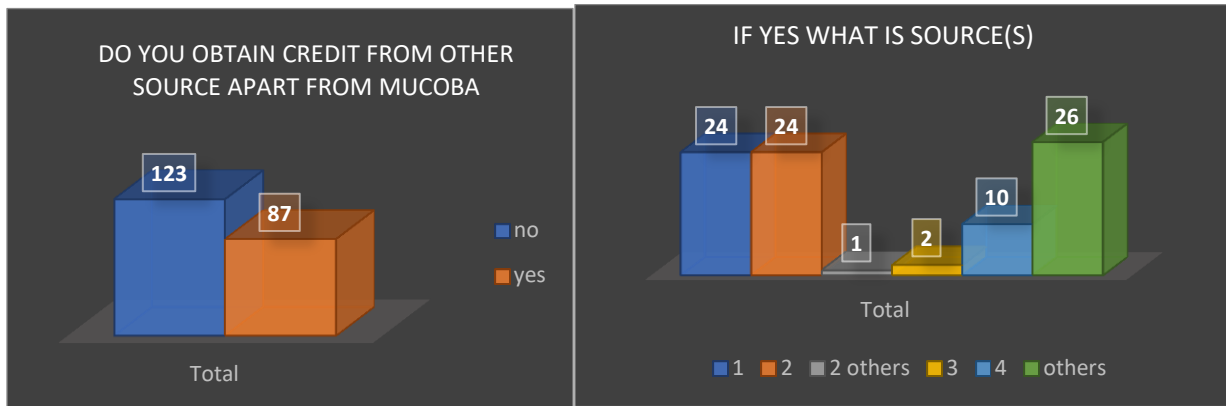


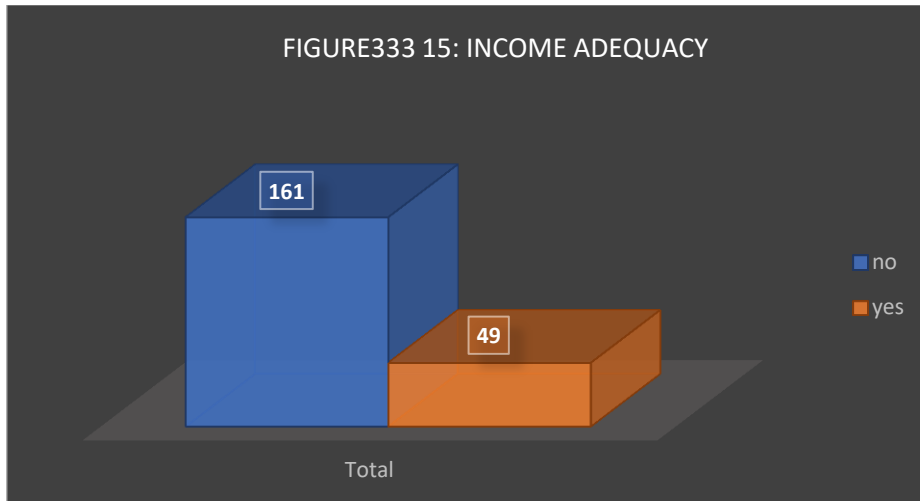
Figure 11: Credit from other Sources

Note: 1: Other Banks 2: SACCOS 3: VICOBA, 4: NGOs

4.7 Income Adequacy for Agricultural Production

The figure above shows that majority of non-borrowers (77%) were not satisfied with the level of their income being adequate for their farming activities. This shows that, they were either not willing to take the risk or they were not adequately equipped with modus operandum of how loan is being granted by MUCOBA bank as shown in the figure 4.15b above (those cited lack of security as reasons for not taken loan). This is because farmers in group do not required security (collateral) to take up loan. This shows that more awareness needs to be done as regard that.

Figure 12: Income Adequacy for Agricultural Production



Source: Field Survey, 2018

4.8 Moderating Effect of Improved Input Usage on Relationship between Credit Facilities and Productivity and Wellbeing of Smallholder Farmers in the Study Areas

Access to credit facility (loan) and other financial services do not necessarily guarantee better production, if the fund is not channeled to those things that will improve production like usage of improved inputs like improved seeds, pesticides, herbicides, and technology. For instance, majority of borrowers do not have other sources of income aside farming, so, it makes it difficult for them to spend the whole fund received from loan on their farming activities. So, this will still limit their production.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The objective of this study was to investigate the effect of rural finance support programme on smallholder farm productivity and wellbeing. Findings from the results in chapter four show a significant difference in input use and farm productivity between CB and NCB, where the farm productivity by the former group was relatively high compared to the latter. The results suggest that input use (fertilizers, improved seeds and hired labour) had significant impact on their

agricultural productivity. Although farming technology such as tractors and ploughs as well as land size were not significant in determining agricultural productivity nevertheless, they had positive relationship with the agricultural productivity.

This report presents the findings of a research on the the effect of rural finance support programme on smallholder farm productivity and wellbeing in Iringa Region of Tanzania. Despite the significance of the agricultural sector to poverty reduction and overall development, the sector is characterized by low production and poorly functioning markets for outputs. Small holder farmers rely on undeveloped methods and technology and they have limited skills and inputs such as improved seeds that would increase yields (FAO, 2009). Hence, the main objective of the study is to assess the impact of credit facilities on smallholder farmers' productivity and wellbeing in the study area and specifically to identify the financial products available to smallholder farmers, to examine the effect of financial products on use of improved inputs by smallholder farmers, to examine the effect of use of improved inputs and technologies by smallholder farmers on their productivity and wellbeing in the study areas and finally to examine moderating effect of improved input usage on relationship between credit facilities and productivity and wellbeing of smallholder farmers in the study area.

Both Qualitative survey method (Key Informant Interviews (KIIs) and quantitative survey method (well-structured questionnaire) were used in carrying out the study. Types of data collected include: socio-economic data, welfare data, and information on the disbursement of credits by the MFIs and application of credits by famers. Both secondary and primary data were used in this study. The primary data were collected through the use of well-structured questionnaires and administered by well-trained enumerators in the study area. Secondary data were obtained from the records made available by the MIVARF administrative centre in Arusha, Tanzania through relevant reviews and publications, text books and publications of the Bank of Tanzania

From the result from the previous chapter, it shows that majority of the famers (both borrowers and non-borrowers) are female, married and literate. This was also corroborated by National

Agriculture and Livestock Policy 1997, ratio of male to female farmers involved in the agricultural sector in the country to be 1:1.5. (Agriculture and Livestock Policy, 1997)

The results show a clear impact of financial services provided by MFI in agricultural productivity. The accessed credits from MFI (both formal and informal) help farmer to purchase inputs and improve farming technologies. According to Green and Ng'ong'ola (1993) access to credits by farmers could influence fertilizers application. Carte (1989) also study reported a positive relationship between credit and agricultural productivity.

Majority of non-borrower respondents were not aware of availability of credit facilities from MUCOBA bank and other microfinance institutes. Likewise, majority of them cited high interest rate and high risk as reason for not taken loan while 19% of them cited lack of security.

Apart from loan, there are other financial services enjoyed by borrower from MUCOBA bank Plc. These are insurance, savings deposit, money transfer, and others (Like ATM card etc). Some of the non-borrower respondents still took loan from other microfinance institutions like SACCOSs, VICOBA and AMCOS.

Unlike commercial banks which put collateral at the centre of credit transaction, microfinance has alternative and friendlier ways of enabling smallholder farmers accessing to credit. The emphasis of microfinance is that farmers should be in groups for credit accessing. This helps to reduce the transaction costs and creates a collective responsibility of borrowers to repay the loan.

Credit access by smallholder farmers also improves market accessibility for agricultural commodities. As indicated in table 4.2 and 4.3, farmers who accessed credits were able to pay for hired labour and trucks to carry products to the market centres where they fetched relatively high price compared to farm gate prices. Consequently, access to market impacted positively on agricultural productivity. According to IFAD (2003b), agricultural market is an important aspect for improving farm productivity of many rural smallholder farmers. The opposite is also true. A study by Guirkingner and Boucher (2008) found that credit constraints reduced agricultural output in the study region in Peru by 26% while Foltz (2004) study findings suggest that the constraints

to credit market access impinge significantly farm profitability. Nevertheless, Pender *et al.* (2004) study report contrasting findings. In their study the researchers found little evidence of the impact of access to markets on agricultural intensification and crop production. This may suggest that access to credit by smallholder farmers is important but not sufficient by itself to have optimal farm productivity. It needs other factors to complement credit accessibility in order to enhance agricultural productivity. These could include extension services and efficient markets.

Another interesting finding is that although loans were borrowed for agriculture production only 39.5% went to the sector. This may suggest that the loan received by smallholder farmers had multiple use and not necessarily intended for agricultural production. Rural farmers were also likely to seek for credit for other pressing needs such food, health, education and so forth. Oboh and Ekpebu (2010) also reports a similar experience from Benue state, Nigeria where their study found that about 43.9% of the loan size received by smallholder farmers was diverted to non-farm activities. However, it should be noted that, farmers who divert credit to other activities different from what they borrowed money for, are likely to fail in producing optimally an act that contributes to their failure to repay the loans. This leads to unsustainable microfinance services. Entrepreneur or credit management education is important to farmers before they access to the loans. On the other hand, studies show that lack of market access can hinder farmers from buying farm inputs and sell their products and consequently, lower agricultural productivity (Davis, 2008). Likewise, volume of loans available to farmers still low and this will still limit them to use of primitive inputs.

Key Informant Interview (KII) results confirm that smallholder farmers need credit not only for their farm operations but also for consumption smoothing. Aside from using their own funds, smallholders borrow from either formal (banks, coops) or informal sources (friend, family, relatives, input dealers and traders). Effective demand for smallholder credit depends on their ability and willingness to access and use credit services. Some may have access but prefer to use their own funds or borrow funds from family and friends to finance their operations.

Financial institutions are constrained to lend to agriculture because of the risks and costs associated with agriculture lending. Aside from the risks arising from climate changes and bad

weather condition, banks are also reluctant to lend to small farmers due to the lack of information about the risk profile of the prospective borrower.

Despite the friendly access to microfinance by farmers and the positive impacts on agricultural productivity, there are a number of factors that constrain microfinance access and sustainability by smallholder farmers. These include the lack of market information, high interest rates, risk averse and others simply they did not want the loan.

Majority of non-borrowers were not satisfied with the level of their income being adequate for their farming activities. This shows that, they were either not willing to take the risk or they were not adequately equipped with modus operandum of how loan is being granted by MUCOBA bank and other microfinance institutions as shown in the figure 4.15b above (those cited lack of security as reasons for not taken loan). This is because farmers in group do not required security (collateral) to take up loan. This shows that more awareness needs to be done as regard that.

In a multiple response question, NCB respondents were asked to state reasons for failure to access credit services. The major factors constraining access to credits by smallholder farmers were reported to be lack of security, high interest rate, high risk and simply some did not want any credit. These results support those reported by Rweymamu *et al.* (2003) that, 60% and 45% of the respondents in Mbozi and Ukerewe districts, respectively mentioned the level of interest rate to be a factor affecting their decision to borrow (i.e either reduce the amount of loan requested or stop borrowing). (Mukama *et al.*, 2005) also reported similar factors such as educational levels of clients, lack of capital to lend to clients and staff related incentives and skills development that were constraining microfinance access in Tanzania. When interest rates are high it is disincentive for farmers to borrow as the benefit from agricultural productivity will not be realized because of paying the debts. Instead it will be used to pay for the debts.

There is general consensus that high interest and transaction cost affect credit access by smallholder farmers in rural areas. On the other hand, the cost efficiency of MFI is affected by average loan size, proportion of net assets, financial sufficiency, financial leverage, business experience and proportion of farm loans (Gregoire, 2006). This study generally confirms that microfinance can increase agricultural productivity and this has impact on poverty alleviation in

developing countries. This observation contradicts that of Weiss and Montgomery (2005) who report no evidence that microfinance is reaching the core poor is very limited. According to the authors whilst microfinance clearly may have had positive impacts on poverty it is unlikely to be a simple panacea for reaching the core poor, remains valid (Weiss *et al.*, 2003). Also, Jamal (2008) argue that microfinance interventions do not seem to have a significant positive impact on the different aspects of women empowerment. However, he agrees that microfinance intervention possibly helps in smoothing consumptions and, to some extent, generating income.

5.2 Conclusion

As earlier stated, although farming technology such as tractors and ploughs as well as land size were not significant in determining agricultural productivity nevertheless, they had positive relationship the agricultural productivity.

CB were also relatively easily accessing agricultural markets and getting good prices through warehouse voucher systems, ability to hire labours and transport for carrying goods to the markets. Indeed, access to financial services from MFI has significant impact on agricultural productivity under smallholder farmers. Factors constraining access to credit were mentioned to be lack of microfinance credit information, high interest rates, inadequate supply of credit institutions and risk averse.

Access to credit facility (loan) and other financial services do not necessarily guarantee better production. If the fund is not channeled to those things that will improve production like usage of improved inputs (improved seeds, pesticides, herbicides, and technology). For instance, majority of borrowers do not have other sources of income aside farming, so, it makes it difficult for them to channel the whole fund received from loan on their farming activities. So, this will still limit their agricultural productivity.

5.2 Recommendations

- ✚ In order to enhance the agricultural productivity and improve the wellbeing of smallholder farmers, it is recommended that smallholder farmers should be facilitated to form SACCOS and for collective responsibilities of accessing credits and paying loans

- ✚ One of the major problems encountered during the course of data collection is access to rural areas, there is urgent need by Government of Tanzania for radical development of rural roads infrastructure. This will increase access to rural areas thereby reducing post-harvest loss and also reduce rural-urban migration
- ✚ There is need for development and Implementation of guarantee and crop insurance programs by government of Tanzania. This will reduce the risk involve agricultural production due to uncertainty in weather and other factors.
- ✚ Increase funding for research and development in agricultural sectors
- ✚ There is need for GoT to improve on financial rules and regulations that promote or constrain agricultural credit and insurance such as interest rate controls and lending quotas
- ✚ . Also, the GoT in collaboration with development partners should build capacity for farmers to use credit efficiently and enforce laws for defaulters.

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APPENDIXES

EFFECT OF RURAL FINANCE SUPPORTPROGRAMME ON SMALLHOLDER FARMERS' PRODUCTIVITY AND WELFARE IN IRINGA REGION OF TANZANIA

CREDIT BORROWERS' QUESTIONNAIRE

Dear Respondent,

Thank you for your interest in this survey. My name is **Waliu Adeniyi Ajibike**. I am currently an intern under **Marketing Infrastructure, Value Addition and Rural Finance Support Programme (MIVARF)** pursuing a **Master of Science degree in Sustainable Development Practices (University of Ibadan, Nigeria)** and hereby

conducting a study titled: **Effect of Rural Support Programme on Smallholders Farmers' Productivity and Welfare in Iringa Region of Tanzania**. The study is aimed at establishing strategies that will bridge the agribusiness bank financing gap and improve the productivity and welfare of Iringa smallholder farmers in particular and Tanzania in general. Information that will be provided in this questionnaire is confidential and will be used for academic purposes only.

Your participation is voluntary and if you have any questions concerning the survey, please, do not hesitate to contact me on +255623817369 or my supervisor, **Mr. Optat Elias Shedehe**(MIVARF-RFS) on +255757824532

Thank you so much.

Questionnaire Number:

Date:

District:

Village:

GPS: Latitude..... Longitude:..... Altitude:.....

A: GENERAL INFORMATION

Gender: 1. Male..... 2. Female.....

AgeYear

Education Level:

1. No formal education2. Adult education..... 3. Adult education.....4. Primary education.....
5. Secondary Education..... 6. Higher education.....

Marital Status

1. Single2. Married.....3. Widowed.....4. Divorced.....

B: USE OF IMPROVED INPUTS AND PRODUCTIVITY

Source of Land for agricultural purposes 1. Rent 2. Own

Total farm size (ha):

Actual farm size use (ha):

Farming experience..... year

6. Mention type of crop, amount produced and sold last farming season?

S/N	Crop	Quantity produced (Kg)	Quantity sold (Kg)	Quantity consumed (Kg)	Price/kg (Tsh)
1					
2					
3					
4					
5					
6					

Which of the following farm inputs were used in the last farming season?

Input	Code	Tick
Hired labour	1	
Family labour	2	
Manure	3	
Fertilizers	4	
Local seeds	5	
Improved seeds	6	
Pesticides	7	
Herbicides	8	
Harrower	9	
Ridgers	10	
Hoes	11	
Cutlass	12	

C: SOURCES OF INCOME

What is your major source of income?

1. Sale of food crops
 2. Wage employment
 3. Others (specify)
2. Do you have any off-farm income generating (not employment) activities? 1. Yes..... 2. No.....
3. If yes, what are they and indicate average income realized per month.?

	Activities/Source	Average income/month (Tsh)
1		
2		
3		

D: FINANCE SUPPORT INFORMATION

How did you learn about the availability of credit facility? 1 Friend/Group.... 2. Bank Staff... 3. TV/Radio..... 4. Newspaper..... 5. Others (specify).....

Indicate the reasons that influenced you to take credit.

1. Loan size:.....
2. Interest rate:.....
3. Type of collateral required.....
4. Other (specify).....

Were you trained on credit utilization before being given? 1. Yes..... 2. No.....

Was some of the credit obtained used for consumption purposes? 1. Yes..... 2. No.....

Are you in default of the above credit? 1. Yes..... 2. No.....

What sort of penalties is imposed by the bank for late payment or default?.....

.....

How many times in the last 2 years have you received credit from the Bank?

Will you continue requesting credit from Bank? 1. Yes..... 2. No.....

Do you feel that the existing credit facilities are adequate for your farming activities? 1. Yes..... 2. No.....

Did you save any amount in the bank after loan repayment 1. Yes..... 2. No.....

Did you obtain credit from other sources apart from MUCOBA/NMB? 1. Yes..... 2. No.....

If YES, what was that source of credit?

1. Other BANKS (specify)
2. SACCOS
3. VICOBA.....
3. NGOs
4. Others (specify).....

13. What other services do you get from MUCOBA apart from credit facilities?

1. Insurance.....
2. Savings Deposit
3. Money Transfer.....
4. Other (specify).....

E: TYPE OF HOUSE AND ASSETS AVAILABLE

Do you own a house? 1. Yes..... 2. No.....

If No, where do you reside?

1. Rented house
2. Relative's house.....
3. Neighbour's house.....
3. If you are Renting, how much do you pay per month? TShs:
4. House condition:

Type of wall	1	Mud+Wood	
	2	Wood+Mud+Cement	

	3	Heated bricks+Cement	
	4	Heated bricks+Mud	
	5	Bricks not heated	
	6	Bricks made of cement	
Type of floor	1	Mud floor	
	2	Floor made of cement	
Type of roof	1	Thatch	
	2	Corrugated Iron sheets	
Toilet	1	Not available	
	2	Pithole	
	3	Water Closet toilet	
Kitchen	1	Present	
	2	Not present	

5. Assets available in the house

		Type of asset	Tick
Transport	1	Motorcar	
	2	Motorbike	
	3	Bicycle	
House assets	1	Table	
	2	Chairs	
	3	Soffer sets	
	4	Wardrobe	
Farm implements	1	Tractor	
	2	Hand hoe	
	3	Machetes	
	4	Bush knives	
	5	Sickles	
	6	Axes	
Kitchen facilities	1	Local stone stove	
	2	Charcoal cooker	
	3	Kerosene stove	
	4	Electric cooker	
	5	Gas cooker	
	6	Refrigerator	
News Media	1	Radio	
	2	TV	
	3	Cable TV	
	4	Internet facilities	

What is the major source of food for your household?

1. Own farm.....
2. Purchases.....
3. Others (specify)
7. Do you have access to health services? 1. Yes..... 2. No.....
8. If yes, mention the type of health services
 1. Traditional services.....
 2. Public services.....
 3. Private services.....
9. How far is the health centre to your house? km.

10. What was your average expenditure on clothing, education, health services, and food in the last one year?

Items	Code	Average value (TShs)
Clothing	1	
Education	2	
Food	3	
Health services	4	
Others (specify)	5	

Thank you for your response

**EFFECT OF RURAL FINANCE SUPPORT PROGRAMME ON SMALLHOLDER FARMERS'
PRODUCTIVITY AND WELFARE IN IRINGA REGION OF TANZANIA**

NON-CREDIT BORROWERS' QUESTIONNAIRE

Dear Respondent,

Thank you for your interest in this survey. My name is **Waliu Adeniyi Ajibike**. I am currently an intern under **Marketing Infrastructure, Value Addition and Rural Finance Support Programme (MIVARF)** pursuing a **Master of Science degree in Sustainable Development Practices (University of Ibadan, Nigeria)** and hereby conducting a study titled: **Effect of Rural Support Programme on Smallholders Farmers' Productivity and Welfare in Iringa Region of Tanzania**. The study is aimed at establishing strategies that will bridge the

agribusiness bank financing gap and improve the productivity and welfare of Iringa smallholder farmers in particular and Tanzania in general. Information that will be provided in this questionnaire is confidential and will be used for academic purposes only.

Your participation is voluntary and if you have any questions concerning the survey, please, do not hesitate to contact me on +255623817369 or my supervisor, **Mr. Optat Elias Shedehe**(MIVARF-RFS) on +255757824532.

Thank you so much.

Questionnaire Number:

Date:

District:

Village:

GPS: Latitude..... Longitude:..... Altitude:.....

A: GENERAL INFORMATION

Gender: 1. Male..... 2. Female.....

AgeYear

Education Level:

- 1. No formal education
- 2. Adult education.....
- 3. Adult education.....
- 4. Primary education.....
- 5. Secondary Education.....
- 6. Higher education.....

Marital Status

- 1. Single
- 2. Married.....
- 3. Widowed.....
- 4. Divorced.....

Were you aware of the credit facilities from MUCOBA/NMB Bank? Yes..... 2. No.....

If yes, what are the reasons for not taking loan from MUCOBA Bank?

- 1. Lack of security.....
- 2. High interest rate.....
- 3. High risk.....
- 4. Not needed.....

Do you obtain credit from any other sources? 1. Yes..... 2. No.....

If YES, what is that source of credit?

SACCOS.....

VICOBA.....

3. Other BANKS (please indicate)

4. NGOs

5. Others (specify)

Do you feel that your income is adequate for your agricultural production needs?

- 1. Yes.....
- 2. No.....

B: USE OF IMPROVED INPUTS AND PRODUCTIVITY

Do you own land for agricultural purposes 1.Yes..... 2. No.....

If No do you rent land? 1. Yes..... 2. No.....

Total farm size (ha):

Actual farm size use (ha):

Farming experience..... year

Mention type of crop, amount produced and sold last farming season?

S/N	Crop	Quantity produced (Kg)	Quantity sold (Kg)	Quantity consumed (Kg)	Price/kg (Tsh)
1					
2					
3					
4					
5					
6					

Which of the following farm inputs were used in the last farming season?

Input	Code	Tick
Hired labour	1	

Family labour	2	
Manure	3	
Fertilizers	4	
Local seeds	5	
Improved seeds	6	
Pesticides	7	
Herbicides	8	
Harrower	9	
Ridgers	10	
Hoes	11	
Cutlass	12	

C: SOURCES OF INCOME

What is your major source of income?

1. Sale of food crops
2. Wage employment
3. Others (specify)

Do you have any off-farm income generating (not employment) activities? 1. Yes..... 2. No.....

3. Indicate average income realized from off-farm sources/activities.

S/N	Activities/Source	Average income/month (Tsh)
1		
2		
3		
4		

D: TYPE OF HOUSE AND ASSETS AVAILABLE

1. Do you own a house? 1. Yes..... 2. No.....
2. If No, where do you reside? 1. Rented house 2. Relative's house..... 3. Neighbour's house.....
3. If you are Renting, how much do you pay per month? TShs:
4. House condition:

Type of wall	1	Mud+Wood	
	2	Wood+Mud+Cement	
	3	Heatedbricks+Cement	
	4	Heatedbricks+Mud	
	5	Bricksnotheated	
	6	Bricksmadeofcement	
Type of floor	1	Mudfloor	
	2	Floormadeofcement	
Type of roof	1	Thatch	
	2	Corrugated Iron sheets	
Toilet	1	Not available	
	2	Pithole	
	3	Water flush toilet	
Kitchen	1	Present	
	2	Not present	

5. Assets available in the house

	Type of asset	Total	Asset value (Tshs)
--	---------------	-------	--------------------

Transport	1 2 3	Motorcar Motorbike Bicycle		
House assets	1 2 3 4	Tables Chairs Soffer sets Wardrobe		
Farm implements	1 2 3 4 5 6	Tractor Hand hoe Machetes Bush knives Sickles Axes		
Kitchen facilities	1 2 3 4 5 6	Local stone stove Charcoal cooker Kerosene Electric cooker Gas cooker Refrigerator		
News media	1 2 3 4	Radio TV Cable TV Internet facilities		

6. What is the major source of food for your household?

1. Own farm.....
2. Purchases.....
3. Others (specify)

7. Do you have access to health services? Internet facilities

8. If yes, mention the type of health services

1. Traditional services.....
2. Public services.....
3. Private services.....

9. How far is the health centre to your house? km.

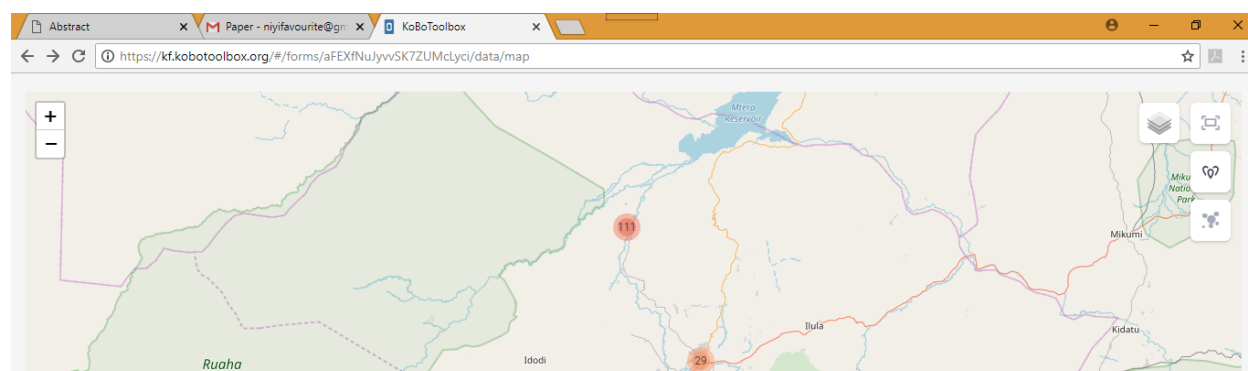
10. What was your average expenditure on clothing, education, health services, and food in the last one year?

Items	Code	Average value (TShs)
Clothing	1	
Education	2	
Food	3	
Health services	4	
Others (specify)	5	

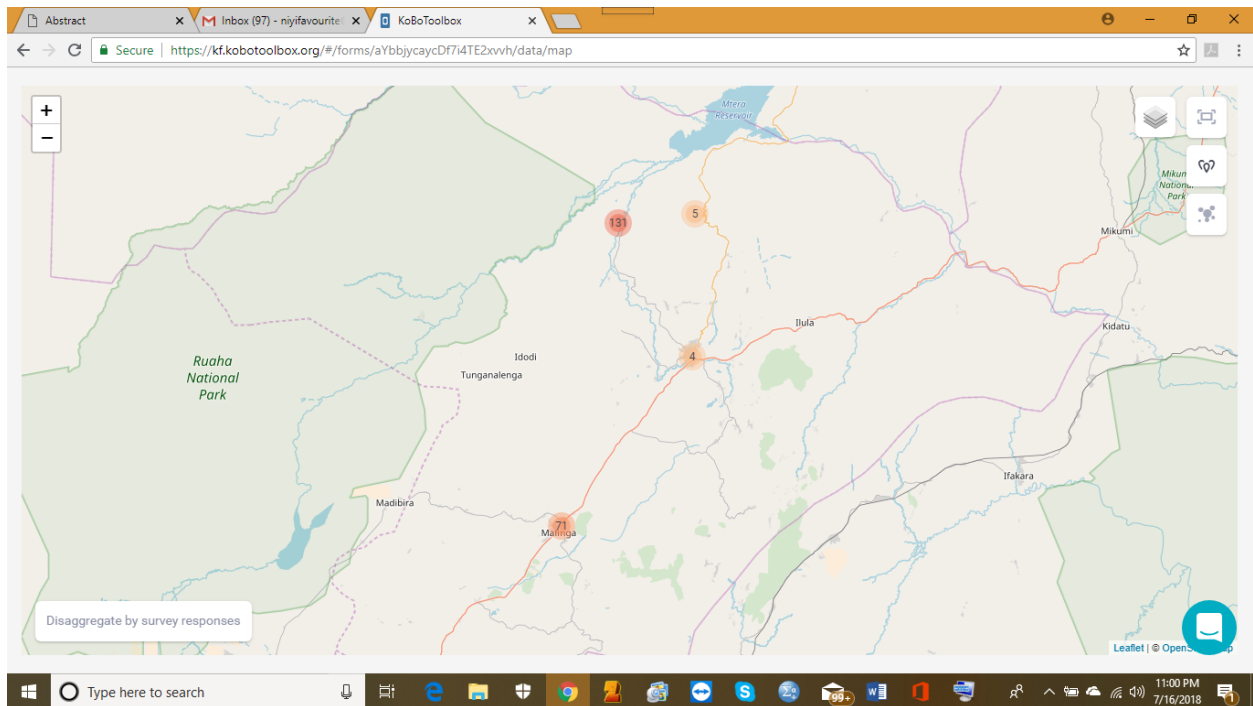
Thank you for your response

Appendix 2

GIS of Field Survey (Borrowers)



GIS of Field Survey (Non-Borrowers)



Appendix 3

PLAN OF THE STUDY

S/N	Activities	March	April				May		
		Week							
		1	2	3	4	5	6	7	8

1.	Preparation and travel plan to field trip including Orientation at MIVARF office	■							
2.	Familiarity with the project team members	■	■						
3.	Work with the project design plan and visit to some field site, Collection of data for pre-test, Main data collection		■	■	■	■			
5.	Monthly Report		■				■		■
6.	Computation and analysis of data and compilation of reports					■	■		
8.	Submission and presentation of final report							■	
9.	Preparation and travel plan from project site								■

Appendix 4
PICTURES FROM THE FIELD DURING DATA COLLECTION









