

**THE CONTRIBUTION OF FARMERS' ORGANIZATIONS TO
SMALLHOLDER FARMERS' WELL-BEING: A CASE STUDY OF
KASULU DISTRICT, TANZANIA**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
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ABSTRACT


Farmers' Organizations (FOs) play quite a significant role as an institutional vehicle for promoting agricultural development through helping farmers solve their common problems relating to agricultural marketing, inputs, credit and technical knowledge. All these services aim at improving farming activities and enable farmers gain economic benefits to sustain their well-being. Based on the above, this study assessed the contribution of FOs to smallholder farmers' well-being in Kasulu district. Specifically, the study assessed farmers' perception towards FOs, identified goods and services accrued by farmers from FOs, and assessed the contribution of goods and services from FOs to farmers' well-being. The above objectives were achieved through a cross-sectional research design in which data for the study were collected from 160 farm households selected randomly and administering of interviews using a structured questionnaire. Both quantitative and qualitative methods of data analysis were used. The study found that FOs contribute positively to members' the well-being, as the members of these organizations have a relatively higher income than is the case with non members; the difference was shown to be statistically significant based on t-test analysis. Generally, the results indicate that extension services and the use of inorganic fertilizers and pesticides have positive contribution to household income and assets ownership. However, the study observed some constraints such as delays in payments, lack of reliable markets and price fluctuation as limiting factors facing FOs members. Therefore, the study recommends that some strategies have to be adopted by FOs to help improve markets access in order to ensure that farmers get better prices and that their payments are made timely. Also, the government needs to create conducive market environment to enable farmers benefit more from their efforts.

DECLARATION

I. PELIMINA BONIFACE MSUTA, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my original work and that it has never been presented elsewhere for a similar or any other degree award in any other institution.



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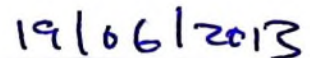


Date

The above declaration is confirmed



Dr. J. K. Urassa
(Supervisor)



Date

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DEDICATION

This work is dedicated to the Almighty God the provider of guidance throughout my life, my beloved parents: Mr. Boniface Msuta and Mrs. Olen Lupeya who laid down the foundation of my education thus moulding me to be who I am today.

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LIST OF ABBREVIATIONS

BTC	Belgium Technical Corporation
DALDO	District Agricultural and Livestock Development Officer
DFID	Department for International Development
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
FHHs	Female Headed Households
FOs	Farmers' Organizations
IFAP	International Federation of Agricultural Producers
KDC	Kasulu District Council
MKUKUTA	Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania
NBS	National Bureau of Statistics
NGO	Non Governmental Organisations
NPK	Nitrogen, Phosphorus, and Potassium
NSGRP	National Strategy for Growth and Reduction of Poverty
SACCOS	Savings and Credit Cooperatives Societies
SLF	Sustainable Livelihoods Framework
SUA	Sokoine University of Agriculture
TDV	Tanzania Development Vision
TSP	Triple Super Phosphate
TZS	Tanzanian Shillings
UK	United Kingdom
URT	United Republic of Tanzania
VEOs	Village Executive Officers

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Farmers' organizations (FOs) are groups of individuals bound by some common purpose to achieve agreed objectives (North, 1990). FOs emerged in the world due to farmer-felt needs such as sharing of local resources (land, labour, water) and market pressures (prices and access to markets). Other needs are access to services (credit, input supply, and advisory services) or for purely social reasons (social security, food security). In all these cases, there has to be a clear advantage in taking a particular collective action in order to be sustainable (Wennink *et al.*, 2007).

Before the era of liberalization, cooperatives were the main farmers' organizations in Sub-Saharan Africa. These cooperatives were created and managed under government directives, and later nationalized (Chilongo, 2005). Due to state control, these cooperatives lacked accountability, became dependent on state subsidies and hence were uneconomically viable. However, due to the withdrawal of the state from being a provider of many services through privatization, democratization and liberalization, most cooperatives failed to compete in the open-market economies, thus they became weak, dormant and eventually collapsed (World Bank, 1995 cited by Abaru *et al.*, 2006). Due to the decline of cooperatives and other FOs, many farmers lack a collective voice.

They cannot access inputs and technologies at affordable prices. In addition, their access to land, water and markets can at times also be challenging. In respect of the

above. Abaru *et al.* (2006) point out that a number of small-scale farmers remain poor and cannot influence policies that affect their livelihoods.

The above cooperation among farmers in search for common solutions to their problems is seen as one of the major ways in promoting the well-being of the small-scale farmers, even if cooperatives encounter shortcomings (Grigoryan *et al.*, 2008). Accordingly, during the 1990s developing countries, Tanzania included encouraged formulation and organization of FOs at different levels in order to enable farmers to be incorporated into research, extension system and other services (Carney, 1996). The formation of FOs is an important tool of assuring smallholder farmers improve their living. FOs provide a wide range of different services. FOs facilitate strengthening of farmers' negotiation position with buyers, reducing transaction costs associated with marketing, sourcing of agricultural inputs, access to knowledge and information as well as increase of their social capital (Hellin *et al.*, 2007, cited by Mapila *et al.*, 2010).

FOs can further allow collective lobbying for desired changes and as such they have the potential to positively influence agricultural policy outcomes (Mapila *et al.*, 2010; Haankuku, 2009; Wennink *et al.*, 2007). Furthermore, FOs might be a good vehicle for donors to reach small-scale farmers, as a group living in sparsely populated rural areas with weak infrastructure; this could facilitate assistance in terms of grants or loans that can enable these farmers improve their livelihood (Bachke, 2009).

1.2 Problem Statement

Despite the fact that FOs play a crucial role in the development of rural agriculture and well-being of the farmers, documentation of FOs achievements in playing the said role has been rather general. Several Studies (Mapila *et al.*, 2010; Bachke, 2009; Grigoryan *et al.*, 2008; Abaru *et al.*, 2006; Mushi, 2000) have focused on evaluating the achievements of FOs in terms of services offered such as extension services, linking farmers with research, markets and other services, but these studies have not clearly indicated how FOs contribute to the well-being of individual farmers. There is little empirical evidence on the benefits generated from FOs, in Tanzania and Kasulu District in particular. Therefore, this study assessed the effect of FOs on farmers' well-being in Kasulu District.

1.3 Justification for the Study

The role of FOs in improving Tanzania's rural farmers' well-being is scantily documented in literature. For example, Mapila *et al.* 2010 and Bachke (2009) conducted studies on FOs in Malawi and Mozambique respectively. In Tanzania FOs researchers (e.g. Mushi, 2000; Swai, 1998 and Nombo, 1995) did their studies before the implementation of the National Strategies for Growth and Reduction of Poverty (NSGRP I). More recent studies, for example Leonard (2009) focused on farmers groups and household income and Sikustahili (2007) focused on the role of Farmers' Organizations in policy formulation. Therefore, the current study was undertaken to mainly generate empirical information on how FOs contribute to the improvement of rural farmers' well-being. The findings from the study would be useful in the formulation of new strategies for enhancing services offered by FOs.

The study results are also expected to help policy makers and planners make informed decisions in the process of policy formulation, especially policies targeting the improvement of rural households' well-being. Moreover, the findings from the study are expected to enlighten implementation of Tanzania's Development Vision 2025, NSGRP II (MKUKUTA II) and the *Kilimo Kwanza (Agriculture first)* initiatives particularly, in the implementation or modification of their strategies. Thus, empirical evidence from the study can be instrumental in the formulation of effective interventions.

1.4 Objectives of the Study

1.4.1 Overall objective

The overall objective of the study was to assess the contribution of Farmers' Organizations (FOs) to smallholder farmers' well-being in Kasulu District.

1.4.2 Specific objectives

- i. To assess farmers' perception of FOs
- ii. To identify goods and services accrued by farmers from FOs.
- iii. To assess the contributions of goods and services obtained in FOs towards households well-being.

1.5 Research Questions

- i. How do farmers perceive FOs?
- ii. What are the goods and services accrued by farmers from FOs?
- iii. Do goods and services obtained by farmers from FOs help to improve their well-being?

- iv. What challenges do FOs face in delivering services to the farmers?

1.6 Conceptual Framework

The conceptual framework (Fig. 1) summarizes hypothetically how, well-being can be achieved in different contexts through access to a range of livelihood resources. The framework focuses on how FOs are related to vulnerability context, farmers' livelihood assets, livelihood strategies and finally improvement of well-being. The vulnerability context has an impact to farmers' decision on their assets portfolio, such as natural capital (land and water), human capital (skills, knowledge, ability to labour and good health), physical capital (roads, communication, buildings, producer goods and technology), financial capital (stocks, credit), and social capital (kin and associations). The prevalence of FOs in relation to goods and services offered have an influence on the vulnerability context, which enhances farmers' decisions of using livelihood assets and develop different livelihood strategies such as income, food security, access to social services (health and education), assets possession, and reduction of vulnerability, all of which in turn improve their well-being.

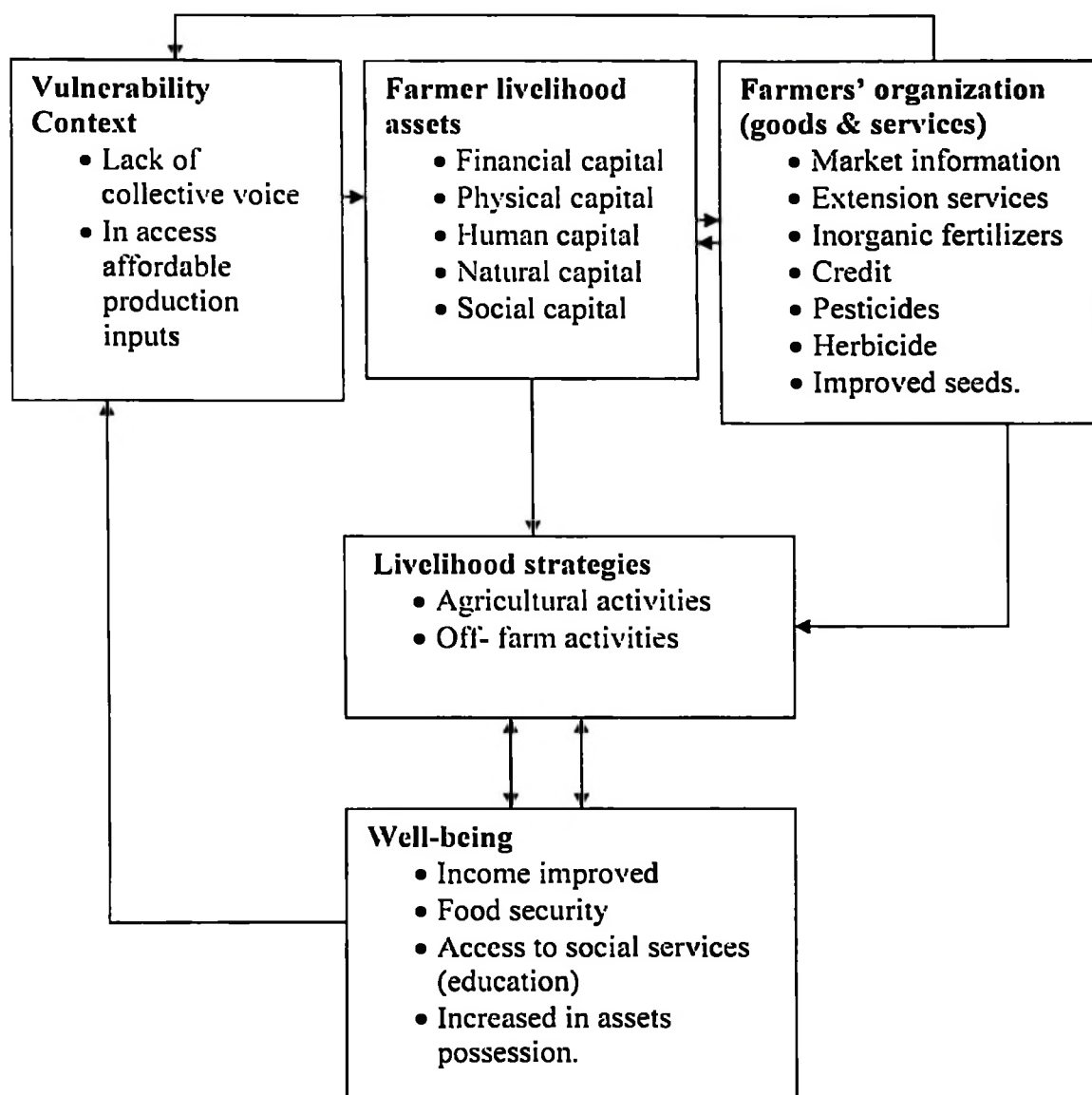


Figure 1: Conceptual framework: FOs and smallholder farmers' well-being
 Source: Adapted from Department for International Development (DFID), 2005.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptualization of Key Concepts

2.1.1 Well-being as a concept

The concept of well-being is very broad and is applied to many situations for a variety of purposes Paim. (1995, cited by King, 2007). Applications of the concept range from specific domain of well-being, such as economic, material, social, and psychological, to all the domains impacting upon people. Keverne (2004) defines well-being as a positive and sustainable state that allows individuals, groups or nations to thrive and flourish. Therefore, the level of an individual's well-being refers to psychological, physical and social states that are distinctively positive. On the other hand, well-being consists of something beyond the absence of disease.

Well-being accounts for elements of life satisfaction, that cannot be defined by economic growth alone, that means well-being is influenced by both personal perceptions (subjective well-being) and physical circumstances (objective well-being). Also well-being can be measured for individuals, communities and countries. The Research Group on Well-being in Developing Countries WeD (2008, cited by Urassa 2010) defines well-being as "a state of being with others, where human needs are met, where one can act meaningfully to pursue one's goals and where one enjoys a satisfactory quality of life." Furthermore, well-being can also be achieved by enhancing basic assets which are linked to each other; these include; natural, social, human, physical and financial capital. Generally, these assets change over time and differ among households and communities (Ellis *et al.*, 2004).

i) Natural capital

DFID (2008) defines natural capital as a capital made up of the natural resources such as air, land, soil, water, plant and animal life that people use. It can be measured in terms of quantity or quality (e.g. acreage, head of cattle, diversity and fertility).

ii) Human capital

Human capital is perhaps the most important factor. It represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives. At the household level, human capital is a factor of the amount and quality of labour available, this varies according to household size, skill levels, leadership potential and health status. According to DFID (2008), human capital is that part of human resources determined by peoples' qualities such as personalities, attitudes, aptitudes, skills, knowledge and physical, mental and spiritual health. It enables individuals to work or pursue some source of livelihood.

iii) Financial capital

Financial capital refers to stocks of money to which the household has access. This is likely to be savings, and access to credit in the form of loans. Neither money savings nor loans are directly productive forms of capital, they owe their role in the asset portfolio of households to their convertibility into other forms of capital, or, indeed, directly into consumption (Ellis *et al.*, 2004). These are available to people in the form of savings, supplies of credit or regular remittances or pensions which enables them to pursue their livelihood.

iv) Physical capital

Physical capital comprises capital created by the economic production processes, such as buildings, irrigation canals, roads, tools, machines and communications. For example, roads have multiple effects in reducing the spatial costs of transaction in resources and outputs. They also facilitate movement of people between places offering different income earning opportunities (Ellis *et al.*, 2004). Not only are people able to move easily, but they are also more likely to be better informed about opportunities (or the lack of them) in areas to which they may think of migrating to, either temporarily or permanently. Thus, this is the capital which is available to the people that enable them to earn their livelihoods.

v) Social capital

Social capital refers to the social networks system where individuals and households can enhance their livelihood strategies through family or community relations. According to Ellis *et al.* (2004), social capital can be defined as the 'features of the social organization such as networks, norms, and trust that facilitate action and co-operation for mutual benefits. Generally, DFID (2008) sees social capital as that component of human resource determined by relationships people have with others, these relationships may be between family members, friends, workers, communities and organizations, and can be defined by their purpose and qualities such as trust, closeness, strength and flexibility. In the Sustainable Livelihoods Framework (SLF), social capital entails the social networks and associations to which people belong. In this context, social capital is taken to mean the social resources upon which people draw in seeking for livelihood outcomes, such as networks and connectedness that

increase peoples' trust and ability to cooperate or membership in groups and their systems of rules, norms and sanction.

2.1.2 The concept of Farmers' Organization

According to Chambers *et al.* (1989), a farmers' organization consists of members of a rural community, along with one or more agricultural researchers and/or extensionists, while Benito *et al.* (2009) define Farmers' Organizations as entities created to organize the relationships between the concerned group of farmers and the outside world, playing a 'bridging' function between farmers and other actors, such as input suppliers, financial institutions, produce retailers or processors and policy makers.

The crucial factor in group membership is that each member perceives some direct or indirect benefit for himself/herself or for his or her family. As Nombo (1995) notes, a member joins a group because of the benefits which can be obtained from the group. As the world is changing drastically with the adoption of the liberalization policy in all sectors of the economy, agro-business companies will pursue policies and practices which will not necessary be in the interest of the majority of small farmers (Matee and Lassalle, 1994). Therefore, farmers in developing countries have only one alternative, that is, they need to build strong platforms through forming groups and local networks, which are able to combine best use of their skills and resources. The capacity of these farmers to organize themselves will determine their capacity to defend their land, shared market, access to inputs and their access to knowledge. The use of groups is important in

recognition of the fact that “in unity lies strength”. Group formation is a source of empowerment, and such groups may be strong enough to be capable of influencing policy decision and promoting their own development on a self reliance basis (Sikustahili, 2007).

2.2 Theoretical Perspective of FOs

FOs takes many different forms varying both in size of membership and the services they provide. According to IFAP (1992, cited by Stockbridge *et al.* 2003), FOs includes the following: farmer groups and pre-cooperatives, farmers' associations, federations and unions. Others are; agricultural cooperatives owned and controlled by their members and chambers of agriculture having a general assembly of elected farmers. Most definitions emphasize the importance of membership with the function of a FOs to its members; the services offered by FOs are a key incentive for becoming a member (Stockbridge *et al.*, 2003). One purpose, which is nonetheless characteristic of most organizations, and surely practically of all organizations with an important economic aspect, is the furtherance of the interests of their members. That would seem obvious, at least from an economist's perspective. To be sure, some organizations may, out of ignorance fail to further their members' interests; and others may be enticed into serving only the ends of the leadership. But, organizations often perish if they do nothing to further the interests of their members.

2.3 Origin of Collective Organizations

Collective Organizations started before the 13th Century in France and Switzerland. The first such organizations include the milk producers of Gruyère and Emmenthal

who formed farmer cooperatives with specific economic objectives, to pool the milk from several herds and thereby accumulate sufficient liquid milk to make cheese. The benefits from large scale enterprise were shared among the members of the group in proportion to their use of its services. In the UK, the first attempts to set up cooperatives dates back to the late eighteenth century, these were workers' consumer cooperatives and some went as far as having an organizational structure: members' meetings, an elected management committee, and a distribution of profit among the members. However, their success was short-lived, mainly due to structural problems that were persistent or permanent weaknesses such as lack of capital, management expertise and opposition from other economic and class interests (FAO, 2010).

2.4 The Spread of Collective Organizations/Cooperatives in Africa

The cooperative sector developed in Africa mostly as a result of intervention by colonial administrations. Kenya's first cooperative was founded in 1908. The first cooperative in Uganda was a growers' association in 1913. Although quickly abandoned, it paved the way for the Buganda Growers' Association founded in 1923 and later the Uganda Growers' Cooperative Union in 1933 (Young *et.al.*, 1981, cited by FAO, 2010). In the Belgian Congo, cooperatives emerged in the 1920s. In South Africa, cooperatives were also introduced in the 1920s to promote the interests of white farmers, and exercise control of prices through agricultural marketing boards (FAO, 2010).

2.5 Farmers Cooperatives in Tanzania

The cooperative movement in Tanzania has always played a major role in marketing and price formation. The Cooperative Unions and primary societies were established in the early 1930s, mainly for key cash crops, the most successful of which were the coffee and cotton cooperatives. The unions became strong during independence time in the 1960s, but later came under political control before being fully disbanded and incorporated into the government structure.

The Villagelization Act, which came into force in 1974, recognized a village as the co-operative unit in which each villager automatically became a member of the cooperative without paying entrance or membership fees. In effect, there was no place for an autonomous cooperative society. In 1976, the Cooperative Unions and the primary societies were all disbanded by the government and reintroduced under the 1982 Cooperative Act. Large cotton and coffee unions, such as Shinyanga Regional Cooperative Union, Nyanza Cooperative Union, Kilimanjaro Native Cooperative Union, and Kagera Cooperative Union were re-established in 1984. In response to this and the negative effects on economic development, the new Cooperative Act of 1991 was enacted to embrace the seven internationally accepted principles of cooperatives such as open and voluntary membership, democratic member control, member economic participation, autonomy and independence, education, training and information, cooperation among cooperatives, and concern for the community (ICC, 2006), cited by Ruvuga, *et al.*, (2007).

2.6 Types of Farmers' Organizations (FOs)

FOs can be grouped into two types: One is the community-based, resource-orientated FO and commodity-based, market-orientated FO (Gupta, 1989).

2.6.1 Community-based, resource-orientated FOs

This type of FOs could be a village-level cooperative or association dealing with inputs needed by the members, or the resource owners to enhance the productivity of their businesses based on land, water, or animals. These organizations are generally small, have well-defined geographical areas, and are predominantly concerned about inputs. However, the client group is highly diversified in terms of crops and commodities. This group of organizations can generate income from the sale of inputs and outputs. The income can then be put back into the organization by spending it on extension, data generation, business planning, and administration. According to Gupta (1989) these organizations have professional and honest management with constant monitoring and periodic rounds of evaluation.

2.6.2 Commodity-based, market-oriented FOs

These organizations specialize in a single commodity and opt for value-added products which have expanded markets. They are designated as output-dominated organizations. Not specific to any single community, they can obtain members from among the regional growers of that commodity who are interested in investing some share capital to acquire the most recent processing technology and professional manpower. These FOs are generally not small and have to operate in a competitive environment. Research, input supply, extension, credit, collection of produce,

processing, and marketing are all integrated to maximize the returns on the investments of the members who invested in the collective enterprise (Benito *et al.*, 2009).

2.7 Role Played by FOs

2.7.1 Scale and level of operations

FOs integrates at different levels around a given commodity for example cotton with specialized functions and services at each level. The local level handles the logistics for input supply and product marketing, the provincial level provides technical and management support to the local groups and the national level is involved in policy-making and negotiations about the enabling environment, such as price setting for inputs and products, as well as government taxes and subsidies. The processes and approaches followed have often been encouraged by governments and donors as part of the privatization process and withdrawal by the state from supporting functions (Bosc *et al.*, 2003).

2.7.2 Marketing and natural resource management

According to Nshimirimana (2009), in the case of marketing, individual rural farmers often produce small quantities, production is seasonal and markets are distantly separated in space. Infrastructure for transport and communication is poor therefore, the costs associated with transfer and transport of commodities are high. Crops produced for the market are either highly perishable or deteriorate fast in quality if not processed in time and storage facilities are poor, or lacking. Organized smallholder farmers are more likely to access markets as FOs become a source of

market information, leading to a reduction of transaction costs through bulk handling which simplify transportation and direct linkages of farmers to buyers and other intermediaries (Kassam *et al.*, 2011).

2.7.3 FOs and empowerment

Empowerment is about people taking increased control over their lives and destiny. Individual farmer's capabilities are an important factor in improving their livelihood situations as a result of increased income from production and improved service provision (Wennink *et al.*, 2007). However, individual farmers cannot determine these development outcomes on their own. FOs are central actors in realising changes among farmers; they are also one of the key mechanisms in supporting farmers' empowerment. Furthermore, farmer groups and organizations would increasingly voice the concerns of their members and have a say on issues that impact farmers' livelihoods. As Rutatora and Rwenyagira (2005) observe, there is a strong connection between farmers and their organizations for collective action for empowerment which is enhanced through participatory approaches.

2.7.4 Agricultural research and extension development

Research and extension organizations have moved from working with individual farmers to collaborating with groups and more so with FOs. At the grassroots level, farmers' associations, producers' groups and cooperatives, as well as specially created farmers' groups, are all involved in research and extension activities (Wennink and Heemskerk, 2006). Also some studies in Africa (Mapila *et al.* 2010; Bachke, 2009 and Jason, 2008) have shown that agricultural research and advisory

services are increasingly channelled through FOs. Furthermore, there is another argument that “client orientation in agricultural research can only be achieved by the effective representation of farmers through FOs structures at all levels” (Pertev, 1993).

2.7.5 FOs and bargaining power

Bargaining power refers to the ability to influence the price or terms of a business transaction. The bargaining power of producers increases when the product is scarce, when alternative marketing options exist, and when producers have access to market information. FOs can increase the bargaining power of small-scale farmers in a number of ways. By bulking or spreading production between members throughout the season, FOs is more likely to be able to meet the demands of buyers and negotiate better prices.

It is easier for FOs than individual members to invest in processing, storage or transport facilities, giving members increased choice over when and where to sell their products. In market chains where buyers have most of the power, FOs can provide some balance to that power; increased producer power is especially important when perishable products are involved or if producers have invested in expensive equipment that cannot be used for other purposes. Both of these situations lead to weak bargaining position of producers, as perishable products need to be sold before they go bad; and investment in specific assets means producers will continue to produce even if they receive low prices (Kassam *et al.*, 2011).

2.7.6 FOs and financial service

Individual farmers find it difficult to access credit from banks due to tough conditions which do not allow lending money unless the value of the loan can be covered by the value of the assets of the person seeking the loan. If the loan is not paid back, the bank can recover the money by seizing those assets. FOs facilitate access to cash loans and input credit, as it is easier to negotiate credit with the banks, especially if the organization is legally registered (Thompson *et al.*, 2009).

2.8 Constraints Associated with FOs

FOs face several constraints in carrying out their duties, especially those related to structural issues such as gaps in the market for services that are not being provided by the public or private sector. These constraints include changing global and domestic world economy which leads to declining of commodity price and limited ability to involve and benefit poorer farmers.

2.8.1 Low commodity price

Marketing of agricultural products is an important factor that can influence growth of an agricultural product. In their operations, FOs are constrained with low commodity prices which in turn affects producer profitability. This situation is conditioned by changes in the world economy; most of the cash crops produced depend on the world market, and any inconvenience in the world market affects the purchases of the products produced especially in developing countries. Low commodity prices are a challenge for most FOs; as a consequence this has made smallholder farmers fail to benefit from their production due to increased costs of

agricultural inputs and labour in some instances. Poor agricultural earnings have forced some farmers to do away with agricultural production. Likewise, high production costs have also made some farmers develop strategies of staying in business and others either getting engaged in contract farming or using other practices (Grigoryan *et al.*, 2008).

2.8.2 Limited ability to involve and benefit poorest farmers

An important challenge facing FOs is their limited ability to involve and be of benefit to the poorest farmers. Generally, poor farmers are more likely to be risk averse than more commercially oriented small farmers. The former are also unable to produce a reliable surplus that meets market requirements on quality (Wennink *et al.*, 2007). Furthermore, they lack the resources needed to meet membership requirements such as membership fees; this group has difficulties in becoming members of FOs and in accessing relevant agricultural services. As a result, the specific needs of this category of farmers are often not provided for, or defended, and they are normally excluded from effective service provision (Kassam *et al.*, 2011).

The poorest small-scale producers often live in deprived and remote areas and face thin markets. FOs find it extremely hard to succeed in areas that are remote and/or areas with limited market development and low levels of service provision. Therefore in such situations, smallholder farmers will be unable to benefit from marketing interventions, as more basic needs must first be met. In order for these farmers to benefit, some fundamental changes such as establishment of

infrastructure whereby a minimum level of input, output and market service development need to effected. In addition, the trend in marketing approach adopted by development organizations has moved towards a more business oriented, facilitative approach, and this is less likely to succeed in remote rural areas than is likely to be the case in less remote, higher-potential areas. Therefore in poor remote areas, smallholder farmers cannot access agricultural services provided by FOs resulting into imbalanced growth in development among smallholder farmers (Thompson *et al.*, 2009).

2.9 Conclusion from Literature Review

This chapter has conceptualized some key concepts of the study that is livelihood and Farmers Organization. It also reviewed some literature on theoretical perspectives of FOs, the origin of collective organization, the spreading of FOs in the world, organization of farmers in Tanzania, the role played by FOs in helping farmers improve their well-being and constraints FOs face in delivering services to farmers. To conclude, the reviewed literature has shown that FOs have been established and would continue to flourish to enable farmers have a common voice in solving their problems. Literature has also shown that FOs have played an important role of linking farmers with research and extension services, increasing market access and bargaining power. FOs are also important in empowering smallholder farmers who can take risks, they improve their confidence in the marketing process thereby increasing their incomes which can then be used to improve their well-being. However, FOs face a number of challenges in delivering services to farmers. These include; low price of commodities produced, poor quality

products, and limited ability to involve and benefit the poorest farmers. These challenges call for some urgent action for smallholder farmers to benefit from the services offered by FOs. In general, the chapter concludes that FOs is important for smallholder farmers' well-being.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Description of the Study Area

The study was conducted in Kasulu district, one of the four districts in Kigoma Region. The district is bordered by Kibondo District to the North and East, Kigoma District and Municipality to the South, and the Republic of Burundi to the west. The district covers a total area of 9 324 square kilometres, amounting to 25.2 per cent of the total area of Kigoma region. The district is located between latitudes 3° 45' and 5° South of the Equator and longitudes 29° 45' and 30° 55' East of the Greenwich Meridian. Administratively, the district is divided into 7 divisions which are further sub-divided into 30 wards and 90 villages. The district is divided into two agro-ecological zones, the highland grassland and the lowland woodland. The lowland's altitude ranges between 950 metres and 1 300 metres, while the highland's altitude ranges between 1 300 millimetres and 1 800 millimetres above the sea level. The highland areas are suitable for coffee and banana production, whereas the lowland areas favour the production of tobacco and cereal grain. Kasulu District experiences two seasons, the wet (between October to May) and the dry season (between June to September). The annual rainfall ranges between 950mm and 1300mm while temperatures range between 16 and 24 degrees centigrade (URT, 2008).

The main inhabitants of Kasulu District are the Ha and the Sukuma. The latter is the second major ethnic group; and the Sukuma migrated to the area from Mwanza and Shinyanga region in search of pastures for their cattle. Based on the districts' population projection for 2011, the district has 758 000 inhabitants, out of whom

361 000 are males and 397 000 are females (KDC, 2011). The major activity for most (85%) of the residents in the district is agriculture. The main food crops grown include maize, bananas, potatoes, beans, millet, groundnuts, and cash crops grown include coffee, tobacco, ginger and cotton (KDC, 2011).

The area was selected because it is one of the poorest districts in Tanzania by most indicators of household well-being with a per capita income of 226 593 TZS, being lower than the national average of 371 608 TZS (URT, 2008). Also, the area was selected for the current study due to the fact that no study on the contribution of FOs to households' well-being had been conducted in the district despite the existence of FOs.

3.2 Research Design

This study used a cross-sectional research design: the design allows data to be collected at a single point in time. According to Bryman (2004), the method can be used for a descriptive study as well as for determining the relationship between variables at a particular point in time. Also the design was considered suitable in terms of time limit and resources available for data collection.

3.3 Sampling Procedures

3.3.1 Sampling methods

Both purposive and simple random sampling techniques were used in selecting the respondents. Purposive sampling was used to select wards and villages in the study area. The selected wards were Munanila and Nyakitonto, the selection of the two wards was based on ease of accessibility, and the long existence of FOs. The

villages selected from the two wards were Mkatanga, Kibwigwa, Nyakitonto and Kitagata. From each village, 40 respondents were randomly selected, out of whom 20 respondents were FOs members and 20 were non members. The selection was guided by FOs registers and village registers. The study also involved five key informants (Ward extension officer, District cooperative officer, and village leaders). These key informants were purposively selected to help in explaining or clarifying some issues related to the FOs in the study area. Purposive sampling was also used to select Focus Group Discussion (FGDs) participants. The FGDs were used to verify and supplement information gathered through the questionnaire. A total of 4 FGDs were held in the study area. each FGD involved 10 participants comprised of both 5 males and 5 females.

3.3.2 Study population and Sample size

The proposed population for this study was farmers in Kasulu district and the unit of analysis was the household. The study involved a total of 160 respondents whereby 80 were members of FOs and 80 non-members. The selected sample size was generally seen to be sufficient for meaningful statistical analysis. According to Bailey (1998), a sample size of 100 respondents is a bare minimum for studies requiring statistical analysis.

3.4 Data Collection Methods

In order to address the specific objectives, both primary and secondary data were collected. A structured questionnaire (Appendix I & II) and interview checklist (Appendix III & IV) were used for data collection. Prior to the main fieldwork, a

pre-testing of the questionnaire was carried out in Munanila village that did not form part of those studied. The exercise aimed at checking the relevance of questions and their comprehensiveness in gathering the required information. After the pre-testing, necessary changes were incorporated before embarking on the actual study.

Primary data were collected using both quantitative and qualitative techniques. For the quantitative method a questionnaire with open and close-ended questions was used (Appendix I & II). The qualitative method used Focus Group Discussions and Key informant interviews guided by checklist (Appendix III& IV). Secondary data were gathered from the Farmers' Organizations files and the District Agriculture and Livestock Development Officer (DALDO).

3.5 Data Analysis

Both quantitative and qualitative methods of data analysis were employed. Qualitative data were analyzed using content analysis; quantitative data were coded and analyzed using Statistical Package for Social Science (SPSS) software. Descriptive statistics such as frequencies, percentages, mean and standard deviation were determined in order to answer objectives one and two. Inferential statistics, t-test, Chi-square and multiple linear regressions were carried out to answer objective three. The t-test method was used to test whether there is a significant difference in acres allocated for production, harvests and income earned before and after joining FOs, and between FOs members and non-members. Chi-square was used to test association between number of meals consumed, type of schools attended by children based on FOs membership. A multiple linear regression model was used to

find out the extent to which the independent variables affected the dependent variable.

The regression model used is shown below;

$$Y = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \beta_6 X_{i6} + \beta_7 X_{i7} + \beta_8 X_{i8} + \beta_9 X_{i9} + e_i$$

Y = dependent variable (farmers well-being determined by income and asset ownership)

β_0 = constant

$\beta_1 - \beta_9$ = are regression coefficient which is a determinant of change to Y.

$X_1 - X_9$ = Independent variables

e_i = error term

X_1 = Access to market information (information on price and demand), X_2 = Access to extension service, X_3 = Use of inorganic fertilizers, X_4 = Use of pesticides, X_5 = Access to credit, X_6 = Use of herbicide, X_7 = Use of Improved seeds, X_8 = Respondents education level, X_9 = Respondents marital status.

3.6 Limitations of the Study

This study encountered some limitations, during its undertaking. These include unwillingness of the farmers to be interviewed without payment. Also a few of the respondents were not willing to respond to some questions for fear that there could be a hidden agenda. These problems were resolved through discussion and educating the respondents and their leaders on the purpose of the study.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of the Respondents

The Socio-economic aspects of the respondents examined in this study include age, sex, marital status, education level, household size and occupation of the respondents'. These characteristics have some influence in the respondents' involvement in farming and decision to join Farmers' Organization (FOs). For example, age is a variable which can determine the period of one's entry into agricultural production and other activities. Also, age of an individual has some influence on individual's preferences of whether or not to participate in certain activities. Therefore, it is important to describe the socio-economic characteristics of the sampled FOs members and non members so as to understand the general picture of the studied sample.

The results from the study (Table 1) show that more than half of the respondents (both FOs members and non-members) were above 35 years. The rest 38% and 47% of both FOs members and non members were in the category of young adults (23-35 years). Table 1 shows further that majority (83.8% FOs members and 77.5% non-members) were males. The higher proportion of male respondents is due to the fact that males in the study area were the heads of household and the study aimed at interviewing household heads. Also, the FOs surveyed in the study area deal with cash crops producers namely coffee and tobacco farmers; most members were males who, as reported by Grigoryan *et al.* (2008), are the main producers of cash crops; this is unlike the case with women. About 16.2% of FOs members and 22.5% of

non-members were observed from Female Headed Households (FHHs) in the study area; these figures are relatively lower than the ones observed in other parts of Tanzania. For example, NBS (2007) reported 23% of female headed households and Ileje district in Mbeya 32% households were female headed. Nonetheless, the total number of female respondents was higher than the above for some did represent their spouses.

The results in Table 1 show further that majority of the respondents (90% of FOs members and 91.2% of non-members), were married and the rest were either widows or single. Generally, marriage has a great influence on family matters since parents are forced to engage in agricultural activities thus necessitating access to inputs from organizations or any other place with the aim of raising agricultural productivity so as to meet family needs.

Education is always valued as a means of liberation from ignorance, developing human skills and knowledge and as a way of empowering the community to participate in certain activities (URT, 2003). The results from the study (Table 1) show that the respondents' education ranged from non-formal education (adult education) to secondary. Table 1 also shows that majority of the respondents both FOs members and non-members (85% and 88.8% respectively) completed primary school education. However, less than 10% of the respondents had secondary school education in both groups.

These finding imply that the studied society can read and write and hence they can adopt improved agricultural practices and new technologies. As the results of a

study conducted by Singh *et al.* (2003) showed that education status of farmers is an important factor in the adoption of new improved technologies. Therefore, the services offered through FOs can effectively be utilized by farmers thereby increasing their agricultural productivity and as well as their income. Household size is another important attribute that could influence livelihoods strategies of rural farming households. Generally, a household includes persons living together and sharing household resources such as accommodation, farmland and foodstuffs (Leonard, 2009). Study results (Table 1) reveal that more than half (52%) of the respondents interviewed (both FOs members and non-members) had a household size of between 6-9 members. Less than 5% of both FOs members and non-members had a household of below 3 members. The observed household size of 6-9 is considered to be a large size based on the 2012 Tanzania census whereby the country's average household size was 4.8 (URT, 2013).

As regards to the respondents' main occupation; Table 1 shows that both FOs members and non-members 100% were engaged in farming as their main economic activity. However, off-farm activities were also undertaken to supplement the main activity. Less than 50% of the respondents from both FOs members and non-members were involved in petty trade. About 50% and 46.2% of FOs members and non-members respectively were engaged in livestock keeping and the rest less than 10% of both FOs members and non-members were earning a regular salary through formal employment.

Table 1: Demographic and socio-economic characteristics of the respondents (n = 160)

Characteristic		FOs members ($n_{fo} = 80$)		Non members ($n_{nm} = 80$)	
		Frequency	Percent	Frequency	Percent
Age of respondents	23 – 35	31	38.8	38	47.5
	36 – 60	47	58.8	42	52.5
	61 and above	2	2.5	-	-
Respondents' Sex	Male	67	83.8	62	77.5
	Female	17	16.2	18	22.5
Respondents' Marital status	Married	72	90.0	73	91.2
	Widow	7	8.8	7	8.8
	Single	1	1.2	-	-
Respondents' Education level	Adult education	6	7.5	4	5.0
	Primary education	68	85.0	71	88.8
	Secondary education	6	7.5	5	6.2
	Diploma and above	-	-	-	-
Respondents' Household size	Below 3	3	3.8	2	2.5
	3 - 5	30	37.5	35	43.8
	6 - 9	46	57.5	41	51.2
	10 and above	1	1.2	2	2.5
Respondents' main occupation	Farming	80	100	80	100
Respondents other activities	Petty trade	32	40.0	39	48.8
	Livestock keeping	40	50.0	37	46.2
	Wage employment	6	7.5	4	5.0
	Carpentry	2	2.5	-	-

NB: n_{fo} = sample size for FOs members and n_{nm} = sample size for the non-members

4.2 Households Land Ownership

Land is one of the most important factors for smallholder farmers' well-being. With enough land, people may have an opportunity of cultivating a variety of food and cash crops which in turn increase production of food and cash crops for sale. The average land size owned by both FOs members and non members was 5.1 and 4.0 acres respectively. The study results (Table 2) also show that half of the respondents both FOs members and non members owned between 4-6 acres. The rest 27% and 41% of both FOs members and non members owned between 1-3 acres. Shortage of

land in the sampled area was reported to result from population growth which resulted into higher demand for food and cash crops which may have led to the acquisition of larger farm sizes by few people leaving others with little access to the resource. Other studies have reported a similar trend for Kasulu (Kangalawe *et al.*, 2009; NBS, 2007).

Table 2: Households land ownership (n= 160)

Characteristic	Land size (acres)	FO Member		Non Member	
		Frequency	Percent	Frequency	Percent
Land ownership	1-3	22	7.5	33	41.2
	4-6	41	51.2	40	50.0
	7-10	14	17.5	7	8.8
	11 and above	3	3.8	-	-

4.3 Farmers' Perception of FOs

The respondents were asked ten statements to determine their perception of the services FOs members are likely to get through their membership. The results from the study (Table 3) show that more than 70% of both FOs members and non-members agreed with the statements (1st, 2nd, 4th, 6th, 7th and 11th) that favour the services offered by FOs to its members. A similar observation was reported by Mapila *et al.* (2010) and Kassam *et al.* (2011). As regards with the services offered to farmers from other development partners through FOs, more than three quarters of the respondents (both FOs members and non members) agreed with the statement, that development partner such as NGOs reach farmers through FOs; hence, farmers in an organization are more likely to get more services than those with no affiliation to any organisation. This finding is in line with the results in a study by Nshimirimana (2009) and Jason (2008) who reported that farmers who had joined FOs were linked to development partners such as NGOs, and had access to

agricultural services. Also 83.3% and 57.5% of FOs members and non-members respectively disagreed with the statement indicated that there no difference between FOs members and non-members in accessing services through FOs. These results imply that majority of the respondents had a positive perception toward services provided by FOs to members.

Table 3: Farmers' perception of FOs (n=160)

Statements	FOs members (n _m =80)		Non members (n _{nm} =80)	
	Disagree	Agree	Disagree	Agree
1.FOs helps farmers to seek agricultural service e.g. credit	3(3.8)	75(93.8)	12(16.7)	67(83.7)
2.FOs members access market information through FOs	6(7.4)	4(92.6)	14(17.5)	66(82.5)
3. New agricultural technology disseminated through group approach	18(22.5)	62(77.5)	31(38.8)	49(61.2)
4. Farmers join FOs gain experience and knowledge	4(5.0)	76(95.0)	16(20.0)	64(80.0)
5. Working in FOs is better than working individually	3(3.7)	77(96.3)	40(25.0)	60(75.0)
6.Through FOs members get agricultural training through farmers field school	15(18.7)	65(81.3)	24(30.0)	56(70.0)
7. Farmers in FOs were access more to extension services than non members	6(7.6)	74(92.4)	14(17.5)	66(82.5)
8. Individual farmers have low bargaining power enabling traders impose low price to their products	38(45)	52(65.0)	39(48.8)	41(51.2)
9. There is no difference between FOs members and non members in accessing services (e.g. Loan and extension services	69(83.2)	11(16.8)	46(57.5)	34(42.5)
10.Farmers working in FOs access agricultural inputs i.e. fertilizers, pesticides and improved seeds compared to non members	0	80(100)	8(11.3)	72(88.7)

NB: Numbers in brackets indicate percentage.

4.4 Reason for Members Joining FOs

The respondents who were members of FOs indicate that the objective of joining the organizations was to seek agricultural services which could in turn help them improve their well-being. The study results (Table 4) reveal that 83.8% of the respondents joined FOs so as to access inputs, credit and better prices. Similar observations are reported by Jason (2008) in Malawi that most, farmers join FOs to enable them access markets, inputs and credit services. However, less than 12% of the respondents joined the organizations so as to access inputs and better prices. The study also reveal that, FOs provide extension services and other trainings such as maintaining crop quality in order to improve the quality of the produce and their marketability.

Table 4: The distribution of respondents by reasons for joining FO (n = 80)

Reason for joining FO	Frequency	Percentage
To get better prices	3	3.8
To access loan	2	2.4
To access inputs	8	10.0
To get better prices, loan and inputs	67	83.8

4.5 Reasons as to why some farmers do not join FOs

During Focus Group Discussions and non-members interviews, the reasons as to why they had not joined FOs were explained. Over three quarters (76%) cited difficult conditions as a reason. To become a member one needs to contribute between TZS 5 000 and 10 000 as membership fee and between 15 000 and 20 000 TZS as organization share per year as stipulated in the constitution. In addition,

members are required to pay 10% of the total transportation cost as service fee to cover transportation cost, when the organization markets their produce or purchase farm inputs for them. However, the sampled organizations in the study area were based on cash crop producers. Therefore, farmers who were not producing these crops were in a way unable to join the FOs. Similar studies by Silver (2004) and Winnink *et al.* (2007) point out that members of FOs were farmers who are commodity producers and can pay their annual subscription fees. These results imply that poor farmers are unable to access services offered by FOs hence their well-being is affected.

4.6 Goods and Services Obtained from FOs

Goods and services accessed by FOs members interviewed include; inorganic fertilizers, pesticides, improved seeds, herbicides, credit, extension services, and market information. Fertilizer is a kingpin in enhancing crop production, it is estimated that contribution of fertilizers in increasing crop productivity is about 50 per cent (FAO, 2002). Fertilizers are used to supply nutrients needed by crops; farmers using fertilizers can produce more food and cash crops which help to improve their well-being.

The results from the study (Table 5) show that 97.5% of FOs members received inorganic fertilizers through their organizations. The types of fertilizers received include; Triple Super Phosphate (TSP), Calcium Ammonium Nitrate (CAN) and Urea. As regards to non members 85% accessed fertilizers from other sources such as markets, input suppliers (Agro-dealers) and other traders certified to provide such

services. Also, the results (Appendix 6) show that 62.5% and 45% of both FOs members and non- members received between 50-200kg of fertilizers. These results imply that FOs members used more kilograms of inorganic fertilizer compared to non-members. The above observation seems to be in line with a study by Alemayehu (2008) which reported that FOs provide credit for agricultural inputs such as fertilizers; hence, members are likely to use fertilizers in their production. Non-members use less fertilizer due to high costs despite that the government of Tanzania subsidizes input prices. This was also reported during FGDs interview where one male respondent aged 45 years said the following. *"we decide to purchase five to ten kg of fertilizers from the markets because we cannot afford to purchase one bag weighing 50kg for TZS 63 000 from input suppliers, since we do not have access to credit"*. Inability to use fertilizers may cause households to get low yields which may then affect their income levels and food security status.

The use of quality and improved seeds has a positive effect on agricultural productivity. In the study area, only improved seeds of tobacco are supplied by FOs, whereby 50% of the FOs members producing tobacco did have access to improved seeds through FOs (Table 5). The interviewed members indicated that apart from the cash crops they produce, they only used maize hybrids and that these were accessed from other sources such as input suppliers and other certified stockists. As regards to non- members, 22.5% used improved seeds from the market and inputs suppliers. These results imply that in the study area, the use of improved seeds by both members and non-members is not very popular. Similar observation is made by Alemayehu (2008) and NBS (2007) who report that improved seeds are used in

small quantities by most of the smallholder farmers in agricultural production. Poor use of improved seeds in farming may result into households getting low yields and consequently low income. Pesticides are important in reducing incidences of pest and diseases which attack crops. It helps farmers to produce more and improve quality of agricultural produce which capture the export markets (FAO, 2002). The study results presented in Table 5 show that both FOs members and non-members (95% and 56.2% respectively) were using pesticides. The common pesticides used include, Red copper, Blue copper, Linkolin, Thiodan, Acephate and Dimethoate. The results from the study show further that pesticides are so important for crop production due to high incidences of pests and diseases. Similar observations are reported by Kangalawe *et al.* (2008) for Kasulu district and Nyambo (2009) for Tanzania. According to the cited authors, the use of pesticides has increased due to an increase in incidences of pests and disease as a consequence of climate change. Generally, these observations were made during interviews and FGDs. For example, one female respondent aged 36 years said the following; *"In the past there was no need to apply pesticides but, nowadays without applying pesticides you harvest nothing."* However, FOs members were enjoying a reduction of some costs associated with such inputs. Due to remoteness and market problems, agricultural inputs in rural areas are expensive. About two thirds (68.8%) of FOs members use between 1 and 5 litres of pesticides (Appendix 6) as opposed to non-member (48.8%).

Herbicides are chemicals used in agriculture in controlling weeds. The results (Table 5) show that less than 30% of both FOs members and non-members were using

herbicides to control weeds. These results suggest that herbicides utilization in the study area was low. Poor use of herbicides can affect production particularly of the large scale farmers especially if weeding is delayed. Common herbicides used by farmers include Pendimethilum, Laundup, and Callach.

Table 5: Distribution of respondents by goods obtained from FOs (n =160)

Goods obtained		FOs members		Non members	
		Frequency	Percent	Frequency	Percent
Inorganic fertilizers	Yes	77	96.2	68	85
	No	3	3.8	12	25
Improved seeds	Yes	40	50	18	22.5
	No	40	50	62	77.5
Pesticides	Yes	76	95	45	56.2
	No	4	5	35	43.8
Herbicides	Yes	22	27.5	17	21.2
	No	58	78.5	63	78.8

4.6.1 Respondents access to extension services

Extension services are important services that enable farmers to improve their productivity. Extension services play a positive role in creating awareness in adopting modern farming techniques to improve agricultural productivity (FAO, 2002). The study results (Table 6) show that FOs members 85% and less 10% of non-members were provided with technical advice and agricultural practices services. Farmers were advised on the use of appropriate agricultural inputs and on maintaining crop quality during harvesting and storage. Similar observations are reported in a study by Mushi (2000) in Kilosa district, who revealed that members in the groups had access to technical advice and knowledge of agricultural practices.

The results from the study reveal further that about three quarters (71.2%) of the FOs members and 1.2% of non-members had access to environmental conservation

practices (Table 6). The respondents were advised on the importance of planting trees to replace those used in the process of curing or drying tobacco leaves. Through FOs, members particularly those cultivating on slopes were also trained on how to use terraces so as to control water runoff and thus controlling soil erosion. FOs members acknowledged that it has been easy for them to meet with ward extension officers compared to doing the same on individual basis. A study by Sadak (2007) shows that agricultural extension staffs are few and that they do not have adequate resources such as transport to reach individual farmers who need their services in the remote areas. Therefore, what the FOs members said justifies what Sadak observed; an extension officer can easily meet a group of farmers at one time as opposed to having to go to each farmer separately.

Table 6: Distribution of respondents by their access to extension services (n=160)

Type of extension service		FOs members		Non members	
		Frequency	Percent	Frequency	Percent
Technical advices	Yes	68	85	5	6.2
	No	12	15	75	93.8
Agricultural practices	Yes	68	85	3	3.8
	No	12	15	77	96.2
Environmental conservation	Yes	57	71.2	2	2.5
	No	13	28.8	78	97.5

4.6.1.1 Frequency of extension visits

According to Rutatora (1993) continuous farmer education is recommended for an innovation to be adopted. Therefore, the adoption of an innovation depends on the strength of the extension services available. The study results (Table 7) show that majority (86.2%) of FOs members were visited twice per year, while 87.4% of the

non-members were not visited at all. These findings show that FOs members had more access to extension services although it was rather seldom as opposed to non-members. Therefore, this observation implies that the FOs members have better chances of raising their crop productivity and income if the advice offered is put into use.

Table 7: Distribution of respondents according to frequency of extension service (n=160)

Visits per year	FO members		Non members	
	Frequency	Percent	Frequency	Percent
Once in three months	3	3.8	3	3.8
Once in six months	8	10	-	-
Twice per year	69	86.2	7	8.8
None	-	-	70	87.4

4.6.1.2 Respondents participation in agricultural demonstrations

Agricultural demonstration is among the participatory approaches to extension services, and which is used to transfer knowledge into usable practices (FAO, 2002). Farm demonstration in the study area was conducted in the neighbouring village (Kitambuka). According to FGDs and key informant interviews, demonstration plots were very few and far from most of the farmers. On the other hand, farmers were advised to use farms of individuals for the purpose of demonstration. The majority (89%) of FOs members attended demonstrations at colleagues' farms. This was also reported by one respondent in the interview who said, "*We use the plot of mzee Philipo Nkubile and Elias as a demonstration plot to learn improved technologies in relation to coffee and banana planting*".

4.6.2 FOs and credit accessibility

The results from the study (Table 8) show that most (87.5%) of the FOs members obtained credit from the FOs both in terms of cash and/or in-kind. The amount of credit received averaged TZS 174 356. According to the respondents, the credit was mainly used to purchase farm inputs such as fertilizers and pesticides. For the non members interviewed, about a third (31%) were receiving loans from different sources such as lenders (people lending out money informally and charging high interest rates). Other services include friends and Savings and Credit Cooperatives Societies (SACCOS); the average loan amount received was 41 562. FOs Members pointed out that the organizations were helpful as they acted as a guarantor to financial institutions. This is due to the fact that the banks generally require collaterals or guarantors before giving out loans. If the loan is not paid back, the bank can recover the money by seizing those assets of the FOs or guarantors. Most smallholder farmers have very few assets; they also lacked a certificate of ownership of such assets as land and houses. Therefore, they farmers are not eligible for credit unless they borrow from private lenders. Similar observations is made by Wennink *et al.* (2007) who point out that smallholder farmers lack the capacity to access formal credit in terms of collateral, knowledge, skills and organization. Lack of access to credit can result into low use of agricultural inputs, and which can result into low crop yield and income to farmers.

Table 8: Distribution of respondents by credit accessibility (n=160)

Characteristic		FO members	Non-members
Credit access	Yes	63(78.7)	24(31.2)
	No	17(21.3)	56(68.8)
Amount of loan (TZS) received	50 000-250 000	53(66.2)	22(27.5)
	250 001-450 000	6(7.5)	1(1.2)
	450 001-650 000	2(2.5)	1(1.2)
	> 650 001	2(2.5)	-
Average amount (TZS) of loan received	174 356	41 562	

NB: Numbers in brackets indicate percentage.

4.6.3 Market information

Market information helps farmers to know the prices and trends in the market for them to be able to bargain with buyers. According to Kassam *et al.* (2011), FOs have to analyze market information to enable farmers make decisions on agricultural production. Information on the prevailing market profile has a great influence on producers in relation to the quantity and quality to be produced in accordance with the existing demands. All the FOs member respondents reported that they normally receive information on markets through their organizations, while the non-members (42%) reported to have been accessing market information from market sources and just under two fifths (38.8%) from FOs. Therefore, this result implies that the existence of FOs enhances accessibility to market information by farmers.

4.6.4 Problems encountered in the FOs

During the study, respondents identified problems hindering efficient performance of their organizations. The main problems raised by FOs members are shown in

Table 9. The results show that about a third (33.8%) of the respondents pointed out delay of payments as the main problem affecting them. The FOs members said further that selling their crops through organizations makes them for between 6 and 9 months before getting their payments and this was discouraging. A similar observation is reported by Rweyemamu and Kimaro (2006) who reveal that tobacco farmers in Ruvuma region face delays in payments, experience transport problems, and inadequate grading materials. About a third (31.2%) of the respondents also pointed lack of reliable markets for coffee and tobacco as another constraint, since the crops depend on the world markets; therefore, price fluctuations do affect their production. The above finding is in line with similar findings in a study by Parrish *et al.* (2005) who report that smallholder farmers in developing countries are vulnerable to declining and fluctuating commodity prices which do not correspond with the rising production costs. Other constraints mentioned include; price fluctuation (17.5%), shortage of inputs (10%), lack of transport (6.2%), and shortage of skilled personnel (1.2%). In addition, these observations are in line with the observations put forwards by the key informants and the respondents in FGDs as follows;

Payments delay;

“After selling our crops payments are done in three rounds, it depends on which round one will be paid” (a 35 years old female FGD participant, Nyakitonto village FGD held on 3/12/ 2011).

Some have been paid during the first and second rounds, but I don't know when the third payment will be done” (A male respondent aged 45 years, Kitagata village, FGD held on 17/12/2011)

Price fluctuation.

"Price is not predictable, last year we sold 1 kg of coffee for TZS 3 000 per kg, this year we sold the same for 5 000 but, as for next year we don't know what the price will be" (A male participant aged 50 years, Kibwigwa village. FGD held on 23/1/2012).

"Price can be raised or lowered; if it lowered it affects our lives" (a middle aged female, Mkatanga village. FGD held on 16/2/2012).

Table 9: Distribution of respondents by problems encountered (n= 80)

Type of problem	Frequency	Percent
Delayed payments	27	33.8
Lack of reliable markets	25	31.2
Price fluctuation	14	17.5
Shortage of inputs	8	10.0
Lack of transport facilities	5	6.2
Shortage of s kill personnel	1	1.2

4.7 Contribution of Goods and Services from FOs on Farm Production

Access to goods and services from FOs has a positive impact on farmers' production and productivity (Demaine, 2008). Access to goods and services enables FOs members to increase the area under cultivation in acreage (Table 10). For example, the study results show that more than 55% of the FOs members cultivating both coffee and tobacco increased an area under cultivation of these crops after joining FOs. This result implies that accessibility to agricultural inputs had an influence on the land allocation for production. A study done by Bachke (2009) reported similar

observations that farmers access to inputs led to allocation of more land for production relative to farmers who did not have access. Moreover, the results of t-test (Appendix 8) indicate that there was a significant difference ($p < 0.05$) in the acres the farmers cultivated before and after joining FOs.

Table 10: Distribution of respondents by acres of coffee and tobacco cultivated before and after joining FOs (n=80)

Area under cultivation (acre)	Before joining FO		After joining FO	
	Coffee	Tobacco	Coffee	Tobacco
None	-	9(22.5)	-	-
<1	22(55)	14(35.0)	2(5)	1(2.5)
1-3	16(40)	17(42.5)	26(65)	15(37)
4-6	2(5)	-	12(30)	24(60)

NB: Numbers in brackets indicate percentage.

The study results in (Table 11) show that 52.5% and 70% of FOs members producing coffee and tobacco respectively reported an increase in production after joining FOs; and that, their harvests ranged from 500 to 1 000 and from 1 001 to 1 500 kg for both coffee and tobacco, respectively after joining FOs. The study results (Appendix 7) show further that a half of the non-members had their production ranging from 100 to 500 kg for coffee and from 501 to 1 000 kg for tobacco. This result implies that the goods and services accessed by farmers through FOs contributed positively to an increase in crop yields. This is consistent with Bachke's (2009) observation that increased agricultural productivity usually comes as a result of effective utilization of improved technology. Other studies done by Pinto (2009) in Zambia and Parrish *et al.* (2005) noted high yields to farmers working in FOs as

opposed to farmers working individually. Also the results of t-test (Appendix 9) verify that there was a significant difference in harvests ($p < 0.05$) before and after joining FOs and among the groups.

Table 11: Distribution of respondents by amount of coffee and tobacco harvested (n=80)

Amount harvested (kg)	Before joining FOs		After joining FOs	
	Coffee	Tobacco	Coffee	Tobacco
None	10(25)	3(7.5)	-	-
< 100	8(20)	3(7.5)	-	-
100- 500	19(47.5)	27(67.5)	17(42.5)	1(2.5)
501-1 000	3(7.5)	5(12.5)	21(52.5)	9(22.5)
1001-1 500	-	2(5.0)	2(5.0)	28(70)
> 1 501	-	-	-	2(5)

Numbers in brackets indicate percentage.

Income levels of the respondents were estimated from farm products and off-farm activities. The study results (Table12) reveal that 67.5% of the respondents' incomes had increased after joining FOs as compared to before joining. Also, the results in the Table show that 67.5% of the FOs members earned incomes of above 2 000 001 TZS, while non members 45% earned incomes of between 1 000 001 and 1 500 000 TZS per annum. This result suggests that goods and services received by farmers from FOs contributed positively to farmers' incomes. Similar observations were reported by Bachke (2009) in Mozambique Jason (2008) in Malawi and by Mushi (2000) in Mvomero district. In addition, the results of a t-test (Appendix 10) show a significant difference in the income earned ($p < 0.05$) before and after joining FOs, and among the groups.

Table 12: Distribution of respondents by annual income (n=160)

Income (TZS)	FOs members		Non- members
	Before joining FOs	After joining FOs	
100 000-500 000	28(35)	1(1.2)	7(8.7)
500 001-1 000 000	47(58.8)	1(1.2)	24(30)
1 000 001-1 500 000	5(6.2)	13(16.2)	36(45)
1 500 001-2 000 000	-	11(13.8)	10(12.5)
>2 000 001	-	54(67.5)	3(3.8)

NB: Numbers in brackets indicate percentage.

4.8 Improvement of Respondents' Well-being

4.8.1 Children's education

Information on education attainment of the children from FOs members and non members' households was obtained in respect of the type of school, number of children schooling in the family and the level of education attained. The results of the study (Table 15) reveal that 67.8% and 83.3% of both members and non members of FOs had children in primary school. In addition, 27.6% and 16.7% members and non members of FOs had children in public secondary schools. This result implies that the respondents interviewed were able to meet the costs of education offered in public schools and not in private schools. This can be attributed to school fees paid in public schools and the selection criterion for joining secondary education in public school. Generally, the fees in public schools are lower than those in private ones hence many parents/guardians with limited resource will pay for public education. Further, the results from the Chi-square test (Appendix 11) indicate lack of significant association ($p > 0.05$) between children's attendance to both public and private schools, and parents' memberships to FOs.

Table 13: Distribution of respondents by type of school attended by children (n=160)

Type school	FO members		Non members	
	Frequency	Percent	Frequency	Percent
Public primary school	59	67.8	65	83.3
Private primary school	2	2.3	-	-
Public secondary school	24	27.6	13	16.7
Private secondary school	2	2.3	-	-

4.8.2 Respondents assets ownership

Household assets are the components of a household's physical capital and can be used to measure household well-being. According to Komba (2008), assets provide people with the opportunities and options in the face of impoverishing forces. And that being assets poor limits people's capacity to improve and safeguard their well-being. As Kamuzora (2001) points out, the possession of assets also reflect income level. Therefore, estimating the value of a household's assets is fundamental in assessing the respondents' well-being.

The study findings (Table 13) show that majority (85%) of FOs members owned a house with burnt bricks, mud floor and corrugated iron roofing after joining FOs. These results imply that after joining FOs, members were in a good position to improve their houses. This observation was supported by one discussant in the FGD who said, *"the service I gained in my FO has enabled me improve production which has enabled me to roof my house using corrugated iron sheets replacing the thatch roof I had before. (A 35 years old male, Kibwigwa village FGD held on 23/11*

201"). The study results also reveal that 41.8% of the non-members owned houses with burnt bricks, mud floor and corrugated iron roofing. A similar study by Pinto (2009) shows that farmers in organizations have been able to register improved production and access to marketing which enables them build modern houses. This is further reflected by Chi-square test results (Appendix 11) which show a significant association ($p < 0.05$) between the types of the house owned and membership to FOs.

Table 14: Distribution of respondents by type of house owned (n=160)

Type of house	FOs Members (n _{fo} =80)		Non- members (n _{nm} =80)
	Before joining FOs	After joining FOs	
Mud bricks, mud floor and thatch roof	27(33.8)	-	11(13.8)
Burnt bricks, mud floor and thatch roof	38(47.5)	2(2.5)	32(40)
Mud bricks, cemented floor and corrugated iron roofing	8(10.0)	1(1.2)	1(1.2)
Burnt bricks, mud floor and corrugated iron roofing	7(8.8)	68(85.0)	33(41.8)
Burnt bricks, cemented floor and corrugated iron roofing	-	9(11.3)	3(3.8)

NB: Numbers in brackets indicate percentage

Livestock keeping in the study area was an important activity where by households including those of the respondents were rearing animals such as cattle, pigs, goats and chicken. According to Ciamarra *et al.* (2011), livestock act as a savings and insurance, the sale of animals provide immediate cash for meeting expenses of daily maintenance of the household or unexpected expenditure such as Medical costs.

The findings from the study (Table 14) show that more than 25% of FOs members owned between 4-6 pigs and goats after joining FOs, 20% owned 1-3 cattle and 33.8% owned 7 and above chicken. As for the non-members, less than 18% owned between 4-6 goats and chicken.

Table 15: Distribution of respondents by livestock ownership (n =160)

Type of livestock		FOs Members n _{fo} =80)		Non members
		Before joining FO	After joining FO	(n _{nm} =80)
Cattle	0	77(96.2)	63(78.8)	71(88.8)
	1-3	3(3.8)	16(20.0)	8(10.0)
	4-6	-	1(1.2)	1(1.2)
	<7	-	-	-
Goats	0	63(78.8)	47(58.8)	57(71.2)
	1-3	9(11.2)	3(3.7)	5(6.3)
	4-6	8(10.0)	24(30.0)	11(13.7)
	>7	-	6(7.5)	7(8.8)
Pigs	0	72(90)	52(65.0)	67(83.8)
	1-3	6(7.5)	3(3.8)	5(6.3)
	4-6	2(2.5)	21(26.2)	7(8.8)
	<7	-	4(5.0)	1(1.2)
Chicken	0	56(70)	49(61.2)	48(60.0)
	1-3	3(3.8)	-	5(6.2)
	4-6	14(17.5)	4(14)	14(17.4)
	>7	7(8.7)	27(33.8)	(10.4)

NB: Numbers in brackets indicate percent

A study conducted by Pinto (2009) showed that assets such as Radio, TVs, Motorbike, bicycles and houses with corrugated iron sheets roofing are usually linked to a wealthy status. The study findings (Table 15) show that more than three quarters of the FOs members owned a radio, bicycle, and a mobile phone after joining FOs and less than 12% own a motorbike, milling machine, sewing machine and solar panel. However, more than a half (58%) of the non-members owned a

radio and a bicycle. 42.5% owned a mobile phone, and less than 2% own a motorbike and a solar panel.

Table 16: Distribution of respondents by other assets ownership (n=160)

		FOs members (n _{fo} =80)		Non members (n _{nm} =80)
		Before joining FO	After joining FO	
Radio	Yes	51(63.8)	72(90.0)	67(83.8)
	No	21(36.2)	8(10.0)	13(16.2)
Bicycle	Yes	12(15)	74(92.5)	58(72.2)
	No	68(85)	6(7.5)	22(27.8)
Motorbike	Yes	-	6(7.5)	1(1.2)
	No	80(100)	74(92.5)	79(98.8)
Milling machine	Yes	-	2(2.5)	-
	No	80(100)	78(97.5)	-
Sewing machine	Yes	-	8(10)	-
	No	80(100)	72(90)	-
Solar panel	Yes	-	3(3.8)	1(1.2)
	No	80(100)	77(96.2)	79(98.8)
Mobile phone	Yes	30(37.5)	62(77.5)	34(42.5)
	No	50(62.5)	18(22.5)	46(57.5)

NB: Numbers in brackets indicate percentage

4.8.3 Households' food security

Food security is critical for peace and social stability; and according to FAO (2011), household food security is more than food production. And a household can be food secure if it has the ability to access and utilize sufficient quantities and quality of food to support a healthy and active lifestyle. Smallholder farmers need to satisfy non-food demands like clothing, housing, sugar, salt, farming tools and various fees, these could influence a households balancing of food requirements to ensure food security (FAO, 2011).

The results from the study (Table 17) reveal that 37.5.5% and 87.5% of both members and non members of FOs consume two meals per day. The findings also show that 62.5% and 3.8% of FOs members and non members respectively are able to consume three meals per day. This result implies that being a FOs member enables a farmer to have the opportunity to be food secure due to the fact that the income obtained from commodities produced is used to sustain other household requirements such as construction of modern houses and paying for school fees. whereby the food crops produced can then be used for household consumption only. Furthermore, the results of the Chi-square test (Appendix 11) show a significant ($p < 0.05$) association between the number of meals consumed by households and membership to FOs.

Table 17: Distribution of respondents by households food security (n=160)

Characteristic	FOs members		Non members	
	Frequency	Percent	Frequency	Percent
One meal per day	0	0	7	8.8
Two meals per day	30	37.5	70	87.4
Three meals per day	50	62.5	3	3.8

4.8.4 Households' farm tools

Farm tools identified in the study area were hand hoe, panga and axes; majority 95% of both FOs members and non members owned a hand hoe, pangas and axes. Based on the findings, farmers in the study area seem to use simple technologies in their production. According to URT (2008), approximately 75% of the Tanzania farming population depends on the use of hand tools; and that only a small proportion uses

modern technologies; for example, ox-plough is used by 20% and tractors by 10% of the total population. The use of improved technology by small scale farmers in production is still very low. Therefore, there is need of introducing new and relevant agricultural technologies so as to increase agricultural productivity.

Table 18: Distribution of respondents by households farm tools (n=160)

Characteristic	FOs members		Non members		
	Frequency	Percent	Frequency	Percent	
Hand hoe	Yes	80	100	80	100
	No	-	-	-	-
Panga	Yes	76	95	78	97.5
	No	4	5	2	2.5
axes	Yes	77	96.2	76	95
	No	3	3.8	4	5

4.9 Results of the Regression Analysis

In order to determine the contribution of goods and services accrued by FOs members to their wellbeing, a multiple linear regression model was employed. The well-being of members was determined by considering income and assets ownership after joining FOs, by measuring each one separately (Tables 19 and 20). The variables included in the model were estimated using beta weight and confidence intervals. Table 19 shows how independent variables explain dependent variable (income earned after joining FOs). Regression results (Table 19) show an F- value of 8.010; p- value = 0.000. This implies that the model was significant, the results also show that the model had an Adjusted $R^2 = 0.346$ which implies that independent variables were able to explain the dependent variable by 35% and the rest (65%) could not be explained by variables in the equation. Three independent

variables in the model were observed to have significant ($P < 0.05$) regression coefficients; these include access to extension services, the use of pesticides and the respondents' marital status.

Table 19: Regression results for respondents' income after joining FOs

Variables	Coefficient			
	Beta	Std.E	t	Sig. level
Constant		.991	6.240	.000
Fertilizers	.035	.304	.445	.657
Pesticides	.235	.633	2.154	.033*
Improved seeds	-.067	.295	-.972	.333
Herbicides	-.121	.425	-1.199	.232
Credit services	-.051	.212	.716	.475
Extension services	.538	.311	6.707	.000*
Market information	-.003	.361	-.038	.970
Marital status	.171	.670	2.200	.029*
Education level	-.025	.281	-.384	.702

Adjusted R. Square (R²) = .346, F-value = 8.010*. * = Statistically significant at 0.05 significant level

As shown in Table 19, extension service was the highest predictor of income earned with a standardized regression coefficient of 0.538 (significant at $p < 0.05$). The positive regression coefficient implies that the frequency of extension visits and income earned are positively related. The increase in frequency of the visits of extension officer helps farmers to adopt modern agricultural practices which increase production as well as the income earned. This is supported by Mushi (2000) that continuous farmer education has been recommended for an innovation to be adopted. The regression results also indicate that the use of pesticides was significantly ($p < 0.05$) correlated to the income earned. The positive regression

coefficient (0.235) signifies that an increase in the use of pesticides helps to improve quality of agricultural produce which leads to an increase in the production and ultimately of the income earned. This is due to the fact that pesticides use improves crop quality by preventing harmful pest hence increasing productivity which contributes to an increase of an income.

Marital status had a positive correlation to the income earned after joining FOs. this was significant ($p < 0.05$) and had a regression coefficient of 0.171. The positive coefficient indicates that being in marriage influences the income earned in the household possibly due to effective utilization of goods and services accessible in FOs.

Another variable which shows a positive correlation to income earned by FOs members in the model was the use of inorganic fertilizers. The results suggest that any unit increase use of inorganic fertilizers leads to an increase of the households' income by 3.5%. Despite the use of inorganic fertilizers not being significantly ($p > 0.05$) correlated with the FOs member income, the positive correlation implies that framers' use of fertilizers increased soil nutrients which in turn increased productivity thus contributing to an increase of household income.

According to the regression model, the use of credit service, improved seeds, education level, market information, and herbicides were observed to have a negative association to FOs members' income. The results in the model show that the use of credit had a negative regression coefficient of 0.067 (significant $P > 0.05$)

to income of FOs members. The negative regression coefficient means that an increase in the use of credit influences negatively the income earned by FOs members. This is attributed to farmers' diversion of use of credit accessed into other activities such as paying for education and health, something which is not intended for.

Also the results indicate that the use of improved seeds was negatively correlated with the income earned, with the regression coefficient of 0.051 (which was significant at $p > 0.05$). Any increase in the use of one unit of improved seeds has a negative impact on income of FOs members. These results imply that the types of improved seeds supplied to FOs members are not favoured by the prevailing climatic condition leading to low productivity and hence low income. This observation is consistent with the findings of a study by Wekesa *et al.* (2003) which show that the use of improved seed varieties which is not favoured by the prevailing climatic conditions of an area results into low crop yield and thus lowering incomes of farmers.

Education level was also negatively correlated with income of FOs members with a regression coefficient of 0.025 (which is significant at $p > 0.05$) (Table 19). This result implies that any unit increase of education level leads to a decrease of income of FOs members by 0.025. This can be attributed to the fact that as the level of education of the respondent increase, so is the tendency of people seeking for other jobs that pay well in towns and reduce dependency on agricultural activities. This is

in line with Singh *et al.* (2003) observation that higher levels of education are linked with non-farming activities.

The regression model also shows that herbicide use was negatively correlated to income (Table 19). These results imply that the increase in the use of 1 unit of herbicides has a negative effect on the nutrients content in the soil, and which support crop growth and hence decreases agricultural productivity. Similar observation is made by FAO (2010) that excessive use of herbicides has a detrimental effect to soil worms, beetles, micro organisms and other types of organisms which are responsible for maintaining soil fertility and aeration for crop production.

Regression results on respondents' assets ownership

Regression results (Table 20) show that the model used had an F- value of 6.610; (p-value = 0.000). This indicates that the model was highly significant. The model Adjusted $R^2 = 0.297$ implying that independent variables were only able to explain 29.7% in relation to the association between the independent variables in the model and assets ownership, the rest were not explained by the variables in the model. Most variables in the model show a positive association relationship with a household's assets ownership. The use of inorganic fertilizers, pesticides and access to extension services showed a positive and statistically significant ($p < 0.05$) relationship with assets ownership and FOs membership. Other variables in the model with a positive relationship but which was not significant include; education level, access to market information, access to credit service, use of improved seeds

and marital status. Herbicides use had a negative relationship with assets ownerships and this was significant at 0.05 levels.

The regression model shows further that extension services had a regression coefficient of 0.291(significant $p < 0.05$). This implies that an increase in access to extension services by FOs members enables farmers to improve farming which leads to increase in crop yield as well as assets ownership by 29.1%. The access to extension services by FOs members created awareness particularly of modern farming techniques which helped to improve agricultural productivity and increase assets ownership. This observation conforms to what was reported by Mushi (2000) that access to extension services assist farmers to solve farming problems. Therefore, farmers are likely to adopt improved farming practices which would enable them to improve their agricultural productivity and thereby increase in assets ownership.

Table 20: Regression results on assets ownership

Variables	Coefficient			
	Beta	Std.E	t	Sig. level
Constant		.344	6.240	.000
Education level	.072	.868	1.044	.298
Marital status	.051	.540	.648	.518
Fertilizers	.204	.544	2.455	.015*
Pesticides	.258	.612	2.201	.029*
Improved seeds	.083	.034	1.162	.247
Herbicides	-.226	.862	-2.118	.036*
Credit services	.073	.238	.994	.322
Extension services	.291	.354	3.505	.001*
Market information	.065	.062	.880	.380

Adjusted R. Square (R^2) = .297, F-value = 6.610*, * = statistically significant at 0.05 significant

level.

Based on the regression analysis of a household, the use of pesticides and fertilizers were positively related to FOs members' assets ownership, with regression coefficients of 0.258 and 0.204 respectively (significant at $p < 0.05$). The positive regression coefficient implies that an increase in the use of pesticides and fertilizers would increase agricultural productivity as well as FOs members' ownership of assets. This is consistent with FAO (2002) observation that the use of fertilizers would supply the nutrients needed by the crops and thereby increases crop yields. Similarly, pesticides would reduce incidence of diseases and pests and thereby improve the quality of agricultural produce (FAO, 2008).

Regression results show further that the use of improved seeds and credit were positively correlated with assets ownership of FOs members' with a regression coefficient of 0.083 and 0.073 respectively (significant at $p > 0.05$). These findings imply that any increase in the unit of improved seed and credit would lead to an increase of the number of assets owned. However, a positive regression coefficient implies that an increase in the use of improved seeds and credit plays a significant role in boosting crop productivity and in turn in improving farmers' earnings. According to Jason (2008), access to improved seeds and credit among FOs members has been positively linked to an increase in agricultural productivity hence creating the possibility of earning more income from crop sales which in turn increases assets ownership.

Education level of FOs members had a regression coefficient of 0.072 (significant at $p > 0.05$) which implies that an increase in the level of education would increase the

adoption of improved agricultural practices and new technologies and consequently increase agricultural productivity, and possibly the income and ultimately assets ownerships. Similar observation is made by Singh *et al.* (2003) who point out that education status of farmers is an important factor in the adoption of new improved technologies for agricultural productivity.

Lastly, access to market information according to the regression analysis results (Table 20) had a positive correlation with assets ownership of FOs members with a regression coefficient of 0.065 (significant at $p > 0.05$). The positive coefficient indicates that access to market information enables FOs members to be informed of the prevailing situation about prices thus guiding them to increase or reduce production to meet the existing demands and hence increase in asset ownership.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusions

In developing countries such as Tanzania, FOs play a significant role as institutional vehicles for promoting agricultural development. They help farmers to solve their common problems relating to marketing, access to agricultural inputs, credit availability, and access to technical assistance (Grigoryan *et al.*, 2008). Addressing these problems is would help to increase farmers' productivity and thereby improving their well-being. Based on the findings from the study it can be concluded that farmers have a positive perception towards services provided by FOs to members.

The study identifies inorganic fertilizers, pesticides, improved seeds, credit, extension services and market information as goods and services accessed by FOs members through their membership. It can therefore be concluded that FOs members access more services than is the case with non-members. It can also be concluded that goods and services farmers obtain through FOs contribute positively to an increase in farm production as is proven by t- test analysis whereby crop yield among FOs members was higher than was the case with crop yields of non members at $p < 0.05$ significant level.

It is further concluded that FOs brought positive changes in the well-being of its members. This has been confirmed by differences in the annual income between FOs members and non-members; on average FOs members had higher annual

incomes than was the case with non members. In addition based on the regression results, goods and services such as access to extension services, the use of pesticides and inorganic fertilizers was positively and significantly associated with FOs members' income and assets ownership. Lastly, it can be concluded that variables such as education level, marital status, access to credit services, use of improved seeds and access to market information was positively associated with assets ownership at $p > 0.05$ level of Significance.

5.2 Recommendations

Based on the study and conclusions findings, the following recommendations are made:

- i. FOs should establish strategies which can help improve market access in order to ensure that farmers get better prices and their payments are made timely.
- ii. Also FOs need to improve their services so as to enable farmers produce goods of high quality and thereby improve their marketability. This would increase their market share hence improve their incomes and presumably their well-being.
- iii. The government needs to create conducive market environment that would enable farmers benefit more from their efforts and involvement in agricultural than is the case with the current situation.

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19. What motivated you to the farmers' organization?

- 1. To get bonus
- 2. To get better price ()
- 3. To enable me get a loan
- 4. To get inputs
- 5. To get better price, loan and inputs
- 6. Others (specify).....

20. What goods have you gained/do you access from farmers' organization? (Fill the table as indicated below).

D). Goods gained/obtained from your FO

No	Type of goods	unit received kgs/litres	Price per unit (Tsh	Total
1.	Inorganic fertilizer			
2.	Pesticides			
3.	Herbicides			
4.	Improved seeds			
5.	Other specify			

E). Services accessible from your FO

21. List the services that you can access from your FO?

i)..... ii)..... iii).....

22. Who offers the above service(s)? Mention

- 1. -----
- 2. -----

23. Do you get any extension services from your FO? Yes / No

If your answer in question 23 is no, where do you get such service?

24 What type of extension services do you get from your FO?

- 1. Technical advice ()
- 2. Agricultural practices
- 3. Environmental conservation. ()
- 4. Others, (specify) -----

25. How frequent do you get advice from extension officers?

- 1. Once in three months
- 2. Twice in six months []
- 3. Once per year
- 4. Other (Specify) -----

26. How do extension services help you to improve your life?

.....

27. How does the knowledge obtained from the organization disseminated to other

.....

ii). Market information.

28. Is your organization helping you to search and provide market information about demand and supply of your goods produced? 1. Yes 2. No

29. If your answer is no where did you get such information?

- 1. Market place
- 2. Through Radio
- 3. From other farmers
- 4. Others (Specify) -----

iii). Credit accessibility

30. Is your organization helping you to access credit? 1. Yes 2. No []

31. If yes what amount do you receive (Tsh)? -----

32. If your answer is no, where do you get loans?

- 1. Cooperative
- 2. Bank []
- 3. Microfinance

33. How the loan you gain helps to solve your problems?

- 1. -----
- 2. -----
- 3. -----

34. What kind of external support do you get from government and Non Government Organization through your organization?

Supports provided	Government	NGOs
1. Input sourcing	[]	[]
2. Agricultural extension advice	[]	[]
3. Marketing advice/market source	[]	[]
4. Improved technology information	[]	[]
5. Training on good agricultural practices	[]	[]
6. Credit provision (cash or in-kind)	[]	[]
7. Others (specify) -----		

35. What challenges do you face in your organization? 'Mention'

- | | |
|----------|----------|
| 1. ----- | 2. ----- |
| 2. ----- | 3. ----- |

36. Give your comments on progress of the organization?

- 1. Very good
- 2. Good []
- 3. Poor

F. Achievements

37. How can you evaluate yourself from goods and services gained from farmers' organization, have they helped you to improve your household well-being?

- 1. Yes 2. No []

38. If no, why -----

39. If your answer is yes, has your production output increased? How much total harvests do you get per acre?

		Production before join Farmers' Organization				Production after join Farmers' Organization			
S/ No	Cr op	Area under cultivation (acres)	Amount harvested (kg/bags)	Price per unit (kg/bag)	Total	Area under cultivation (acres)	Amount harvested (kg/bags)	Price per unit(kg/b ag)	Total
1									
2									
3									
4									
5									
6									

40. How many meals does your family consume per day?

1. One meal per day []
2. Two meals per day
3. Three meals per day

If one why?

.....

41. How many children attend school regularly?

.....

42. What kind of school did your children attending?

1. Primary school (Public / private) []
2. Secondary school (Public / private)

43. Among your children how many have stopped going to school?.....

Give the reasons for stopping

.....

44. What type(s) of house(s) do you own? (Fill the table as indicated bellow)

Type of house	Before joining	Value of house (Tsh)	After joining	Value of house (Tsh)
Mud bricks, mud floor thatched by grass				
Burnt bricks, mud floor thatched by grass				
Mud bricks, cemented floor corrugated iron roofing				
Burnt bricks, mud floor corrugated iron roofing				
Burnt bricks, cemented floor corrugated iron roofing				

45. What other households' assets do you own? Please fill as indicated in the table below

Types of assets	Assets owned before (FOs)			Assets owned after (FOs)		
	Number	Value (Tsh)	Total	Number	Value (Tsh)	Total
Livestock assets						
Chicken						
Pig						
Goat						
Cow						
sheep						
Other specify						
Other assets						
Redio						
Tv						
Bicycle						
Motor bike						
Milling machine						
Sewing machine						
Solar panel						
Other specify						
Farm Implements						
Hand hoe						
Ox plough						
Panga						
Axe						
Power tiller						
Tractor						
Other specify						

G. Farmers attitude towards farmers' organizations

Please indicate your agreement or disagreement with the following statements by putting a tick to the statement that coincides with your statements. 1= strong disagree. 2=disagree, 3= uncertain, 4 = Agree, 5= strong agree

Statements	1	2	3	4	5
46. Farmers' organization helps farmers to seek agricultural services such as credit					
47. Through farmers' organization members can access market information					
48. New agricultural technology disseminated through group approach					
49. By joining farmers' organizations members gain experiences and knowledge through interaction.					
50. Working in farmers organization is better than working individually					
51. Through farmer organization members get agricultural training such as farmers' field school and practices.					
52. Farmers in the organization access extension services than those who are not members.					
53. Government agencies or NGOs working with farmers in the organizations, hence farmers are likely to get more services rather than individual farmers.					
54. Farmers working individually have low bargaining power of their product hence traders impose low prices to their products.					
55. There is no difference in getting services between those who work in groups and those who work individually.					
56. Farmers' working in organizations has access to agricultural inputs such as fertilizers, pesticides and improved seeds than those who are not members.					

Thanks for your cooperation

Appendix 2: Questionnaire for FOs non members, titled “The contribution of FOs to smallholder farmers well-being”

Questionnaire no ----- Village-----
 Ward ----- Date -----

Instruction: Please write the appropriate number in the brackets and fill the open blanks.

A. General information

1. Respondent name -----

2. Age of respondent -----

3. Sex

1. Male

[]

2. Female

4. Marital status

1. Married

[]

2. Separated

3. Widowed

4. Single

5. Education level -----

6. Household size -----

B. Activities of respondent

7. Which activities do you engage as your source of income? List according to your preference.

1. Farming

2. Livestock keeping

3. Petty trade

4. Employed

5. Others (Specify)

8. If your activity is agriculture, what size of land do you own in acre? -----

B. Existence of farmers' organization

9. Are you aware of the existence of farmers' organization in this area?

1. Yes 2. No []

10. If yes, why have you not joined?

1. Not convinced
 2. Progress is low []
 3. No advantage.
 4. Difficult conditional ties

11. Are you now interested to join farmers' organization?

1. Yes 2. No []

12. What goods and services are you in access with because of not being in farmers' organization?

i). Goods in access

1. Inorganic fertilizer []
 2. Pesticides []
 3. Herbicides []
 4. Improved seeds []

ii). Services []

1. Loan services []
 2. Technical advices
 3. Market information []
 4. Others (Specify)-----

13. If you're in access of such goods and services in organization where do you get input such as seed, fertilizer, pesticides and herbicide?

1. Markets []
 2. Traders
 3. District agriculture officer
 4. Agricultural input agent
 5. Other (specify)

E. Market information

20. Where did you get market information for your products?

- 1. Farmers' organization
- 2. Market []
- 3. From other farmers
- 4. Radio
- 5. Others (specify).....

What type of market information do you get from the above source/sources?

F. Credit accessibility

21. Did you need a credit to improve your production?

- 1. Yes 2. No []

22. If your answer is yes where did you get loans?

- 1. Cooperatives
- 2. Bank []
- 3. Microfinance
- 4. Other (specify)-----

23. How much do you receive? -----

24. How the loan you gain help to solve your problems?

- 1. ----- 2. -----
- 3. -----

25. What challenges are you facing when searching loans?

- 1. -----
- 2. -----
- 3. -----

26. What kind of external support do you get from government and Non Government Organization?

33. Among your children how many have stopped going to school? -----

Give the reasons for stopping -----

34. What types of house do you own? (Fill the table as indicated bellow)

Type of house	Value of house (TZH)
Mud bricks, mud floor thatched by grass	
Burn bricks, mud floor thatched by grass	
Mud bricks, cemented floor corrugated iron roofing	
Burt bricks, mud floor corrugated iron roofing	
Burt bricks, cemented floor corrugated iron roofing	

35. What other households' assets do you own? Please fill as indicated in the table below

Types of assets	Unit(s)	Value per unit (TZH)	Total Value
Livestock assets			
Chicken			
Pig			
Goat			
Cow			
sheep			
Other specify			
Other assets			
Radio			
TV			
Bicycle			
Motor bike			
Milling machine			
Sewing machine			
Solar panel			
Other specify			
Farm Implements			
Hand hoe			
Ox plough			
Panga			
Axe			
Power tiller			
Tractor			
Other specify			

F. Farmers perception towards farmers' organizations

Please indicate your agreement or disagreement with the following statements by putting a tick to the statement that coincides with your statements. 1= strong disagree, 2= disagree, 3= uncertain, 4 = Agree, 5= strong agree

Statements	1	2	3	4	5
Farmers' organization helps farmers to seek agricultural services such as credit					
37. Through farmers' organization members can access market information.					
38. New agricultural technology is disseminated through group approach					
39. By joining farmers' organizations members gain experiences and knowledge through interaction.					
40. Working in farmers organization is better than working individually					
41. Through farmer organization members get agricultural training such as farmers' field school and practices.					
42. Farmers in the organization access extension services than those who do not join.					
43. Government agencies or NGOs working with farmers in the organizations, hence farmers are likely to get more services rather than individual farmers.					
44. Farmers working individually have low bargaining power of their products hence traders impose low prices to their products.					
45. There is no difference in getting services between those who work in groups and those who work individually.					
46. Farmers' working in organizations has access to agricultural inputs such as fertilizers, pesticides and improved seeds than those who are not member.					

Thanks for your cooperation

Appendix 3: Questionnaire for key informants, at village and ward level titled “The contribution of FOs to smallholder farmers’ well-being”

Village Ward.....

Instruction: Write appropriate number in the brackets and fill the open blanks.

A. General information

1. Respondent name -----

- 1. 25- 35years
- 2. 36- 55years []
- 3. 56 and above years

3. Sex

- 1. Male
- 2. Female []

4. Marital status

- 1. Married
- 2. Separated []
- 3. Widowed
- 4. Single

5. Education level

- 1. Adult education
- 2. Primary education []
- 3. Secondary education
- 4. Diploma and Above

6. What is your occupation? -----

7. How long have you been working in this Ward/Village? -----

8. Did you know about existence of farmers’ organization in this area?

- 1. Yes
- 2. No []

9. If yes what activities are done by these farmers’ organizations in your area? -----

10. Why is it important to formulate farmers’ organizations in ward/ village?

11. What is the rate of formation of the Farmers' organization in the ward/ village?

12. What goods and services do members of organizations get from their organizations? Mention

1. ----- 2. ----- 3. -----

14. Do farmers being provided with extension services in the ward/ village?

1. Yes
2. No

15. If your answer is yes how extension services is provided in the ward/ village?

16. Is there any demonstration plot in your village/ward?

1. Yes []
2. No

17. If no. is there any other kind of demonstration (e.g. on-farm)? Explain briefly

18. How frequent does the extension agent conduct demonstrations per year?

19. What problems do extension workers face in their work?

20. Are there any policies supporting or restricting the formation of farmers' Organization?

1. Yes []
2. No

21. If yes, please mention them -----

22. What kind of supports does members of Farmers' organizations get from either Governmental or Non Governmental Organizations for their enhancement (sustenance)? Mention

1. ----- 2 -----
3. ----- 4-----

23. What challenges facing farmers' organization in the wards/ village? -----

Thank you for your cooperation

Appendix 4: Checklist for key informants, at district level titled “The contribution of FOs to smallholder farmers’ well-being”

Instruction: Write appropriate number in the brackets and fill the open blanks.

A. General information

1. Department----- Date -----
2. Sex
 1. Male []
 2. Female []
3. Age:
 1. 25- 35years
 2. 36- 55years []
 3. 56 and above years
4. Marital status
 1. Married
 2. Separated []
 3. Widowed []
 4. Single
5. Education level
 1. Adult education
 2. Primary education []
 3. Secondary education
 4. Diploma and Above
6. What is your profession? -----
7. How long have you served in your organization? -----
8. Is there any farmers’ organizations existing in your district?
 1. Yes []
 2. No
9. If your answer is yes, how many farmers’ organization in the district? -----
and give total of their members by sex. Male ----- Female -----
10. Is there any farmers’ organization registered?
 1. Yes
 2. No

11. If yes how many farmers' organizations registered? -----
12. How many farmers' organizations have bank accounts? -----
13. What is the rate of formation of the Farmers' organizations in the district? -----
14. Why it is important to formulate Farmers' organizations?
1. ----- 3. -----
2. ----- 4. -----
15. How do these organizations operates in the district-----
16. What are the services do members of these organizations get?
1. -----
2. -----
3. -----
17. Is there any linkage between your organization and farmers' organizations?
1. Yes []
2. No []
18. If yes what services your organization offers to farmers' organization?
19. What kind of support do Farmers' organizations get from either Government or Non Governmental Organizations for their enhancement (sustenance)? List the supports in relation to who offers such support.

Supports provided	Government	NGOs
1.	[]	[]
2.	[]	[]
3.	[]	[]
4.	[]	[]
5.	[]	[]
6.	[]	[]

20. How do extension services provided to farmers in the district?
1. Individual approach []
2. Group approach
3. Other (Specify) -----

20. Is there any demonstration plot in their village/ward?

1. Yes

2. No

()

21. If no. is there any other kind of demonstration (e.g. on-farm)? Explain briefly

22. How frequent do the extension agent conduct demonstrations per year?

23. What problems do extension workers face in their work?

24. Are there any policies supporting the formation of farmers Organizations?

1. Yes

2. No

()

25. If yes, please mention them

26. What are the challenges facing the farmers' organizations in the district?

27. How can you help to solve some challenges facing farmers' organization?

28. What suggestion can you give on the development of farmers organizations in the future? -----

Thank you for your cooperation

Appendix 5: Operational definition of variables and their measurement level

Variables	Operational Definition	Level of measurements	Unit of measure
Market information	Accessibility of information concern market product	Ordinal	1. Yes 2. No
Extension services	Training and technical advise given to farmers on a certain issue	Ordinal	1. Yes 2. No
Credit	The amount of money given to people under contract in a certain period of time.	Ratio	Tsh
Inorganic fertilizer	Industrial fertilizer	Ratio	Kg
Pesticides	Chemical to control crop pest	Ratio	Litre
Herbicides	Chemical to control weed	Ratio	Litre
Improved seed	Certified seeds bought from commercial seed dealers	Ratio	Kg
Food security	Ability to feed oneself and one's family throughout the year	Ratio	Number of meals
Access to education	Ability to afford education expenses	Ratio	Number of children in school
Assets possession	Stocks of goods per household	ratio	Number of goods
Farmers well-being	Income and assets possession gained by transforming livelihood strategy		

Appendix 6: Distribution of respondents by goods used in Kg/ltrs (n=160)

Parameter		FOs members		Non members	
		Frequency	Percent	Frequency	Percent
Fertilizers	None	3	3.7	12	15
	<50	-	-	30	37.5
	50-200	50	62.5	36	45.0
	201-400	22	27.5	1	1.2
	401-600	4	5.0	1	1.2
	>601	1	1.2	-	-
Pesticides	None	4	5	35	43
	1-5	55	68.8	39	48.8
	6-10	12	15.8	5	6.2
	11-15	6	2.5	1	1.2
	16-20	1	7.5	-	-
	>21	-	-	-	-
Herbicides	None	2	2.5	63	78.8
	1-5	1	18.8	17	21.2
	6-10	4	2.5	-	-
	11-15	-	1.2	-	-
	16-20	-	8.0	-	-
	>21	-	-	-	-
Improved seed	None	40	50	62	77.5
	1-5	40	50	18	22.5

Appendix 7: Distribution of respondents by amount of coffee and tobacco harvested (n=160)

Amount harvested (kg)	FOs members (n _{fo} =80)		Non member (n _{nm} = 80)	
	Coffee	Tobacco	Coffee	Tobacco
None	-	-	4(10)	3(7.5)
<100	-	-	-	-
100-500	17(42.5)	2(5)	18(50)	16(40)
501-1 000	21(52.5)	9(22.5)	20(45)	23(57.5)
1 001-1 500	2(5)	28(70)	2(5)	8(20)
> 1 501	-	2(5)	-	-

NB: Numbers in brackets indicate percent.

Appendix 8: t-test results on acres allocated to coffee and tobacco farming before and after joining FOs

Characteristic	means	Std.Dev	P- value
Acres for coffee before joining FOs	0.3750	0.45138	0.001*
Acres for coffee after joining FOs	1.000	1.8271	
Acres for tobacco before joining FOs	0.3175	0.480	0.001*
Acres for tobacco after joining FOs	1.6250	1.190	

* Significant at the 5% level

Appendix 9: t-test results on coffee and tobacco harvest before and after joining FOs, and between FOs members and non members

Characteristic	means	Std.Dev	P- value
Harvest before joined FOs	1.4522	1205.94	0.001*
Harvest after joined FOs	9.1300	1813.05	
Harvests by FOs members	5.9929	1704.05	0.022*
Harvests by non member	1.166	433.12	

* Significant at the 5% level

Appendix 10: t-test results on income earned by farmers before and after joining FOs, and between FOs members and non members

Characteristic	means	Std.Dev	P- value
Income before joining FOs	2.645	2.410	0.001*
Income after joining FOs	6.306	1.104	
Income of FOs members	2.325	1.1047	0.001*
Income of non member	1.130	5.8217	

• Significant at the 5% level

Appendix 11: Chi-square test results on food security, houses owned and education attained by children based on FOs membership

Characteristic	Chi-Square value	P- value
Number of meals consumed	15.185	0.001*
Education attained by children	1.096	0.296
Types of house owned	42.977	0.001*

Significant at the 5 % level.