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IMPACT OF MICROFINANCE ON SMALLHOLDER FARM PRODUCTIVITY IN TANZANIA: THE CASE OF IRAMBA DISTRICT

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ABSTRACT

Over the past two decades, there has been a high promotion of microfinance institutions (MFI) in Tanzania. In 1990s there was only 825 MFI which increased to 1,875 in 2005. Currently, the country is estimated to have more than 5000 MFI. The promise of MFI lies in the belief that microfinance could empower poor people to fight against poverty through easy access to credit. But what is the actual impact of MFI on the ground? Empirical evidence in this area is inconclusive. The objective of this study was to investigate the impact of microfinance on agricultural productivity by smallholder farmers in Tanzania with the case study of Iramba District. A total of 98 respondents were selected randomly from credit beneficiaries (CB) and non-credit beneficiaries (NCB). The collected data were analyzed through descriptive statistics and multiple regression analysis. Findings 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. The major factors hindering smallholder farmers' access to credit were reported to be lack of information, inadequate credit supply, high interest rates and defaulting.

Keywords: Micro fiancé, agricultural productivity, poverty alleviation, Tanzania, Africa.

INTRODUCTION

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 microloans worldwide (Daley, 2009). In Tanzania, Savings and Credit Cooperative Societies (SACCOS) are 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. The main objective of this study was to investigate the impact of microfinance on agricultural productivity by smallholder farmers in Tanzania with the case study of Iramba district in Singida region. Specifically the study intended to: a) describe the profile of MFI in the district; b) investigate levels of credit accessed by smallholder farmers c) analyze the impact of microfinance on agricultural productivity and; d) assess the impact of microfinance on market accessibility by smallholder farmers credit beneficiaries.

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 microfinance on agricultural productivity in rural areas where majority of the low income and subsistance farmers exist. This justifies the need for more research case by case to come up with a robust policy implication of the impact of microfinance industry the country on poverty alleviation.

The main objective of this study was to test a hypothesis on whether there has been any significant impact of microfinance on agricultural productivity in Tanzania with the case study of Iramba district, Singida region. The choice of the district was threefold. First it is an agricultural dominated, second poverty is high and deep and three, there is considerable number of microfinance institutions. Findings from this study will inform policy and decision makers on how best microfinance could be developed to enhance smallholder farmers' agricultural productivity in a sustainable manner. It will also inform microfinance service providers on how best microfinance could be easily accessed by smallholder farmers in a sustainable manner. Furthermore, it will inform credit recipient on how best the microfinance credits could easily be accessed and impact positively in agricultural productivity and poverty alleviation.

Limitation of the Study

The study encountered two major limitations: First there was a problem with regard to conversions of local units of measurement to the standard international ones (e.g for crops, fertlizers and

improved seeds). Farmers were not conversant of converting their local units into standard international units. A high proportion of the respondents were using tins, plastics and heaps for market transactions. Second, it was difficult to get time from the respondents during the morning and afternoon hours as they were busy with farming and secondary economic activities, particularly petty trading, respectively. They did not want to be disturbed. To minimize these limitations the researchers had to buy some of the commodities and take it to the conventional measurement for accurate data. They used evening hrs to meet some of the respondents in their respective homes.

The Literature on Microfinance and Agricultural Productivity in Developing Countries

Microfinance

Microfinance is the provision of a broad range of financial services such as deposits, loans, savings, payment services, money transfers, and insurance to the poor and low-income households and their micro-enterprises who are excluded from the formal financial systems (Ledgerwood, 2002). When credit accessed, it is returned in small agreed installments.

The term microcredit and microfinance are often used interchangeably, but it is important to highlight the difference between them. Sinha and Martin (1998) define microcredit as a small loans, whereas microfinance is appropriate where NGOs and microfinance institutions supplement the loans with other financial services (such as savings, insurance, pension, and payment services) therefore, microcredit is a component of microfinance. In this study, microfinance is the main concept used for measuring the impact on agricultural activities under the smallholder farmers. Generally, there are many types of microfinance institutions (MFI) depending on the structure and function. According to a 1995 World Bank estimate, in most developing countries the formal financial system reaches only the top 25% of the economically active population, the bottom 75% have no access to financial services apart from moneylenders. This is partly because of avoiding losses and high transaction costs of lending to the poor. It is said that a well-managed bank is perceived to be of lower loan loss provision and such an advantage will be translated into higher profitability (Mustafa *et al.*, 2012). According to the study by Lapenu and Zeller (2001) MFI reached 54 million members, 44 million savers (voluntary and compulsory savings), and 23 million borrowers and that the total volume of outstanding credit was $18 billion. The authors predict that more households in developing countries as currently reached are likely to benefit from future growth of the MFI sector.

Agricultural Productivity

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.

Microfinance Policy in Tanzania

The main objective of the National Microfinance Policy of 2001 is to establish a basis for evolution of an efficient and effective micro-financial system in the country that serves the low- income segment of the society and thereby contributes to the economic growth and improve people's wellbeing. This is based on the fact that the access to financial services by the low income earners gives them an opportunity of managing scarce household and enterprise resources more efficiently, protecting against risks and providing investment opportunities for economic returns (Kessy and Urio, 2006). This policy is guided by a vision of achieving wide spread of microfinance throughout the country, made possible by institutions operating on commercial principles. Since the launching of the National Microfinance Policy in 2001, microfinance industry in Tanzania has increased significantly, with many players entering the field and several institutions are now involved.

Types of Microfinance Institutions in Tanzania

Generally, there are two types of MFI, namely the informal microfinance institutions which include money lenders and money traders who charges interests in the form of cash or in kind. Others are such as Rotating Savings and Credit Associations (ROSCA) and Accumulated Savings and credit Association (ASCAS). In second category is the semi formal microfinance institution like NGOs-microfinance such as the promotion of Rural Development Enterprises (PRIDE), Small Enterprises Development Assistance (SEDA) and Foundation for International Community Assistance (FINCA) that offers micro-credit to the people. Another type of microfinance highly promoted in Tanzania is the "Credit and Saving Cooperative Unions" (SACCOS). Both SACCOS and NGOs - MFIs are referred to as semi or quasi formal financial institutions.

In order to operate the MFI have to obtain official registration from appropriate government authorities (i.e. The Registrar of Cooperatives and Non-Financial Government Agencies and Departments). Various authors have established that, the overall goal of MFI as development organizations is to serve the financial needs of un-served on under-served markets as a mean of meeting development objectives.

The Impacts of MFI Worldwide

The promotion of micrifinance started over two decades. This promotion intends to enable poor people access easily to credit for poverty alleviation. There has been an interest growing to find out

the impact of these microfinance on poverty alleviation. Khandker (2005) did a study on Microfinance and Poverty in Bangladesh and found positive effects on poverty alleviation rates. He found that between 1991/92 and 1998/99, moderate poverty in all villages declined by 17%. Among program participants who had been members since 1991/92, their poverty rates declined by more than 20%. Khandker (2005) estimates that more than half of this reduction is directly attributable to microfinance, and finds the impact to be greater for extreme poverty than moderate poverty. The author further found out that microfinance programs reduced average village poverty level by 1% each year in program areas. Microfinance thus helps not only poor participants but also the local economy. According to Khandker (2005) microfinance accounted for 40% of the entire reduction of moderate poverty in rural Bangladesh.

MkNelly and Christopher (1999) did a study on the impact of credit with education on mothers and their young children's nutrition in Bolivia by assigning communities to either a program or control group. This was followed by baseline data collection, thereby allowing program impact to be measured through simple comparison between the treatment and the control group. MkNelly and Christopher (1999) study found a positive impact on income. Their results show that the majority of participants (67%) of the credit with education program in Bolivia felt that their incomes had 'increased' or 'increased greatly' since they joined the program. Additionally, MkNelly and Christopher (1999) find that clients of Lower Pra Rural Bank Credit with education program in Ghana increased their incomes by 36 US dollar compared to US dollar 18 for non-clients per month.

Review of MFI Case studies in Tanzania

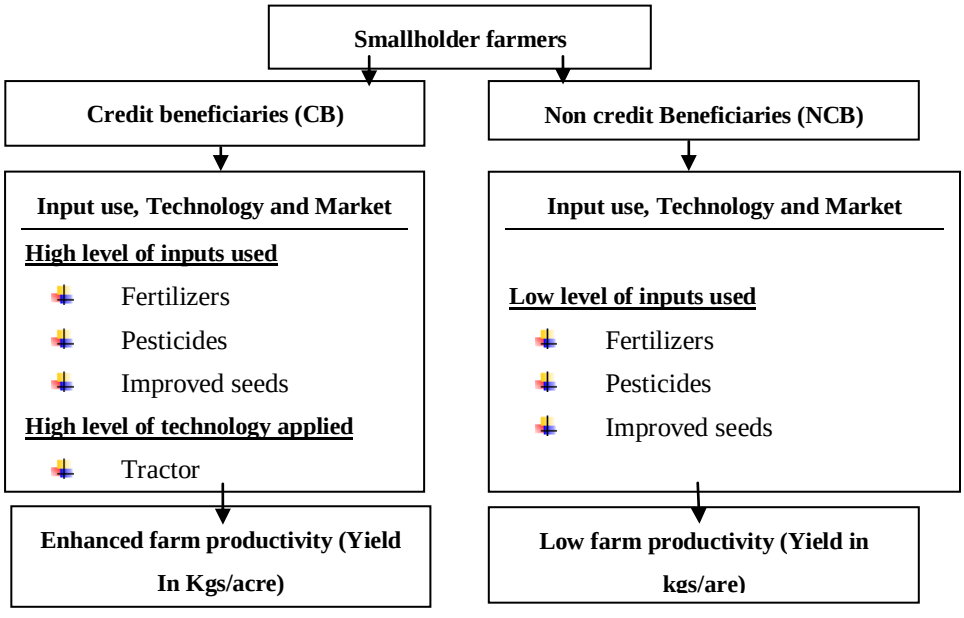
There have been considerable studies in Tanzania that targeted to find out the impact of microfinance on poverty alleviation in Tanzania (Kessy and Urio, 2006; Mhunzi, 2012). The general consensus microfinance has positive impact on poverty alleviation. The study revealed that the borrowers from MFI invested in purchase of agricultural inputs and livestock establishment; trading in agricultural products, rural grocery and shop establishment. Other investments included food vendor, petty business establishment and carpentry. She also found that MFI created employment opportunities for rural people.

Conceptual Framework

Figure 1 illustrates the conceptual framework of microfinance and agricultural productivity. Given the limitations of credit facilities in rural areas, it was expected that, some will access credit from microfinance while others will not. Those who will access credit were expected to improve their farming technologies and input use. The inputs considered in this study include agrochemicals (fertilizers, pesticides) and improved seeds. Credit beneficiary farmers were also expected to be able to apply improved farming technology such as tractors, power tillers or ox-plough.

Consequently, farm productivity was expected to be high by farmers with CB compared to NCB. According to Olayide and Heady (1982), a change in productivity over time will depend upon changes in the types and quantities of inputs and technology used. It is also expected that, farmers who accessed credit would have more opportunity to access market for their produce more easily compared to the NBC. This is because they are anticipated to be able to pay for transport and communication to reach the buyers. The productivity in this study was analysed for maize and sunflowers as for other crops, farmers did not use any input. The productivity was determined in terms of yield per acre.

Figure-1. Conceptual framework developed by researcher



MATERIALS AND METHODS

The Study Area

Iramba district is one of the four districts in Singida region. In this district sample ward was Shelui and was purposively selected due to the presence of an active MFI known as "Jipemoyo saving and credit cooperative societies" (SACCOS). This SACCOS provide services to the smallholder farmers in the study area. In order to access credits farmers are organized in groups. The services farmers are getting from MFI include saving, deposit and credit. Also the area was selected due to its location which is easily accessed by road and other communication facilities. Geographically, Iramba District lies between latitude $3^0$50'and $4^0$55 south of the equator and between longitude 33^0 54' and 35^0 06^1 East of Greenwhich Meridian. Iramba District is bordered to the Northwest by Shinyanga region, to the Northeast by Manyara Region, to the South by Singida rural and Singinda Urban Districts and to the west by Tabora region. The district has an area of 7,900 Sq. km. (URT.,

2005).

According to the population and housing census of 2002, Iramba district had a total population of 368,131 people, whom 179,002 are males and 189,129 are females. The total population is projected to be 440,000 in 2012. There are 71,677 total number of households in the district. The climate of Iramba district is semi arid with seven to eight months of dry season, lasting from late April to early November. The mean annual rainfall range from 600mm to 800mm and the rainfall is erratic and unreliable in terms of both amount and timing.

Sample Size and Data Collection

This study used households as a sampling framework. Households were categorized into CB and NCB. To make it gender equitable within each category farmers were further grouped into men and women. In each category, 5% of the households were selected randomly making a total of 98 sample size. Both primary and secondary data were collected. Secondary data were collected from published documents; thesis, journal, working papers, government and research reports. Secondary data helped to understand on status of microfinance and agricultural sector productivity. Primary data were collected from late-February to mid-April 2010.

The collection of primary data involved three phases. The first phase focused on key informant discussion. In this method five (5) MFI officials were included. This enabled to collect qualitative information regarding (1) MFI operation and (2) advantages and challenges of lending to the smallholder farmers. Checklists with open ended questions were used to guide the discussion. Second phase concentrated on focus group discussion. The discussion comprised of 10 people. The discussion was conducted with consideration of gender (men, women) and age equitable (i.e. youth, middle aged and elders). Members were allowed to give their views and experiences on credit access and amounts, agricultural productivity, availability of inputs and market as well as microfinance operations. This phase two was essential to obtain extra information on qualitative data. Finally, questionnaire interviews were undertaken. Structured and open ended questionnaires were designed in order to obtain both qualitative and quantitative information from credit beneficiaries and non beneficiaries, respectively. The questionnaire were designed, pre-tested and administered to the smallholder farmers for in-depth data collection. The purpose of this exercise was to collect specific information of each household for gaining an understanding of the credit status, production and market patterns of the households. During this phase the type of data collected included: socio-economic characteristics, amount of loan borrowed, type of input used, type of farming technology, issues of market access and prices as well as productivity and production levels.

Descriptive statistics, multiple regression analysis, and t-test were used to analyse were data using the Statistical Package for Social Sciences (SPSS).

(a) t – test was applied to test the difference between means of variables regarding the two farmer categories (i.e. CB and NCB). mean values were calculated as follows:

$$\frac{X_1 - X_2}{S_1^2/N_1 + S_2^2/N_2}$$

Where:

X_1 and X_2 are sample means of alternative groups;

S_1 and S_2 are sample variables for the two groups;

N_1 and N_2 are sample size for the compared groups.

Model of Quantitative Data Analysis

(b) Regression model is expressed as follows:

$$Q = f(X_1, X_2, X_3, X_4, X_5, X_6)$$

$$Q = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + u$$

$$Q = a + i\sum X + u$$

Where:

Q = output in from farm (bags)

a = constant

b 's = coefficients to be estimated.

X_1 = Inputs (fertilizer, seeds, pesticides)

X_2 = Technology (tractor,ox-plough and handhoe);

X_3 = Hired labour

X_4 = Money (Tsh)

X_5 = Land

u = error term

FINDINGS

Socio-Economic Characteristics

Out of 98 respondents, 46.9% were CB and 53.1% were NCB. A gender comparison show that 46.5% of the CB were men compared to 53.5% women suggesting that women were more active in seeking and accessing credit compared to men. This is quite different from the experience observed in commercial banks where only few women are able to access credit facilities compared to men. This is because a high proportion of women do not own valuable assets and therefore fails to fulfill the bank's conditions especially the condition requirement of collateral. Majority of the CB aged between 36 to 45 years (60.5%). This could be explained by the fact that this group consists of the most economic active segment of the population. Also a highest proportion of this age category have more family responsibilities (e.g raising children, paying for education and health services). Thus, accessing to credit for this age group has multiplier effect in that not only it benefit the

applicants but also the dependants. Education wise, findings show that majority of the respondents (85.7%) attained primary education while only 10.2% had secondary education or post secondary education. A comparison between CB and NCB show no significant different. Findings show that 88.3% of the respondents from the CB group attained primary education and only 11.7% had either secondary or post secondary education while it was 83.6% and 9.1%, respectively for NCB respondents. Nevertheless, none of the CB had no formal education compared to 7.3% for NCB. Generally findings show no significant difference between CB and NCB with regard to family size and age. A majority of the respondents (50%) had a range of 5 to 8 persons per households with an average of 6.2 persons. A comparison across CB and NCB show that the former had an average of 6 persons per household compared to 6.3 for the latter. Generally, there was no significant difference in education and family size between CB and NCB.

Econonic Activities of the Respondents

Findings show that, the main economic activity of the majority respondents (82.7%) was agriculture. A small proportion of 2.3% of the CB were involved in business compared to 16.4% for NCB.

Profile of Microfinance Institutions

The district had 11 registered MFI with members being organized in the form of SACCOS. All these SACCOS were supervised by the district cooperative officers. In total there was 2,604 members of the SACCOS in the district of which 44% were men and 56% were women. In this study, results show that average credit per beneficiary was T.shs 748.437.8. Results also show that majority of the beneficiaries invested only T.shs 198179.1 or 26.5% of the total amount of credit received for agricultural production (Table 1).

Table-1. Loan amount by credit beneficiaries

Loan amount in Tsh.	No. of Beneficiaries (%)	Mean loan (Tsh.)	Proportion used for agriculture (%)
< 500,000	38.8	345,294.10	20.4
500,001 – 1,000,000	28.6	770,000	24.7
1,000,001 – 1,500,000	24.2	1,007,500	29.2
1,500,001 – 2,000,000	0	0	0
2,000,001 – 2,500,000	6.3	1,335,714	32.2
2,500,001 – 3,000,000	0	0	0
3,000,001+	2.1	2,443,333	35.4
Overall Mean Loan	100	748.437.8	26.5

Source: Field survey data (2011)

An investigation on how the money was used in agricultural production show that as high as 80.6% of the respondents from the CB used the loan for buying farm inputs while 19.4 % reported to use the loan for hiring farm labourers (Table 2). Generally, results show that there was significant difference in the levels of using improved seeds and fertilizer at P<0.05 and P<0.01, respectively between CB and NCB. The CB used on average, 14.6kgs improved seeds and 100.1 kgs fertilizer compared to an average of 8.1 and 42.6 kgs, respectively for NCB. Nevertheless, there was no significant different in using tractors, hand hoe and ox-plough. Generally faming technology was dominated by hand hoe.

Table 2. T-test result for respondents' credit accessibility and levels of inputs

Inputs	Respondent category	Mean	Std. Dev	t-value	2-Tail Sig (P-value)
Fertilizer	With credit (n=49)	100.1	1.2		
	Without credit (n=49)	42.6	1.4	-0.13	0.89***
Improved seed	With credit (n=49)	14.6	14		
	Without credit (n=49)	8.1	12	2.4	0.02**
Tractor	With credit (n=49)	0.1	0.4		
	Without credit (n=49)	0.03	0.2	1.74	0.07 NS
Hand hoe	With credit (n=49)	49	0.7		
	Without credit (n=49)	49	0.5	1.46	0.39 NS
Ox-plough	With credit (n=49)	1.2	0.7		
	Without credit (n=49)	1.1	0.6	0.25	0.79 NS

*** significant at 1%; ** - 5% level of significance, NS Not significant
Source: Data analysis, 2011

Access to Agricultural Market by Smallholder Farmers

In this study respondents were asked to state the status of accessing to agricultural markets. A high proportional of CB (61.2%) was easily accessing to markets using warehouse voucher system[1] to access market compared to only 24.5% for NCB. Also 53.1% of the CB was able to hire labourers for caring agricultural commodities to the markets and 22.4% hired trucks for the same purpose compared to only 36.7% and 12.2% for NCB. These results suggest that, increasing MFI, may improve market accessibility and bargaining power of the smallholder farmers.

Agricultural Productivity by the Respondents

In order to assess whether there was any significant difference in the productivity of agricultural produce between the two categories of farmers t-test was used to analyse data (Table 3). Results show a significant difference (P<0.01) in aggregate productivity (ie sunflower and maize) between CB and NCB. CB produced on average of 31.8 bags of sunflower and maize per acre compared to 17.7 bags for NCB. CB also had more productivity for individual crops of sunflower (p<0.001) and

[1] This system enables farmers to access credit from the MFI with collateral being agricultural produce in warehousing waiting for good prices.

maize ($p<0.1$). This implies that, the farms managed by CB were more productive than that of the NCB mainly because of high input use.

Table-3. Farm productivity for sample farmers

Category	Mean	Std. Dev	t-value	2-Tail Sig (P-value)
Total production				
Credit beneficiaries (n=49)	31.8	25		
Non beneficiaries (n=49)	17.7	18.6	3.1	0.002***
Sun-flower				
Credit beneficiaries (n=49)	15.3	14.9		
Non beneficiaries (n=49)	7.6	11.8	2.8	0.005***
Maize				
Credit beneficiaries (n=49)	16.5	17.4		
Non beneficiaries (n=49)	10	11.4	2.1	0.029*

Note: *** - 1% level of significance, ** - 5% level of significance' * - 10% level of significance
Source: Data analysis, 2011

Determinants of Agricultural Productivity

Results obtained from multiple regression analysis for smallholder farmers show positive and significant impacts on agricultural productivity for variables of fertilizers, improved seeds and hired labour (Table 4). An increase of fertiliser by one unit will increase sunflower productivity by 0.274units while 1 unit increases in improved seeds application will result in s 0.223 unit increase in sunflower productivity. On the other hand, I unit increase in hired labour will result in 0.316 units increase in sunflower productivity *ceteris paribus*. Although, improved farming technology and land size were not significant nevertheless, they had positive correlation suggesting that increase use of improved farming technology as well as well as increasing land size will increase agricultural productivity *ceteris paribus*.

Table-4. Regression analysis of determinants of agricultural production (sunflower)

Variables	Coefficient	t-value	2-Tail sig. (P-value)
Constant	-1.835		
Fertilizer	0.274	3.261	0.002***
Improved seeds	0.223	2.528	0.013***
Tech (Tractor & ox-plough)	0.146	1.788	0.077NS
Hire labour	0.316	3.235	0.002***
Land size	0.523	2.528	0.85NS

Note: *** - 1% level of significance NS=not significant
Source: Data analysis, 2011

Constraints Facing Smallholder Farmers Access to Credits

In a multiple response question, respondents were asked to state reasons for failure to access credit services. About 61.2% of the respondents reported lack of MFI information as the main constraint hindering them from accessing credit while 51.0% it was on high interest rates. Others were simply risk adverse (29.6%) or did not want any credit (20.4%).

DISCUSSION

The results in section 4.0 show a clear impact of microfinance in agricultural productivity. The accessed credits from microfinance 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. Unlike commercial banks which put collateral at the centre of credit transaction, microfinance has alternative and friendlier ways of enabling o 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 section 4.5 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 Guirkinger 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. The study also revealed that women outnumbered men in accessing to microfinance credit. This is an encouraging results as many women despite being the main producers and food security managers of their households, they cannot easily access credits from commercial banks due to the fact that they lack collateral. Women in many African countries do not own assets such as houses for collateral purposes due to the perceived culture that women will get married and will belong to another clan. Nevertheless, the culture is gradually changing, thanks to the education and religion teachings. These findings are similar to those reported by Ajagbe (2012) who observed that the demand for credit was strongly influenced by the gender, age, education, location, value of assets owned and other dwelling characteristics.. Another interesting finding is that although loans were borrowed for agriculture production only 26.5% went to the sector. This may suggest that the loan received by smallholder farmers had multiple use and not necessarily intended for agricultural production (Table 1). 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). According to Zeller *et al.* (1998), differences in the household's access to financial and commodity markets significantly influence its cropping shares and farm income. Kamara (2010) findings also show aggregate physical productivity increased with improvement in market access. According to this study, farmers who were easily access to markets benefited more than farmers with difficult access. 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. Results obtained from multiple regression analysis for smallholder farmers show positive and significant impacts on agricultural productivity for variables of fertilizers, improved seeds and hired labour. Although, improved farming technology and land size were not significant, nevertheless, they had positive correlation suggesting that increase use of improved farming technology as well as well as increasing land size will increase agricultural productivity *ceteris paribus*. However, these findings are in contrast with those of Cornia (1985) who reported a higher yield by farmers with small farms. According to Cornia (1985) for all but three countries a strong negative correlation were found between farmsize on the one side, and factor inputs and yields per hectare on the other. The decline in yields for increasing farmsize could be attributed to decreasing returns to scale Cornia (1985). In a multiple response question, 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 MFI information, high interest rates, low level of education, risk adverse 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 realised because of paying the debts. Instead it will be used to pay for the debts. Although, Diagne (1999) report differently in that farmers are not discouraged in their participation and borrowing decisions by further increases in the formal interest rate and/or the transaction costs associated with getting formal credit, nevertheless, this should be taken as a case specific experience. 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 contradict 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.

CONCLUSIONS AND RECOMMENDATIONS

The objective of this study was to investigate the impact of MFI on smallholder farm productivity based on sunflower and maize. Findings show a significant difference in input use and farm productivity between CB and NCB, where the farm productivity by the former group was persistently high compared to the latter. A regression analysis suggests that input use (fertilizers, improved seeds and hired labour) had significant impact on agricultural productivity. Although farming technology such as tractors and ox-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. Thus, the null hypothesis was not rejected. Indeed, access to MFI credits 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. 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. Also the government in collaboration with development partners should build capacity for farmers to use credit efficiently and enforce laws for defaulters.

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