Assessing the impact of primary agricultural co-operative membership on smallholder farm performance (crops) in Mnquma Local Municipality of the Eastern Cape Province.

By

Christian Mzuyanda

(200906483)

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University of Fort Hare

South Africa

Supervisor. Prof Ajuruchukwu Obi

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DECLARATION

I hereby certify that this dissertation is my own original work and has not previously been submitted to another university for the purpose of a degree. Where use has been made of the work of others, such work has been duly acknowledged in this text.

Signed …… Date: ……..

Christian Mzuyanda (200906483)

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ABSTRACT

When the issue of economic growth and development of a developing country is raised, one has to take into account the performance of the smallholder farmers, especially where the agricultural sector is an important employer of labour and source of livelihoods. Reducing the challenges they are facing and utilizing their potentials can help to accelerate the transformation of the agricultural sector and economic development of the country as a whole. Agricultural cooperatives are ideal means for self-reliance, higher productivity and promotion of agricultural development. Therefore, the major concern of this study is assessing the impact of cooperative membership on farm performance in Mnquma Local Municipality. In order to address these issues a structured questionnaire was used to interview 100 farmers. Farmers were divided into two groups, one group consisting of fifty members of agricultural cooperatives and the other fifty non-members of cooperatives; all these farmers were randomly selected from Ngqamakhwe, Butterworth and Centane in Mnquma.

The study investigated and profiled the socio-economic situation of the farmers. It also undertook a comparison of the members and non-members of the co-operatives in terms of their production and marketing activities. To analyze the data, descriptive and inferential statistics were used to explain some measures of central tendency and dispersion as well as test the hypothesis that there is a difference in performance between members and non-members of cooperatives. In addition, a simple linear regression model was used to assess the impact of cooperative membership on farm performance. To avoid selection bias that arises from the use of the simple linear regression model, the propensity score matching was also used to test the effect of different treatments on the sample.

The expected results were that members of cooperatives perform better in terms of farm revenues, incomes and value of inputs used than non-members. In addition, the expectation was that members of cooperatives have larger plots of land, high crop yields hence generating high revenues per unit sold.

The results from the field survey indicated that cooperative membership is positively related to performance (including revenue, farm income and value of inputs used), although some development programmes are needed to enhance performance of these farmers. Members of cooperatives produce and sell large quantities of output compared to non-members. This could be attributed to the fact that cooperative members receive farm inputs and extension

support. Because of the frequent visits by extension officers, members of cooperatives have high access to market information.

The results further confirm the hypothesis that membership in a cooperative has a positive impact on farm performance. The results from the first regression model indicated that membership in a cooperative has a positive and significant influence (p=0.004) on farm income, and (p=0.124) on revenue. The second regression model indicated that membership of cooperatives has a positive and significant influence of (p=0.007) on farm income, (p=0.138) on revenue. With regards to value of inputs, membership was found not significant at 1%, 5% and 10% levels. The age of household head, number of years spent in school, land size, access to information, type of market and ward in which these farmers are situated significantly influence farm performance at 1%, 5%, and 10% levels. Propensity score matching also confirms this hypothesis that membership was significant in respect to farm income (p=0.006) although not necessarily so in respect to revenue (p=0.088).

While the study confirms the positive contribution of cooperatives, it is clear that more needs to be done to achieve greater inclusivity and make livelihoods improvements more sustainable. This calls for interventions from government and NGOs to motivate individual farmers to join cooperatives and operate within the framework of organized groups. The support could be provided in terms of credit to farmers, extension services and infrastructure development to serve smallholder farmers. In terms of further research, the study suggests that research on cooperative membership impact on farm performance in all forms of cooperative would yield immense insights for policy. Also, the present study was limited to only one municipality and it is necessary to conduct similar studies in other parts of the municipality, province and country to ascertain the extent to which these results hold up.

Key words: *Agricultural cooperatives, Smallholder farmers, Farm Performance, Propensity Score Matching, Treatment Effects*

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DEDICATION

I dedicate this thesis to my family (parents, brothers & sisters), relatives and my friends for their support and unconditional love.

I love you all.

LIST OF ABBREVATIONS AND ACRONYMS

BEE	Black Economic Empowerment
B-BBEE	Broad Based Black Economic Empowerment
COOPS	Cooperation
CTA	Technical Centre for Agricultural and Rural Cooperation
DAFF	Department of Agriculture, Forestry and Fisheries
DLA	Department of Land Affairs
DSAC	Department of Sport Arts and Culture
DSD	Department of Social Development
DTI	Department of Trade and Industry
EC	Eastern Cape
ECSECC	Eastern Cape Socio Economic Consultative Council
ECDA	Eastern Cape Development Agency
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GI	Gross Income
ICA	International Co- operative Alliance
IFAD	International Fund for Agricultural Development
MFP	Massive Food Programme
NDA	National Department of Agriculture
SADA	South African Department of Agriculture
SANACO	South African national Apex Co-operative
RSA	Republic of South Africa
RDP	Reconciliation and Development Programme
WUA	Water User Association
UFH	University of fort Hare

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

South African agriculture has a dualistic character, with a well-developed commercial farming and more subsistence-based production in the deep rural areas (Department of Agriculture, Forestry and Fisheries, 2012). However, Makhura (2001) and Moloi (2010) stated that the majority of the disadvantaged farmers are not part of the mainstream agriculture and practice subsistence agriculture in overcrowded, semi-arid areas. This kind of subsistence farming is characterized by low production, poor access to land and poor access to inputs and most importantly, poor access to credit (DAFF, 2012).

According to Statistics South Africa (2013), agriculture's contribution to the South Africa's Gross Domestic Product (GDP) is falling – currently estimated at 2.2% compared to 2.5% in 2012. Commercial farmers make up the smallest proportion of agricultural households in South Africa, yet account for the bulk of production (DAFF, 2012; STATS SA, 2009). In order to boost agricultural productivity, particularly amongst the black rural population, promotions of agricultural co-operatives have been identified as one of the key policies to address the problems faced by small-scale farmers. However, the performance and sustainability of the co-operatives has been a great challenge.

DAFF (2012) stated that about 78 percent of the Eastern Cape population depends directly or indirectly on agriculture for their livelihood. The agricultural sector has been identified as one of the sectors that have a significant potential for job creation (DAFF, 2010). Poverty in the Eastern Cape remains widespread and deep. It is estimated that 80 percent of the Eastern Cape residents live below the poverty line (Eastern Cape Socio Economic Consultative Council, 2012). The main factors that contributed to high levels of poverty include (1) large household size; 2) lack of employment; 3) lack of education; 4) lack of access to markets; 5) poor road infrastructure (Stats SA, 2011).

In addition, the most prevalent constraint to smallholder farm production as relating to problems of access to production resources includes inputs like water, power, fertilizers, feeds, capital, extension services, and information as well as access to markets (Minot, 1993).

More so, smallholder agriculture in Eastern Cape is associated with inadequate value addition. Nkhoma (2011) stated that, smallholder farmers normally produce raw fresh products and sell at the farm gate with very minimal value addition, hence the failure to meet the needs of the domestic markets. Therefore, reducing these challenges that are faced by smallholder farmers can help to improve growth of the agricultural sector as well as promote the economic development of the Province.

1.2 Problem Statement

Smallholder agriculture is argued to remain important for economic development and poverty reduction in developing countries including South Africa but its development is challenged by the need for institutional innovations to overcome market failures (World Bank, 2008; Hazell *et al*., 2010). To overcome such challenges, the South African government has in one way or the other been promoting farmers' association such as agricultural co-operatives. However, it is foreseen that collective action would enhance smallholder farmer participation to market their produce effectively and efficiently thereby enhancing growth in rural areas (Chirwa *et al.,* 2005). In addition, collective action could assist smallholder farmers to further access markets down the chain by meeting their contract requirements (Kirsten and Sartorius, 2002). Moreover, small rural farmers could become competitive by forming agricultural co-operatives where they can pool resources together such as trucks in order to establish joint processing and storage facilities which are not cost effective for individual farmers. In a similar manner, a group of farmers can form a co-operative to pool their products and find larger markets that are more stable yet with greater rewards.

Consequently, there have been so many scholarly views about the successes and failures of agricultural cooperatives around the world. Although agricultural cooperatives have had a negative history in developing countries, particularly in Africa, evidence therefore suggest that they have had potentials for linking farmers to markets by reducing transaction costs (Delveltere, Pollete and Wanyama, 2008). Ito, Bao and Su (2012) in their study indicated that membership of a cooperative has a strong positive effect on the income of watermelon farmers in China. In addition, the findings of Vandeplas, Minten and Swinnen (2013) revealed that dairy farmers in India are more efficient and have higher profit margins when organized in a cooperative. Also, Abebaw and Haile (2013) and Francesconi and Heerink (2010), respectively, found out that cooperative membership in Ethiopia increases the adoption of improved agricultural technologies, especially mineral fertilizer, as well as the

rate of commercialization. Moreover, Silim (2009) showed that membership of grain cooperatives in Kenya lead to increased adoption of improved varieties, higher producer prices and larger marketable surpluses.

Likewise, there is also an evidence of a lack of success of cooperatives to improve farm performance. Bernard, Taffesse and Gabre- Madhin (2008) and Bernard and Taffesse (2012) respectively indicated that grain marketing cooperatives in Ethiopia, while offering higher prices, do not succeed in increasing commercialization. Moreover, Hellin (2009) concluded that producer organizations in the maize sector in Mexico failed because the cost of the organization is not compensated by an increased income from sales. However, Mujawamariya, D'Haese and Speelman (2012) as cited by Verhofstadt and Vaertens (2013) pointed out problems of double side-selling in coffee cooperatives in Rwanda.

The aforementioned studies focused on a single cooperative, on multiple cooperatives in a single sub-sector cooperative, or on various cooperatives. However, very few of them explicitly looked at impact of cooperative membership on production and marketing of crops. There is therefore, a need to better understand the extent to which agricultural primary cooperatives are performing, so as to stimulate the development of the smallholder farming sector. In this study, we assess the impact of cooperative membership on farm performance in Mnquma. This will be done through the assessment of their contributions towards production and marketing of the selected crops.

1.3 Research objectives

The objectives of the study are as follows:-

The main objective of the study is to assess the impact of cooperative membership on farm performance in terms of crop production and marketing in Mnquma region of the Eastern Cape Province of South Africa. More specifically, the study aims:

1) To describe the main characteristics of the smallholder farm sector in Mnquma Municipality of the Eastern Cape in South Africa.
2) To assess the impact of cooperative membership on farm performance for smallholder crop farmers.

3) To describe the marketing channels of the smallholder crop farmers in the study area.

4) To identify key constraints on crop production and marketing in the study area.

1.4 Research Questions

The questions that this research seeks to answer are as follows:-

1) What are the main characteristics of the smallholder farm sector in Mnquma Municipality of the Eastern Cape in South Africa?

2) What impact does cooperative membership have on farm performance for smallholder crop farmers?

3) What are the viable marketing channels followed by the smallholder crop farmers in the study area?

4) What are the key constraints on crop production and marketing in the study area?

1.5 Hypothesis

In order to achieve the general objective of the study, the following specific hypothesis was tested:

- Cooperative membership plays a pivotal role to smallholder crop farmers resulting to better performance in terms of farm incomes and revenues.

1.6 Limitations and delimitations of the study

The study assesses the impact of cooperative membership on farm performance in terms of crop production and marketing in Mnquma Local Municipality of the Eastern Cape. The study was limited to smallholder farmers involved on crop production only. Although smallholder farmers are spread throughout the province, this study was limited to the specified areas of Butterworth, Centane and Ngqamakwe in the Eastern Cape Province. This means that whatever the results are, they are based on the mentioned areas and caution will be needed to extrapolate the results to other parts of the province or country.

1.7 Project justification

No research study on agricultural primary cooperative membership and its impact on farm performance in terms of crops has been conducted previously in South Africa to the best of our knowledge. Similar studies have however been conducted in neighbouring countries

such as Swaziland. However, even for that country, the focus was on dairy production and marketing. This study aims to provide insight into this less studied dimension in agriculture by eliciting and assessing the impact of cooperative membership on farm performance of selected farmers.

1.8 Research outline

The dissertation comprises five chapters. The first chapter gives an introduction to the research wherein the context, the problem addressed and the objectives of the study are discussed. A detailed presentation of literature review on cooperatives and smallholder agriculture in chapter two of the study. Chapter three presents the theoretical and analytical framework, wherein the methodology used in the study is explained. In this chapter an overview of the study area is also given, with emphasis on the selection process, physical characteristics and its relationship with surrounding areas. The results of the study are presented in chapter four. The final chapter (five) presents a summary of the research findings, conclusions and the recommendations followed by a list of references and appendices at the end of the Dissertation.

CHAPTER TWO

COOPERATIVES AND SMALLHOLDER FARMERING IN SOUTH AFRICA

2.1 Introduction

The purpose of the study is to assess the impact of cooperative membership on production and marketing of crops. The literature review presented in this chapter is divided into three main sections, namely: (i) the review of the concept of cooperation, (ii) a review of the underlying theories and related concepts and (iii) a review of the smallholder agricultural sector.

2.2. The cooperation concept

Kanyana (2009) stated that the word "cooperation" is derived from the Latin word *co-operari*, which means "working together". Cooperation has been the very basis of human civilization. According to Nganwa, Lyne and Ferrer (2010), the inter-dependence and the mutual help among human beings have been the basis of social life. It is the lesson of universal social history that man cannot live by himself and for himself alone. Since the beginning of human society, individuals have found advantage in working together and helping one another in all over the world. In South Africa too, it is common for people to be inter-dependent in mutual help and self-help activities in their day-to-day socio-economic conditions.

2.2.1 Definitions of cooperatives

There are so many scholarly views on the definition of agricultural producer and marketing co-operatives. For example, Randot and Collion (2001) explained that cooperatives are business formed organization which can be formed in any sector of the economy. This definition further states that cooperatives can either operate at village level, regional or national level. On the other hand, Suber (2005) stated that cooperatives differ from other organizations in the sense that when profit is generated, it is returned to the business as benefits. However, this study will only take two definitions which are relevant to the South African context.

1. Agricultural producer co-operatives are defined by Galor (2003) as "economic enterprises founded by and belonging entirely to the members". This type of venture is formed with the aim of best providing excellent services at lower costs to their members, especially if the market fails to provide goods and services at a reasonable

price and good quality. This definition further explains that a cooperative stands on two legs, in order to be solid and sustainable:

a. The equal ownership of members of their cooperative. Members pay with their money, by cash payments or by loans undertaken by the cooperative, in order to create the fixed assets of the cooperative. Therefore, the cooperative belongs to them entirely, equally, and members own equal shares.
b. The cooperative renders to members the best possible service at the lowest possible cost. This basically means that, cooperatives are working not to generate profits but a surplus that would enable the head of the cooperative, at the AGM, to show members how successful they are in terms of wealth creation.

2. Agricultural co-operatives are defined by the International Co-operative Alliance (ICA) (1995) as "an autonomous association of people united voluntarily to meet their common economic, social aim as well as aspirations through jointly owned democratically owned initiative".

a) Firstly, this definition means that these co-operatives are formed by groups of people who have a common goal and need.
b) Secondly, this definition means that these initiatives are formed freely by members after they all have contributed with their assets.
c) Thirdly, these initiatives are democratically formed in order to achieve a specific objective and
d) Lastly, the organization is an independent initiative promoted, owned and controlled by the members to satisfy their needs.

Taking all the definition that have been highlighted, definition two will be used in this study as it explains the South African situation.

2.2.2 Cooperative values and principles

The cooperative values and principles are commonly applied to all types of cooperatives. However, they may be interpreted by different traditions of cooperatives according to their operating conditions, type and specific environments. But still, it is possible to identify certain common characteristics and features of cooperative organizations though there are distinctive traits for every type of cooperative. The general conception is that cooperatives are

private sector enterprises set up to meet their members' needs. They are owned and democratically controlled by their members. In principle, they are based on values of self-help, self-reliance, democracy, equality, equity and solidarity. They cover a wide range of activities including: agriculture, financial services, manufacturing, transport, utilities, health care and funerals (DFID, 2010).

The cooperative principles are guidelines by which cooperatives put their values into practice. Cooperative societies have certain distinguishing principles or characteristics, which set them apart from other forms of business organizations. According to literature, there are seven principles generally agreed upon by theoreticians and practitioners in the area (ICA, 2007; Kanyane, 2009; DoED, 2012). The principles are outlined as follows:-

1. **Voluntary and open membership:** Cooperatives are voluntary organizations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political or religious discrimination.
2. **Democratic member control:** Cooperatives are democratic organizations controlled by their members who actively participate in setting their policies and making decisions. Men and women serving as elected representatives are accountable to the membership. In primary cooperatives, members have equal voting rights (one member, one vote) and cooperatives at other levels are organized in a democratic manner.
3. **Member economic participation:** Members contribute equitably to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. They usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for any or all of the following purposes: developing the cooperative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative; and supporting other activities approved by the membership.
4. **Autonomy and independency:** Cooperatives are autonomous, self-help organizations controlled by their members. If they enter into agreements with other organizations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.

5. **Education, training and information:** Cooperatives provide education and training for their members, elected representatives, managers and employees so they can contribute effectively to the development of their cooperatives. They inform the general public particularly young people and opinion leaders about the nature and benefits of cooperation.
6. **Cooperation among cooperatives:** Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional and international structures.
7. **Concern for community:** While focusing on member needs, cooperatives work for the sustainable development of their communities through policies accepted by their members

2.2.3 Types of cooperatives

Cooperatives typically classified according to the function they perform. Below is the clarification of the types of primary cooperatives according to the Cooperative Act (No.14 of 2005).

2.2.3.1 Worker cooperatives

Workers cooperatives were formed in South Africa in 1980 where there was a massive economic restructuring and unemployment (Philip, 2003). The use of worker owned cooperatives was used in a defensive situation. In most cases, during the eighties trade union linked cooperatives were used to provide subsistence employment to workers who lost their jobs.

The main aim of these cooperatives is to provide their members with work by operating an enterprise. In worker cooperatives, the members own the cooperative are, meaning that they are collective owners, obtain jobs and control the management and administration of their enterprises. Worker cooperatives are democratically controlled by their members (Philip, 2003). An example of the worker cooperative in South Africa is Sarmcol Workers Co-operative (SAWCO), the central activities of which included shirt silk-screening and vegetable farming (Nathan, 2011).

2.2.3.2 Consumer cooperatives

The main aim of these cooperatives is to provide their members with goods and services for their personal use. These type of cooperatives are owned by the consumers of the goods sold

by the cooperative and can work in various sectors. They can range from small buyer groups such as stockvels and buying clubs to large market organizations. An example of consumer cooperative is Petroleum Trust Cooperative with more than 30 000 members and it is based in Pretoria (DEDEA, 2008).

2.2.3.3 Financial cooperatives

The main aim of these cooperatives is to offer banking services such as credit, savings, and investments to their members. They are owned and controlled by their members. The examples include savings and credit cooperatives known as credit unions, stockvels and village banks that largely remain informal. These types of cooperatives are spread throughout the country and targeted the regulation under the Bank Act (No. 40 of 2007) under the national treasury (DEDEA, 2008)

2.2.3.4 Housing cooperatives

According to DEDEA (2008), the main aim of the housing cooperatives is to provide housing and allied services to their members and is owned by the users or members of the cooperatives. Examples of housing cooperatives are Newtown housing cooperatives in Johannesburg with 351 housing units for its members, and Amalinda housing cooperative in East London with more than 200 housing units for its members.

2.2.3.5 Agricultural cooperatives

Agricultural cooperatives can be classified into three broad categories according to their main activity, namely:- marketing cooperatives (which may bargain for better prices, handle, process or manufacture, and sell farm products), farm supply cooperatives (which may purchase in volume, manufacture, process or formulate, and distribute farm supplies and inputs such as seed, fertilizer, feed, chemicals, petroleum products, farm equipment, hardware, and building supplies), and service cooperatives (which provide services such as trucking, storage, ginning, grinding, drying, artificial insemination, irrigation, credit, utilities, and insurance) (Cropp and Ingalsbe, 1989; USDA, 2004). These cooperatives usually vary greatly with regard to functions performed, and can also vary greatly in size.

The scope of the study focused on marketing cooperatives. These cooperatives produce process and market their members produce and services directly to the market (DEDEA, 2008).

2.2.4 Classification of cooperatives

Cooperatives can be classified according to the degree of formality, ownership and the level in the "cooperative hierarchy".

2.2.4.1 Degree of formality

Attwood (1988) stated that, when classification is done on the basis of degree of formality, formal and informal cooperatives are discussed below. This distinction largely relates to the legal status of a cooperative.

2.2.4.1.1 Informal cooperatives

An informal cooperative normally operates outside the ambit of the law but works with the values of a cooperative, has cooperative practices and might even have voluntary constitution (Philip, 2003). Haileselassie (2003) further explains that traditional or informal forms of cooperatives have existed for many centuries in developing countries as well as in South Africa and in many cases continue to the present time. These traditional cooperatives practices are often deeply rooted in the local cultures with typical instances such as: systems of work sharing (e.g. at harvest time), irrigation water sharing arrangements, rotating saving and loan clubs, burial societies, construction, agricultural activities.

According to Van der Merwe (1996), in South Africa, the most common informal cooperatives are *stokvels*. *Stokvel* associations are community-based saving schemes, aimed at improving the lives of their members both economically and socially, by providing them with financial support within a social or community-based grouping. Establishing a *stokvel* is very simple and becoming a member is generally based on the recommendation of another existing member (Van der Merwe, 1996). Therefore, it is usually established between people who work together or who belong to the same church, family etc., who come together to form a *stokvel*. *Stokvels* are established informally, with no limit on the number of members.

Furthermore, the members can impose their own regulations on the *stokvel*. It also has legal personality through conduct, as well as limited liability of the members in as far as a member will not be held liable for an amount exceeding his contribution during the existence of the *stokvel* (Maluleke, 2006). The following are some types and variations of *stokvels*: *Makgotlas, Umgalelo clubs, Youth stokvels, Istoki, Gooi-goois*, and *Investment clubs* (Matthews, 2003 and Mashalaba, 2006).

The characteristics of a *stokvel* can be summarised as follows:

- A rotating credit scheme
- Informal establishment
- Association of persons making regular contributions to the capital pool
- Limited liability by conduct
- Money is paid out periodically in rotation to each member, either fully or in part.

2.2.4.1.2 Formal cooperatives

According to Amin and Bernistein (1995), formal cooperatives were first introduced in sub-Saharan Africa (SSA) by colonial governments, often for the purpose of promoting production of cash crops by peasant farmers. After independence, many SSA governments adopted policies that further accentuated the role of cooperatives and other rural organizations in the agricultural sector. They became important channels for government-sponsored credit input supply and marketing programs, and often had to operate under close guidance and control by the state (Hussi *et al.*, 2002).

Formal cooperatives are defined as legally registered in terms of cooperative legislation and has to comply with certain statutory requirements (Amin and Bernistein, 1995). There are a wide range of policies and government institutions supporting directly or indirectly co-operative movement. The most important and known is Broad Based Black Economic Empowerment (B-BBEE) Act (Act no.53) of 2003 (RSA, 2004). This legislature compels increased participation in the economy by the people classified as “blacks” and previously disadvantaged. Co-operative developments are seen as an empowerment tool. During 2009, the South African national Apex Co-operative, SANACO was founded to promote the interest of co-operatives movement at the national level.

According to The Department of Trade and Industry (2012), the government activities in support of co-operatives show positive results and co-operatives are flourishing in many parts of South Africa. This is supported by the fact that, when the co-operative Act of 2005 was implemented, there were approximately 4 000 registered co-operatives and three years later (2008) there were more than 19 000 co-operatives registered. The new trends show that the trend will continue and at the end of 2012 there were more than 50 000 registered co-operatives in South Africa (DTI, 2012).

2.2.4.2 Ownership and purpose

There are a range of types of cooperatives that can be characterized as worker-owned cooperatives, or user-owned cooperatives. While there are differences between these forms of cooperatives, they share an essential feature. In these cooperatives, the members are users of the cooperative's economic services, rather than necessarily being workers in the enterprise.

2.2.4.2.1 The worker-owned cooperatives

United States Federation of Worker Cooperatives (2007) defines worker cooperative as a business entity that is owned and controlled by the people who work in it. Worker cooperatives thrive in many industries and regions. A worker cooperative is an alternative for-profit structure based upon standard democratic principles. It is not designed to maximize profits, nor returns to investors, but rather to bring to the workplace many of the rights and responsibilities that we hold as citizens in our communities. These principles include one-person/one-vote equality; open access to information (i.e., open-book management); free speech; and the equitable distribution of resources (such as income).

According to the National Youth Development Agency (2012), a worker cooperative is not owned by outside shareholders or a small group of founders or partners but by all the employees in equal portions. Top level managers and entry-level employees alike own an identical share and receive an equal share of any profits or losses. These "worker-owners" both elect the Board of Directors and fill six of the nine Board seats. The Board in turn is responsible for hiring and supervising management.

2.2.4.2.2 The user-owned cooperatives

Phil (2013) mentioned that cooperatives and other user-owned firms benefit their user-owners through access to infrastructure and services, cash patronage, stock patronage as it is redeemed and the ability to have input into how the organization operates. In addition, User-owned firms have another level of benefits that impact the general marketplace and economy (Phil, 2013).

The benefits of cooperative businesses to the general public involve market conduct, alignment and risk taking. User-owned firms help to keep the marketplace competitive. They prevent or offset the power of monopolies and cartels; they also help force other firms to set fair prices. The ultimate effect is fair prices for consumers. Managers and board members of user-owned firms are aligned with the interests of owners and customers. They are not driven

by the need for short-term profits and bonuses. User-owned firms have advantages to the general public because they keep markets honest; provide stability and stay focused on the long-term goals of their customers (Phil, 2013).

2.2.4.3 Level in the cooperative hierarchy

The cooperative Act, (No. 14 of 2005) classifies cooperatives into the following categories:-

2.2.4.3.1 Primary cooperatives

Whyte (1988) mentioned that co-operative formed by a minimum of five natural persons whose object is to provide employment or services to its members and facilitate community development. Examples of primary cooperatives include food gardens, rural sewing people, rural tuck shops etc. See Figure 2.1 below.

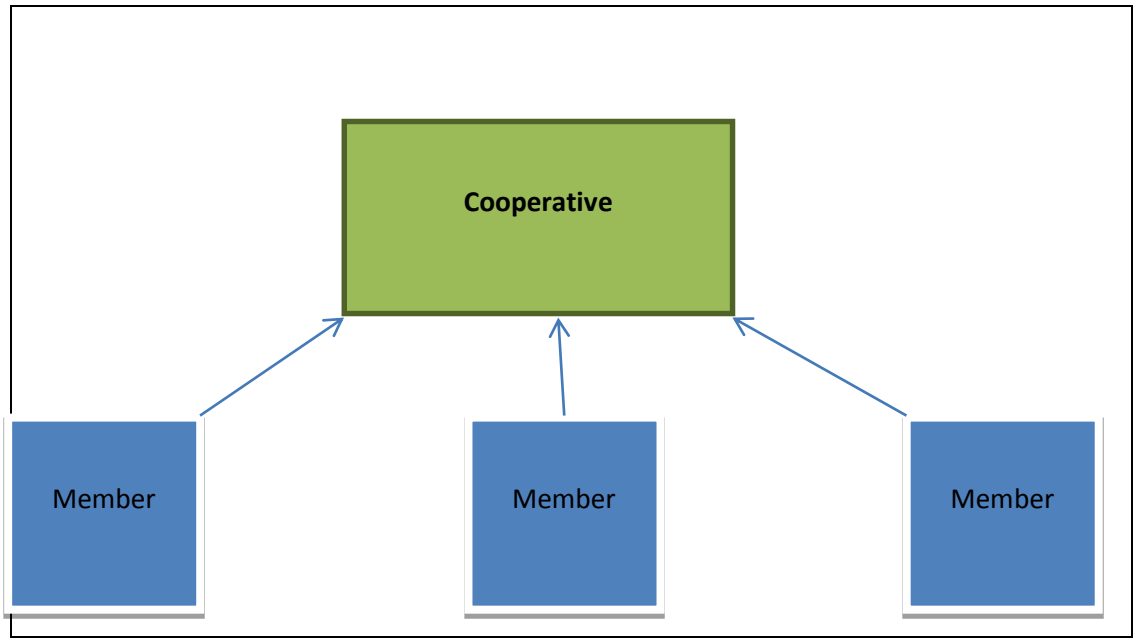

Figure 2.1: Primary cooperative structure **Source:** Whyte (1988)

2.2.4.3.2 Secondary cooperative

World Bank (1993) stated secondary co-operatives consist of two or more primary co-operatives with the objective of ensuring efficient and comprehensive services to the members. This type of co-operatives are also providing their services to the big companies like Shoprite, Spar, and Woolworths whereby they even sign up a contract for the provision of services for a certain period of time. See Figure 2.2 below.

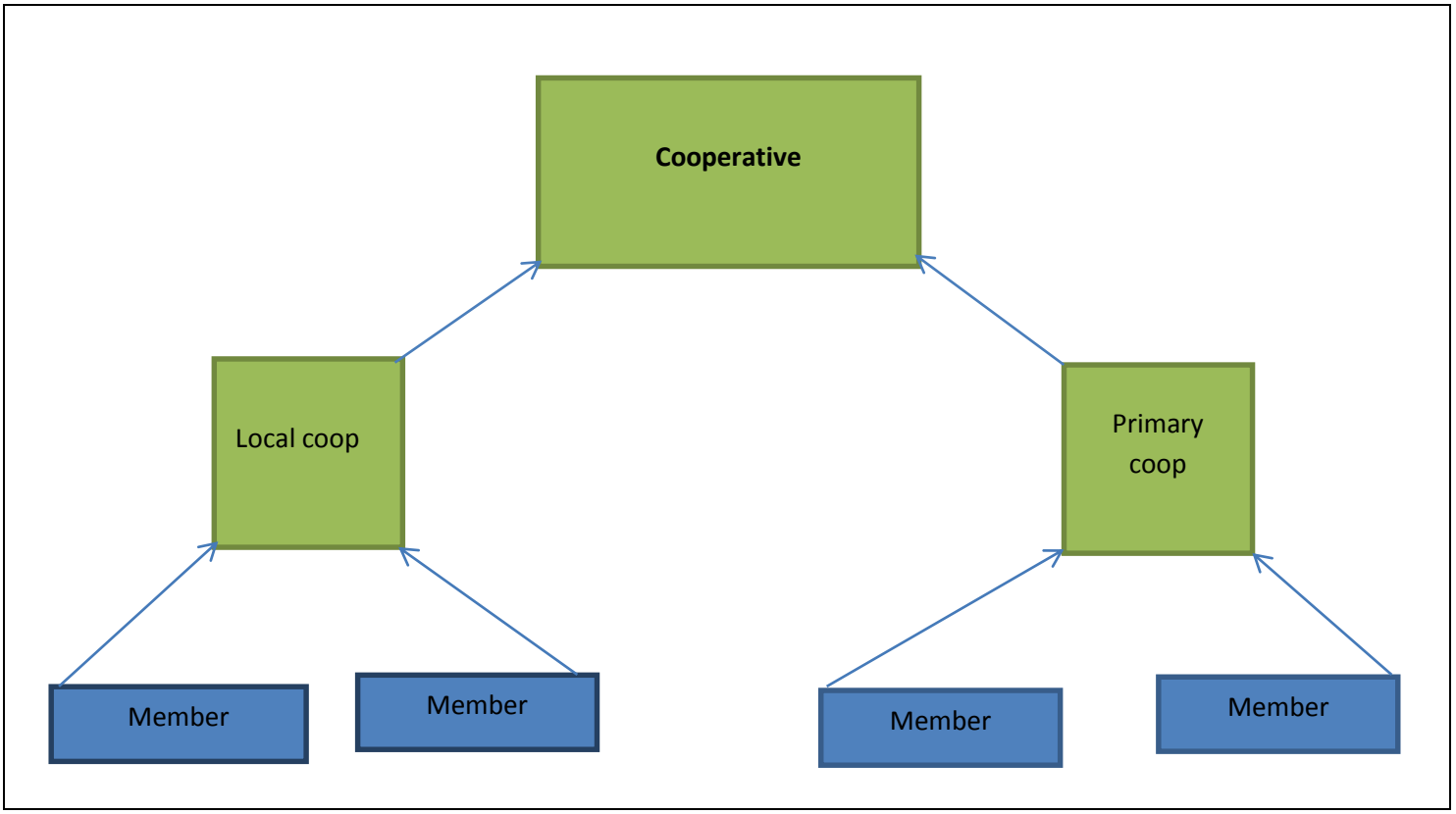

Figure 2.2: Secondary cooperative structure
Source: World Bank (1993)

2.2.4.3.3 Tertiary cooperative

It is defined as a co-operative whose members are secondary co-operatives. Their main objective is to sponsor and engage the government, the private sectors and stakeholders that would act on behalf of its members and that may present a specific sector to the regional area (World Bank, 1993). See Figure 2.3 below.

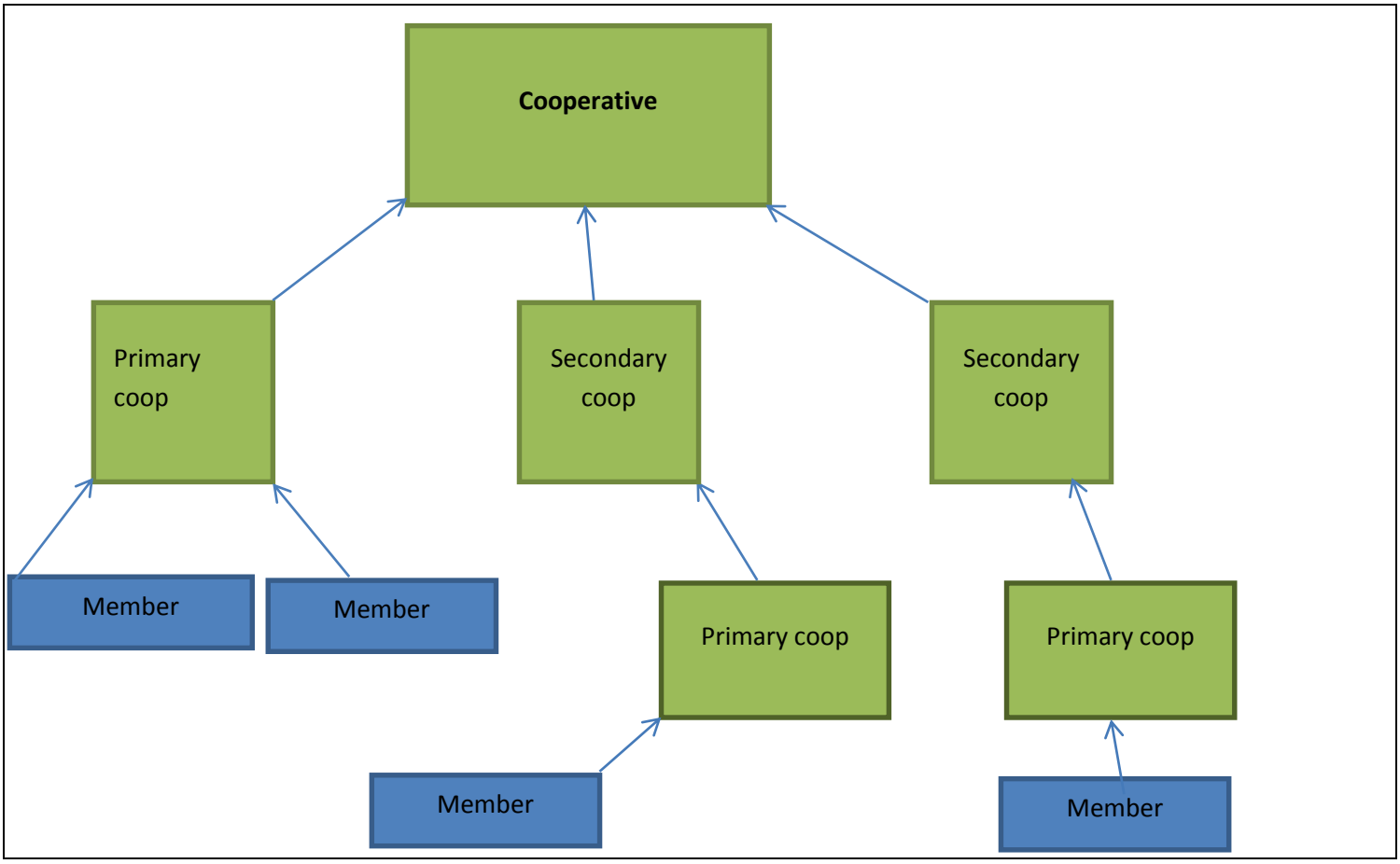

Figure 2.3: Tertiary cooperative structure
Source: World Bank (1993)

2.2.5 The link between co-operatives and stockvels

Van der Merwe (1996) defined *stockvels* as "rotating credit union formed by a group of participants who agree to make regular contributions to a common group on a specified regular period (monthly, weekly or fortnightly)". Money in this group is then paid out in full or partially to every participant, either on a rotation basis or in times of financial need. *Stockvel* associations are therefore community-based saving schemes, aimed at improving the lives of their members by providing them with financial support within a social or community-based grouping. To establishing *Stockvel* is very simple and becoming a member is generally based on the recommendation of another existing member (Van der Merwe, 1996) Therefore, it is usually established between or amongst people who work together or who belong to the same church or family.

Although the *stockvels* predate the co-operative, there are some distinctions. Some *stockvels* have coincidentally even been referred to as savings and credit co-operatives, burial co-

operatives, and financial services co-operatives, and have been called credit unions, mutual building societies and friendly societies. Furthermore, Philip (2003) stated that savings and credit co-operatives are the more formal and registered versions of a *stockvels*. These similarities support the view that the *stockvels* was the precursor of the co-operative and that this was the first kind of co-operative known to South Africans. However, the *stockvels* are certainly not as refined and regulated as the co-operative has always been. Hence, should be seen as the father of modern co-operative, rather than something strictly synonymous with this kind of organisation.

2.2.6 Co-operatives movement in South Africa (1922-2014)

The co-operative movement in South Africa dates back to the beginning of the 19th century where farmers organized themselves into agricultural groups in the four colonies namely: Natal, Cape Province, Transvaal and Orange Free State (van Niekerk, 1994). The oldest co-operative is a consumer co-operative which was established in Pietermaritzburg in 1892. By the year 1907, there were already 53 established co-operative and 80 of them were in a process of being established. The following year (1908), cooperative Act was then established by the Transvaal colony and it was the first Act of this kind in South Africa. The other three remaining colonies registered the co-operatives under the company Act.

Van Niekerk (1994) mentioned that in 1910, the four colonies decided to unite to form the Union of South Africa and the Orange Free State adopted the co-operative Act of Transvaal. Two years later (1912), the agricultural Bank of South Africa (Land bank) was then established whereby they offered co-operative farmers with loans at reasonable interest rates than commercial banks that were present then. The co-operative society Act (Act 28) became a law appealing to all previous co-operative legislation in 1922, and it was the first Act to control the co-operatives in all four provinces. The Act further allowed all other co-operatives to be registered.

According to Strickland (1937), in 1929 where South Africa was in great depression (i.e. fall in agricultural product prices), co-operatives were greatly affected which then resulted to declined numbers. For example, in 1930 there were 430 agricultural co-operatives registered and their number decreased to 202 in 1941 just after the depression. In 1937, the New Marketing Act was established which was viewed decisive for South African developments in general and co-operatives in particular. The reasons were that, the Act placed the South African agricultural marketing directly under the control of the Minister of Agriculture and

control boards. The Act delineated a number of control mechanisms such as single channel fixed price scheme, single channel pool scheme and surplus removals scheme. Vink (2012) support the statement and said this Act with its heavenly government intervention was in favour of "whites" discriminating the farmers classified as "blacks" and "coloured". Groenewald (2000) even labelled it as "one of the most controversial pieces of economic legislation in the history of South African agriculture".

In 1939, the co-operative Society Act (29) became a law. One aspect of legislation allowed limited liability to co-operatives and as a result more and more co-operatives seized this opportunity until in 1965. In 1940s-1950s, as co-operatives in South Africa thrived and handle a very large share of national production, criticism bubbled up about the privileges they enjoyed, mainly exemption from the income tax and Land Bank financing on reasonable rates. In response to that kind of situation, a commission of enquiry into co-operative affairs was formed in 1963 (Schoeman, 2006). It further defined three types of co-operatives namely: agricultural, special farmers and trading. However, the legal definition of co-operatives was sketchy and had little in common with the International Co-operative principle as defined by the International Co- operative Alliance (ICA) (Schoeman, 2006).

Since the political change in South Africa (movement from apartheid of the national Party to ANC led government) in 1994, the government is heavily involved and committed to the promotion of co-operatives (Republic of South Africa, 1994). This started with the Reconciliation and Development Programme (RDP) that made mention of co-operatives in several passage of development plan. A number of policy amendments followed: the co-operative development policy for South Africa in 2004 preceded the co-operative Act (Act no.14) passed in 2005 replacing the Act of 1981 (Republic of South Africa, 2005). The most crucial improvement from the Act of 1981 to that of 2005 was that co-operatives did not have to comply with the narrow legislative definition of co-operative, but that any venture was permitted that prescribed to the seven international principles defined by ICA.

2.2.6.1 The Cooperative Act No. 14 of 2005

The Cooperatives Act of 2005 explains the need of cooperatives in South Africa as:-

- Cooperatives are based on self-help, self-reliance, self-responsibility, democracy, equality and social responsibility as their values.

- A strong cooperative movement in South Africa can advance social and economic development by creating employment, generating income, promoting black economic empowerment and helping to end poverty.
- Cooperatives will strengthen the South African economy by creating large number of sustainable economic enterprises in wider variety of sectors.
- The South African government is committed to providing a supportive legal environment that will help cooperatives develop and succeed.
- The new law in cooperatives will make sure that the cooperatives principles are followed in South Africa.
- The new law on cooperatives will make possible for the cooperatives to register with the government and to have their own legal status.
- The new law will make it easier for the government and others to provide support to new cooperatives, particularly cooperatives owned by women, black people, youth, people who live in rural areas and people with disabilities (Hubbard, 2005).

2.2.6.2 Registration of cooperatives

DTI (2005) mentioned that the registrar of cooperatives registers the cooperative if:

- The application satisfies all the requirements in the Cooperatives Act.
- The constitution of the cooperative meets all the requirements in the Cooperatives Act.
- The constitution of the cooperative adheres to the cooperative principles.
- The proposed name of the cooperative follows the rules in the cooperatives Act.

Once the cooperative meets all these conditions, the certificate will be awarded. Once the cooperative is registered, the Department of Trade and Industry will be able to give it special support if it follows the cooperative principles.

2.2.6.3 Constitutions

Each cooperative must have a constitution according to the Cooperatives Act of 2005 which includes the:

- General matters: such as name, level, number of votes and allocation must be included.
- Membership: should indicate the requirement for applying for membership, duties of members and rights, rules for the transfer of membership and member loan. The requirement for voluntarily withdrawing from membership, notice period for

withdrawal and repayment of shares, and any rules imposed about a member's liability on behalf of the cooperative for a certain period of time after withdrawal. The rules and procedures for suspending membership and for terminating membership.

- Meetings: minimum notice period, conditions and procedures members must follow to request it and the quorums for general meetings which must be large enough to ensure meaningful member control and decision making should be included. Rules should also include procedure for voting and for passing a resolution instead of holding a meeting.

According to Section 32-33, 27(3) on management matters: there should be rules for appointment of a chairperson, vice chairperson and acting chairperson.

Sections 40-46 of the Cooperatives Act on finances states that there should be dates of the financial year of the cooperative, rules on how surplus funds that have been placed in a reserve fund can be used, and how the surplus funds that are not placed is a reserve fund can be utilized and rules for distribution of assets of the cooperative if it is dissolved.

2.2.6.4 Loans

Applying for loans is an important way to purchasing equipment and paying for training of co-operative members. Due to high interest rates and services fees access to many poor South Africans is rare. Agricultural Cooperatives that can afford loans get assistance from Standard Bank, Absa, First National Bank and the Land Bank which provide finance to all sectors of the agricultural economy and agri-business and welcome cooperatives because they even have cooperatives Incentive Schemes. Provincial development agencies, for example the Limpopo Business Support Agency (Libsa), give financial assistance to cooperatives (Macaskill, 2011). Capital structure allows members to contribute and be paid by shares for the contribution made.

2.2.7 The potential role of agricultural primary cooperatives to rural development

According to South African Integrated Sustainable rural Development Strategy (ISRDS, 2000:02), rural is characterised as an area where population are spatially dispersed. Agriculture is often the main activity, and sometimes the exclusive economic sector and opportunities for resource mobilization are limited. This strategy further states that South

Africa rural areas are characterised by high levels of poverty. About 70% of South Africa's poor people live in rural areas and that 70% of the rural residence are poor (ISRDS, 2000). Their incomes are constrained because the rural development is not sufficient enough to provide them with remunerative jobs or self-employment opportunities. Their cost of living is very high because they spend more on basic social services such as food, water, energy and education, transport and communication services (ISRDS, 2000:02). Jayalakshi (2009:1) describes rural development as the process of improving living conditions, providing minimum needs, increasing productivity and employment opportunities. Cooperatives contribute in different ways to rural development:-

2.2.7.1 Providing access to input and product markets

Cooperatives are helpful in overcoming barriers to assets, information, input and output markets. Farmers producing crops which are marketed by co-operatives are gainfully employed because they can account for their labour input by the revenue they earn during the marketing seasons. Clegg (2006) supported this as well as identified that agricultural cooperatives have played important roles in helping smallholder farmers to cope with competitive and fluctuating markets and high transaction costs to achieve economies of scale through bulk selling in order to meet market demands.

As far as market development is concerned, it has been evident that agricultural co-operatives have been responsible for introducing the exchange economy in remote and rural areas of South Africa. In so doing, co-operatives have been responsible for developing modern markets in rural areas, where they provide a ready market for farmers undergoing crop production but also absorb transaction costs (Holloway *et al*., 1999), which would otherwise hinder smallholder farmers from market and production integration.

2.2.7.2 Employment creation

Agricultural cooperatives are critical rural development because they provide employment of accountants, bookkeepers, managers, as part of direct employment (Allahdadi, 2011). But those members earning better revenue through enhanced co-operative prices are likely to invest in income- earning projects such as piggery, chicken projects and other small enterprises. Such enterprises outside the mainstream agricultural marketing co-operative domain, increase income levels of entrepreneurial farmers, but also increase additional employment to the rural people and hold up the massive population that would have migrate to cities in search of decent jobs.

Agricultural co-operatives maintain higher levels of income, making small farmers able to construct decent houses, send their children to school and provide health insurance to sustain rural livelihoods (Chambo *et al*., 2007). They also have the advantage of accessing co-operative education and business development capacity building. Co-operative education enables them to participate in democratic debates and exercising democratic principles and leadership training. This gives them the ability to become enlightened citizens able to debate more effectively different political issues of concern to the community. But through co-operative education and practice, they also gain the skills of running business. That is why; rural development would greatly be enhanced, if people became members of agricultural co-operatives.

2.2.7.3 Bargaining power increment

Due to economies of scale, a cooperative has a market power which would be an incentive for farmers to become part of the organization thereby avoiding price exploitation. They have increased the bargaining power of individual farmers, since they all speak in one voice. Cook (1995) indicated that cooperatives in situations like exploitation would help to increase margins and provide market insurance.

2.2.7.4. Providing other member services

This is achieved by providing distinctive products and services. Cooperatives, because of their particular structure, are able to operate in markets where there are no competitive rates of returns. Non-cooperative organizations will not be willing to operate in such markets because their owners would not receive any monetary reward (Fulton and Ketilson, 1992). Cooperative members, at the opposite of non-cooperative organizations owners, are attracted by social capital benefits. Examples of such nonmonetary benefits include stability of market outlet, crop quality control, farm inputs (fertilizers, machineries, seeds, experts and consultants), as well as research and development support which cooperatives provide to their members or growers. Some of these services are paid for indirectly by members with social capital investments.

2.2.7.5 Improvement in crop production

According to Chambo (2010), agricultural co-operatives create the ability for the supply of required agricultural inputs so that production of commodities is done timely to enhance productivity. They also provide an assured market for commodities produced by isolated small farmers in the rural areas. With collective action, agricultural co-operatives can capture

the benefits of value added, because of bulking and take advantages of introducing grades and standards allowing agro processing value addition for the members. In addition, agricultural co-operatives are responsible for stimulating poor farmers to make entry into markets, enhancing demand for standards and grades for perishable commodities (Ortman *et al*., 2006), such as cabbages, onions and tomatoes.

2.2.7.6 Improvement in crop marketing

A marketing cooperative is an organization owned and operated by a group of farmers who produce similar products. Farmers join a marketing cooperative to gain more control in marketing their products so they can: increase the price they receive for their products; reduce the costs of marketing their produce and of obtaining agricultural inputs such as seed and fertilizer; and make the market for their goods more secure (Dorsey and Assefa, 2005). A cooperative which owns transportation equipment may be able to provide lower cost hauling services by using equipment specifically adapted to members crops and volumes, and by using members for driving and maintenance. Marketing costs can be reduced significantly by a co-op that carefully chooses the services it will provide.

Marketing as a group, small farmers can also gain access to new and larger markets. This can mean higher prices (Markelova and Dick, 2009). Small farmers may be able to sell only in a nearby terminal market because their volume is inadequate to ship to more lucrative markets elsewhere. A marketing co-operative, however, may have sufficient resources and volume to identify and ship to larger markets where prices can be higher. In this way, the small farmer can benefit from new sales obtained by marketing cooperatively.

Marketing co-ops can use brands and other promotional activities to provide the small farmer with markets that are more secure. Promotional activities can establish a loyalty for co-op products from buyers and consumers who will look for and buy the co-op brand. This will tend to stimulate the movement of co-op products even when the market is oversupplied.

2.2.8 The role of government in supporting agricultural cooperatives

Agricultural cooperatives in many developing countries rely solely on government support. However, it is not always the case with other countries. For instance, in Brazil, for proper monitoring of cooperatives, the cooperatives were allowed to work independently (Raquejo,

1997). The cooperatives received functional and administrative anatomy and began to operate independently.

The study conducted in South Africa on cooperatives by DTI (2009) indicated that the major source of support for cooperatives is the state in both developing and developed countries. It is further stated in the study that, cooperatives have potential to lift up people out of poverty. In South African, the cooperatives strategy is led by government and DTI. However, the strategy has its challenges. Even though the present structure of coordinating cooperatives is at the provincial and national level, it fails to put the coordination at the provincial level where cooperatives exist. This is the issue that should be addressed and allow local cooperatives to reach their full potential.

2.2.9 The South African cooperative policy framework

In response to the general objectives in the cooperative formation, the South African government through DTI has launched cooperative development strategy (2004-2014) that has the following objectives:-

- To ensure the existence, strong, viable, self-reliance, autonomous, and self-sustaining cooperative enterprise.
- To ensure that cooperatives are making meaningful contribution to growth of the economy, employment creation and income generation.

According to Jayalakushmi (2004), the cooperative strategy identifies a set of objectives which amongst the others is to ensure that cooperatives are making meaningful contribution to economic growth, employment creation and income generation. The evidence is that, cooperative formation is meant to create viable and competitive enterprises that will help contribute to economic growth and development.

The Cooperative Act (No. 14 of 2005) recognises and re-affirms government's commitment to support cooperatives, enabling them to develop and shine. The Act also confirms the government intension regarding to cooperatives including provision of targeted support for emerging cooperatives especially those that are owned by blacks. The purpose of the Act therefore is to promote cooperatives in order to increase a number of economic enterprises operating in the formal economy.

The strategy further upholds the government's commitment to integrate support in addition to the Small Medium and Micro Enterprises (SMMEs) (RSA strategy, 2004). In terms of the Eastern Cape Rural Development Strategy (commonly known as "*Ilima labantu"*), cooperative development is one of the strategic interventions for sustainable growth and development to improve quality of life.

2.2.10 Cooperatives and member expectations

Prakash (2000) stated that in a cooperative, member is a glowing aspect from which the power of agricultural cooperatives emanates. He further stressed that member is the key and the main source of economic strength of the cooperative. A member should not feel that he/she is dependent on the cooperative; rather a cooperative should be dependent on the member. For that failure to understand, most of the people complain that cooperatives are not doing enough for them.

Marketing process is more difficult as compared to that of production. Marketing process requires a close knowledge of market trends. If not organised properly, it put farmers at a risk of not getting the full value of their produce and the investment made. In cases where agricultural cooperatives are unable to respond to the marketing needs of the members, middlemen prosper and the farmer members get sucked into the brutal circle which the cooperatives are supported to break. Provision of post-harvest services, warehousing, grading, packaging, shipment, and market information are the essential links in the chain of marketing (Prakash, 2000).

One of the main factors for non-performance of cooperatives is due to lack of participation of the members (Prakash, 2000). In any of agricultural cooperatives, the entire business revolves around the economic benefits which the members expect from being part of a cooperative. Farmer members are eager to sell their produce and obtain timely and sufficient funds to increase their produce. The expectation of members from their cooperative normally revolve around: Guidance, advice and support in matters of farm technology; Supply of farm inputs e.g., fertilizers, farm chemicals, farm machines and implements etc.; Easy accessibility to the sources of credit for purchase of improved seeds, maintenance of fields, investments in long-term items e.g., tube wells, farm cattle etc.; Assistance and advice on environment-related issues e.g., disposal of animal wastes and others; Improvement and development of

infrastructure e.g., grading centers, packaging facilities, forwarding facilities, plastics and pipes.

2.2.11 Theoretical application of NIE to co-operatives

Ortmann and King (2006) stated that the applications of NIE to cooperatives reflect the difficulty of linking economic theory and co-operative in practice. They further stressed that many of the benefits farmers receive from forming co-operatives originate from the holdup problem and the opportunistic behaviour associated with asset fixity. Royer (1999) as cited by Ortmann and King (2006) uses the "standard" example of the holdup problem in agriculture involving farmers of a perishable commodity and a processor who has no competition in the region. They reported that at harvest, the processor can refuse to accept delivery from farmers in an attempt to force them to accept a lower price or risk spoilage of their product. On the other hand, the processor who has invested in specific plant and equipment is also prone to the threat of holdup by the farmers. A strategy for producers to eliminate or minimize the holdup problem is for them to purchase the processing plant.

According to Chibanda (2009) the basic idea of NIE is that the success of a market system depends upon the institutions to facilitate efficient private transactions. North (1990) as cited by Chibanda (2009) demonstrates that institutions matter because they provide the rules of the game, constraining human interaction and providing incentives for individuals and co-operatives to engage in productive and or destructive political, economic, social and other activities. However, he believes that the NIE has some limitations as transaction costs are difficult to observe and measure. The institutional environment has considerable influence on co-operatives, in terms of both their internal and external relations. The formal laws of the state, as well as local institutions based on custom and tradition, determine whether the environment for co-operatives development is an enabling or a disabling one.

2.2.11.1 Sociological institutional theories

Even the ideological motivations commonly found in the sociological and institutional literature on co-operatives (Craig, 1993) can be said to have an economic rationale. If the members are motivated by values such as solidarity, equality and fairness, the effect will be that the membership grows, whereby the volume increases and economies of scale are consequently reaped.

2.2.11.2 Property right and agency theory

According to Jensen and Meckling (1979), agency cost theory concerns the way the owners of the firm as residual rights holders can prevent the other stakeholders from behaving dishonestly. To the extent that dishonesty does occur, the allocation of capital is affected to the detriment and not only of the owners of the firm but also of the economy at large. Basically, the theory emphasizes the principal-agent relationship, for example between the owner of a firm and its management (Chibanda, 2009). If the organisation is large and complex, the owners are not able to manage the firm. This means that ownership and leadership are separate and this becomes a problem especial for co-operatives.

This theory is believed by Ortmann and King (2007) to be more relevant to the way the structure of co-operative is organised. The theory implies that the agent (management) is assigned to act to the benefit of the principal (co-operative members), which in turn means that the mangers can make independent decisions regarding questions affecting the member's wealth. Even though the relationship between the two parties is defined by contract, it may be difficult for the members to prevent the management from acting on their own interest. The problem here is kind of complicated because of the fact that no contract is perfect, and contracts are costly to draft, maintain and to follow up. The theory explains that by means of a system of rewards the principal can reach an agreement between his own goals and those of the agent, and describes how the principal can direct and control the agent. The theory basically is based on the notion of information asymmetry whereby the agent, possessing superior knowledge and therefore is able to act opportunistically against the principal. This means that the principal must protect himself/herself from losses which may result from the agent's dishonest behaviour.

2.2.11.3 Property rights theory

Property rights theory was developed by Grossman and Hart and it is viewed as an incomplete contracting theory of the firm. It builds on the Agency theory by also assuming that the contracts between principal and agent are incomplete. Property rights theory by Fulton (1995) try to explain the existence of co-operatives as follows: taking a production process that uses two production inputs; a farm output and processing services. Then if the quality of processing services is highly variable and unpredictable, the most efficient method of organizing production is to make the owners of these services the residual claimants. If the farm output is highly variable and unpredictable, the most efficient method of organizing the

production process is to make the owners of the farm output the residual claimants; in other words a cooperative should be formed" (Fulton, 1995).

2.2.11.4 Transaction cost theory

The theory of transaction cost assumes that co-operative enterprises are based on the members' efforts to integrate either forwards or backwards in the processing/distribution chain, jointly because each one is too small to accomplish the task on its own.

In the case of an agricultural co-operative, farmers are vulnerable on the market as they have made large transaction-specific investments in herds, machinery, and personal skills. This means that there are considerable uncertainties in terms of agricultural production, due to external uncontrollable factors like changing weather conditions. Therefore, the quality of the produce is often difficult to assess by a co-operative as a whole. This is when then problem of asymmetric information arises. Agriculture is always geographically dispersed, which increases the risk that the farmer will come up against a local or regional monopolist. This means, if the co-operatives were selling to independent trading partners, they would often face high transaction costs. By owning the trading partner their transaction costs can be reduced, and due to the difference in the optimal scale of operations like farming in small scale and processing in large-scale.

2.2.11.5 Neoclassical theory

The neo-classical economic theory assumes that the cooperative business form is constructed so as to attain large volumes of business and thereby reap economies of scale. That is then the reason why co-operative firms have a competitive advantage in industries where the average cost curve shows an ever declining pattern showing market failure (Sexton, 1986). To the extent that an agricultural marketing co-operative has unallocated equity capital and does not pay the allocated capital according to a market rate, the prices for the raw produce are raised, with the result, the volume handled increases due to a larger membership and to increased production by the average member.

Co-operatives often practice a policy of cross-subsidisation between member categories, a practice that may have the effect of stimulating farmers, whose production conditions are not so good, to increase their production, with the result that the total volume increases (Nilsson, 1998). Cooperatives have large market shares in the markets where the economies of scale are most distinct, that is to say in the collection and primary processing of the raw produce.

2.2.12. Institutional issues with traditional co-operatives

In the traditional co-operatives, members are sometimes faced with major organisational challenges (Ortmann and King, 2007). These challenges include free rider, horizon, portfolio, control, and influence cost.

2.2.12.1 Problem of common ownership

A co-operative organisation is owned by a co-operative society which is made up of a number of members. Hence, the ownership of the co-operative's assets is collective, which means that an individual action may result in certain negative effects (Vitaliano, 1983). Therefore, when a new member joins a co-operative society he/she automatically has access to all assets that have been generated before he/she joined. Furthermore, new members generally pay only a small entrance fee to join the co-operative, and this dilutes the equity of the existing members. That means in this stage capital growth is low. It is therefore difficult to justify to members that they should invest in the co-operative organisation, when they have to share this investment with others (Condon and Vitaliano, 1983). Likewise, when a member leaves a co-operative organisation he does not have access to the assets to which he has contributed.

Members are encouraged to be free riders because certain mechanisms do not work properly, since the economic actors do not have to bear the full consequences of their actions thus making the resource allocation to be sub-optimal. The capital that is unallocated works as a sift between members and a co-operative, meaning that the market signals from the owners do not get through. This affects what investments should be made and how the co-operative should be managed and thus ultimately the continued existence of the co-operative. Chukwu (1990) noted that co-operatives tend to have difficulty in raising capital, even for investments that would be profitable Thus, since the use of capital in a co-operative is not optimal, lenders are more cautious, which then results in a higher cost for borrowed capital. This has an impact on reduction value of the co-operative firm for its members (Condon and Vitaliano, 1983). In their desire to get the most out of the co-operative without contributing accordingly, the members prefer to borrow capital, rather than to invest. The logic is then that the burden of the borrowed capital will be carried by future member generations (Jensen and Meckling, 1979).

From the explanation above, it is quietly clear that the problem of common ownership does not only affect the owners: it is also a socioeconomic problem. An important condition for a

productive market economy is that resources are completely mobile. It must be possible to move assets from a shrinking sector to an expanding one, from a failing firm to a successful one, and from poor investments to prosperous investments. But if the firm is built upon unallocated capital, that movement of resources would be very difficult. This is particularly serious for activities subjected to perfect competition. Co-operative firms have great difficulty in being competitive in this regard, because weaker firms are not easily sifted out of the competition.

2.2.12.2 Portfolio problem

In economic undertakings it is normally beneficial for assets to be diversified between different operations. A well-composed investment portfolio reduces the risk to the investor. In co-operative firms it is not possible to reduce risk effectively as the members are so heterogeneous in regard to their risk preferences, capital worth, and other pivotal variables (Vitaliano, 1983). An investment decision in a co-operative firm can at best be adapted to an "average" of member preferences, but as this average covers a diversity of individual preferences, the investment will be optimal for only a small fraction of the members. Even principals and agents can have different ideas about how a portfolio should be composed, which can cause conflict between the agent (elected representatives and managing director) and the principal (members). Therefore the result would be economic inefficiency.

2.2.12.3 Follow up problem

As a result of the lack of conformity between the sacrifices and rewards of the members, the members themselves tend to behave in a manner that does not serve their own best interest. For example, most co-operatives allow members to join without paying an entrance fee corresponding to their share of the co-operative firm's assets. The fact that new members are allowed to become free-riders is an expression of distorted market signals. Such distorted market signals reduce the members' motivation to become involved and to invest, thus creating a vicious circle. This is an indication of market forces in the relationship between the member and the organisation – members receive insufficient compensation for their involvement, which means that the owner control does not work. The control over the firm is weakened, since attempts by members to affect change cannot achieve the intended aims.

Consequently, the dominating element of collective ownership can create a risk that members lose their interest in monitoring the firm and their ability to do so, with the result that the management being able to promote its own interests – take control instead. This probably

means expansion for the organisation, although this may not benefit the principal. Expansion may concern the firm's position in the industry, increased market shares, diversification and vertical integration (Eschenburg, 1971). Cooperative managers may be able to pursue such goals as growth maximisation and others posited in the various so-called 'managerial theories of the firm' (Condon and Vitaliano, 1983).

In larger organisations the management generally obtains higher salaries, secure employment, greater prestige and more challenging responsibilities. Management grants benefits to itself and its closest associates. Costs increase without equivalent increases in income, since the incentives for the organisation's associates are based not upon satisfying market demand but on satisfying the interest of the executives (Eschenburg, 1971).

2.2.12.4 Decision making problem

Due to the differing opinions among members regarding investments, consolidation and yields, it can be difficult for the management of a co-operative organisation to decide how the members' opinions should be weighted (Richards, Klein and Walburger, 1998). In the worst case scenarios, managers may lose the ability to satisfy member interests. And if this occurs, management may decide to go solely by the market signals stemming from the members, particularly as it does not get any inputs from a stock exchange (Condon and Vitaliano, 1983).

Problems may also arise in relations between the board of directors and the members, but they are reduced by the fact that the board is specifically responsible for controlling and directing the management: "Board members of cooperative organizations can be expected to derive satisfaction from developing reputations as stewards of successful organizations that serve human needs in an essentially self-help fashion. Members of the boards of agricultural cooperatives may value such reputations because of the high value placed on service to agricultural and rural communities in certain close, rural social structures" (Condon and Vitaliano, 1983).

2.3 The agricultural sector

The South African agriculture is of dual nature comprised of mainly two categories of farmers namely: the subsistence farmers in the former homeland areas and large-scale commercial (mainly white) farmers (Kirsten and Van Zyl, 1998). This is in contrast with the situation in many other countries of the world where one could find a whole range of farm

sizes, ranging from the very small (often subsistence) farmer to very large farmer/agribusiness type. DAFF (2012) further stated that about 8.5 million South African citizens depend directly or indirectly on agriculture for income and employment. Guided by government's New Growth Path (NGP), the agricultural sector has been identified as one of the sectors having a significant potential to create jobs. This NGP targets job opportunities for about 300. 000 households in agriculture smallholder schemes and a further 145. 000 jobs in agro processing, which in turn will have the potential to upgrade conditions for 660. 000 farm workers by 2020.

The total contribution of agriculture to the economy increased from R33 billion in 2003 to R69 billion in 2010. About 12% of South Africa's surface area can be used for crop production. High-potential arable land comprises only 22% of total arable land. Some 1.3 million hectares are under irrigation (DAFF, 2012). These comprise about 1.5% of South Africa's agricultural land. Primary commercial agriculture contributes about 3% to South Africa's GDP and about 7% of formal employment. However, there are strong backward and forward linkages into the economy, so that the agro industrial sector is estimated to contribute about 12% of GDP. Nkhoma (2011) mentioned that in order to integrate small-holder farmers into commercialization, agricultural co-operatives are recommended as one of the key strategies to overcome problems like market access. However, the sustainability of the farmers in question has been a great challenge in past years, since their establishment. Hence the focus is on smallholder faming.

2.4 Defining small-holder farmers in the South African context

South African agriculture consists of two main categories of farmers namely large-scale commercial farmers and smallholder farmers producing at a subsistence level and found mainly in the *"former homelands"* of the country (Pote, 2011). There is a negative perception regarding smallholder farming being associated with "black farmers" in the former homelands. Of which this is not the case, Dixon, Abur and Watterbach (2005) explain that the term smallholder only refers to their limited resource endowment relative to other farmers in the sector. Moreover, Ellis (1988) mentioned that smallholder farmers are farm households with access to means of livelihoods in land relying mainly on family labour for agricultural production to produce for self-subsistence and often for market sale.

According to the National Department of Agriculture (NDA, 2005) one of the major characteristics of small holder farming in South Africa's production system being classified as simple, out-dated technologies, low returns, high seasonal labour fluctuations and women playing vital roles in production. Smallholder farmers differ in individual characteristics, farm sizes, resource distribution between food and cash crops, livestock and off-farm activities, their use of external inputs and hired labour, the proportion of food crops sold as well as household expenditure patterns. However, for the purpose of this research, the location areas, production system, size of land holding and subsistence have been discussed below as characteristics of smallholder famers in South Africa.

2.4.1 Location areas

Smallholder farmers in South Africa are characterised by their unique location. Their farms mainly located in the "Bantustans" also known as "former homelands" of South Africa. During the apartheid regime, that is before 1994, the homelands were divided into ten self-governing territories, namely Bophuthatswana, Ciskei, Gazankulu, KaNgwane, KwaNdebele, KwaZulu, Lebowa, Qwaqwa, Transkei and Venda (World Statesmen, 2000). They only ceased to exist as self-governing territories on the 27th of April 1994 with the inception of democratic rule in the country. Till to date most smallholder farmers are located in these areas and have been incorporated into South Africa (World Statesmen, 2000).

2.4.2 Size of land holding and tenure

In South Africa, the tenure system of small scale farmers can be characterised into bought land, lease state land, renting and or share cropping, communal land tenure and inherited. However, a large number of smallholder farmers in Eastern Cape Province which is largely rural have minimal access to ownership of land (Ngemntu, 2010). In most countries, the average size of land holdings continues to fall with the fragmentation of it. The only possible way of improving agriculture is by increasing productivity, yet the number of small scale farmers has generally increased as the size of farm holdings has shrunk. This further intensifies the challenge of raising the production levels on small farms through the development and adoption of new technologies.

Usually, the farmers in the former home lands farming on one hectare of dry land or less are the small scale farmers (Kirsten and Van Zyl, 1998). However, land area, may be a poor economic measure of farm size since land is so variable in its agricultural attributes and farms

of different types can require vastly different areas of land for the same value of output (Lund and Price, 1983).

2.4.3 Factor intensity

Smallholder agriculture in South Africa is characterised by intensive use of labour which is mainly derived from family members (Mudhara, 2010). This means that there is limited usage of external inputs such as machinery and fertilizers (Cousins, 2005). Dorward (1999) argued that intensive use of labour in smallholder farming is in some cases a form of self-exploitation arising from the fact that the majority of these farmers are poor which means they cannot afford to purchase external farm inputs. As opposed to larger commercial farms, costs of labour are too high for smallholder farmers in general; hence they have to do with family labour (Dorward, 1999).

2.4.4 Low technology adoption levels

Most smallholder agriculture in Southern Africa as it also the case in Eatsern Cape, is characterised by traditional production techniques with low levels of productivity (Kalibwani, 2005). Smallholder farmers mainly produce to sustain their livelihoods and to a lesser extent for market. Pote (2011) also confirmed this characteristic by asserting that output from smallholder farming for some rural households constitutes a greater proportion of their total livelihoods. For the low production levels that there are calls by researchers and policy makers alike, for smallholder farmers to produce beyond subsistence in order to meet national food security goals (Kalibwani, 2005; Wahington, Wirimayi and Shepherd, 2012).

2.5 Importance of small-holder farming

Even though smallholder farmers face problems in marketing of their products, they continue to produce for their families and survival given the unfavourable conditions. Rosset (1999) mentioned that smallholder farmers have numerous functions that benefit both society and biosphere in the economy. The functions include contribution towards food security (Rosset, 1999), equitable distribution of income and linkage creation for economic growth (Dorosh and Haggblade, 2003). Supporting their views, Dorosh and Haggblade (2003) and Rosset (1999) explained that smallholder farmers have the advantage of flexible motivated family labour resources, which allows them to allocate labour to activities with higher marginal returns. Moreover, Ngqangweni (2000) results indicated that smallholder farmers can use resources efficiently.

Ministry of Agriculture and Land Affairs (1998) stated that agriculture in South Africa has a central role to play in building a strong economy and, in the process, reducing inequalities by increasing incomes and employment opportunities for the poor, while nurturing our inheritance of natural resources. This potential to create employment in rural areas, generate income, and contribute to food security has been recognised by the South African government and reflected in the Agricultural Policy. The contributions that are made by smallholder farming are discussed in the following subsections.

2.5.1 Poverty alleviation

According to Dorward and Kydd (2003), smallholder farming contributes to poverty alleviation through food price reduction and employment creation. Small farms have the potential of creating employment because they are labour-intensive. This is unlike large farms where machinery is mainly used in production. Rosset (1999) is of the view that small farms imply that more people have access to land; which in turn implies own food production. In addition, more agricultural producers result in increased competition. The price of tradable agricultural goods falls in response to competition and production increases, reducing poverty amongst the consumers.

2.5.2 Equitable distribution of income

Magingxa (2003) stated that**,** efficiency of smallholder agriculture leads to increased incomes and promotes equitable distribution of income creating forward and backward linkages necessary for economic growth. In addition, small farms provide a more equitable distribution of incomes since small farms allow own production for relatively many households, implying that less will be spent on food purchases (Dorosh and Haggblade, 2003). Further explanation shows that poor households that produce their own food are better off, in terms of income, than those who purchase food. In addition, Reardon and Barrett (2000) explained that many smallholder farmers earn some income through selling their agricultural produce, resulting in an improved welfare for such farmers.

2.5.3 Linkages for economic growth

According to Haggblade, Hazell and Brown (1990), in areas where small farmers are efficient and successful, other non-farm economic activities usually emanate as a result. Generally, the growth of the small farms allows for the growth of business activities through forward and

backward linkages. In support, Van Rooyen *et al.,* (1995) pointed out that gains in output resulting from investments in any given sector of the economy stimulate demand for production inputs from other sectors (backward linkages). The initial output gains also raise incomes and consequently spur consumer demand for other goods and services (forward linkages). Thus, successful smallholders create a demand for non-farm sector goods. In sectors where excess capacity exists, these increases in demand translate into higher output and consequently higher incomes.

2.6 Constraints to small-scale farmers in South Africa

There are a number of constraints that the smallholder farmers face, not just in South Africa but in the African continent as a whole. The constraints that hinder the growth of smallholder farmers vary from systems constraints, allocative constraints to environmental demographic constraints (Van Rooyen and Nene, 1996). Systems constraints are lack of access to land, poor physical and institutional infrastructure. In addition, Obi (2011) stated that the development of smallholder farmers in the Southern Africa region are harshly constrained by a large number of factors linked to the institutional environments and arrangements operating in a particular region. Many of these constraints relate to the poorly developed extension services, that means the information flows about available inputs and prices are not adequate. The constraints are divided into production and marketing and are discussed below.

2.6.1 Production constraints

Small-scale farmers in rural areas of South Africa often have little or no formal education; they are generally unable to make good or rational decisions in the farming activity which results in limiting or constraining their production. According to Matungul *et al.,* (2002) many smallscale farmers lack inputs such as fertilizers, improved seeds and lack of transport in many parts of South Africa which are the major constraints to expand production. Another possible constraint of production is the small size of land-holding and the low level availability of inputs to the farm such as capital invested in farming. Most small-scale farmers do not have hired labour, capital or good access to improved technologies and support services that they need to use their land productively.

2.6.1.1 Land available per small-scale farmer

Smallholder farmer's characteristics given above suggest that one of the main constraints that smallholder farmers face is the lack of sufficient land. Land is known to be the most

important asset in primarily agrarian rural societies especially in the rural areas of South Africa but is lacking in both ownership and size. There are restrictive administrative and social structures such as land tenure that should be improved (NDA, 2005). Most smallholder farmers have limited access to land and capital and have received inadequate or inappropriate research and extension support resulting in chronically low standards of living. This is due to the unproductive and inefficient use of land in the absence of appropriate research and extension services.

2.6.1.2 Labour used by small-scale farmers

Small-scale farmers operate their farm using mainly family labour and employ capital and machinery that is not expensive and that they can afford or hire in rentals (Ntsebeza, 2007). According to Kirsten and Van Zyl (1998) small-scale farms are farms where the owner is the operator and where his or her family members provide the bulk of labour services throughout the season. The small-scale farmers are willing to put more time and energy in their enterprises. The small-scale farmers depend very heavily on family labour (for subsistence production). Depending on the availability of labour, it is possible for the small-scale farmers not to hire labourers due to the relatively small size of the farm.

2.6.1.3 Poor physical and institutional infrastructure

As mentioned above that most of the smallholder farmers are located in the rural areas, particularly in the former homelands where both physical and institutional infrastructure mostly limits their expansion. For instance, lack of access to proper roads limits the ability of a farmer to transport inputs, produce and also access information. Delgado (1999) made similar observations that infrastructure is typically poor, markets for agricultural inputs and outputs are often missing as well as unreliable for smallholder farmers, implying that the acquisition of agricultural resources becomes difficult thereby limiting the supply of market services.

2.6.1.4 Technology used by small-scale farmers

Agriculture in South Africa for small-scale farmers is labour intensive, as they rarely used advanced technology (Aina, 2007). Small-scale farmers use limited technology such as hoes for planting, watering cans for irrigating and family labourers or sometimes hired labour for harvesting when there is more work than family laboures can do. The small-scale farmers of South Africa are not financially sound; hence they are unable to purchase modern technology.

They are unable to obtain and use new or advanced technology, due to a lack of knowledge, financial capacity and necessary infrastructure. The level of adoption of technology, especially the advanced technology models by small-scale farmers of South Africa is low. The lack of funding makes it extremely difficult for the small-scale farmers to undertake technological adoption.

2.6.1.5 Education and training

According to Aina (2007) the small-scale farmers live in rural areas where there is a lack of basic infrastructure such as telephones, electricity and good road networks. Small-scale farmers rely on poorly developed road networks and telecommunications and because of poor roads they end up lacking transport (Ortmann, 2005). Most of the small-scale farmers cannot read, write and speak any other language except their home language. This can create some difficulties when smallscale farmers have to communicate with extension officers (Aina, 2007). The infrastructure for small-scale farmers of South Africa is poor especially in former homelands (rural areas).

2.6.1.6 Availability of services

Small-scale farmers of South Africa produce inadequate (not enough) products because they choose wrong cultivars for production which are relatively cheaper in order to meet their cost of production since they cannot afford the expensive costs. The reason is that they lack the financial support (Tshikhudo, 2005). The communication between small-scale farmers, especially in former homelands, and the extension officers is lacking because of the poor road networks. The interaction of farmers with the extension officers is very important in disseminating information from extension officers to small-scale farmers. However the long distance to rural areas where many small-scale farmers exist is a constraint.

Also, access to credit is the most crucial factor in the production process. Okurut *et al.*, (2004) mentioned that credit is an important instrument for improving the welfare of the poor directly through consumption smoothening that reduces their vulnerability to short-term income. Credit also enhances productive capacity of the poor through financing investment in their human and physical capital.

Moreover, lack of assets, information and access to services hinders smallholder participation in potentially lucrative markets (DAFF, 2012). On the other hand, it should be accepted that

that there are risks attached to market participation which means that the markets provide both opportunities and pressures for smallholders.

2.6.2 Marketing constraints

There are several constraints that affect farmers from accessing markets. The factors are transaction cost, lack of market information, lack of human capital, and long distance between farms and markets. The factors are discussed into details below.

2.6.2.1 Transaction costs

High transaction costs are one of the major factors constraining growth of smallholder agriculture and this is largely attributed to poor infrastructure. According to Makhura (2001), transaction costs arise from different sources; and include costs of information, negotiation, monitoring and enforcement of contracts. In other words, a poor road network and unreliable distribution could force farmers to grow their own food and less of perishable commodities resulting in lower productivity of resources employed. Increased costs of transportation will also affect inputs used and the marketing strategies followed by the farmers. This means that provision of good infrastructure is a requirement for achieving higher levels of agricultural productivity and profitability.

2.6.2.2 Lack of market information

Farmers generally do not have the required information and means to locate better markets. Poor provision of agricultural information is a key factor that has greatly limited agricultural development in developing countries (Bailey, *et. al.*, 1999). Information needs for communal farmers range from information on prevailing production techniques and market conditions, type of product demanded, quality, quantity, price and market opportunities (Bailey *et al.*, 1999). According to Montshwe (2006), lack of timely and reliable information is severe, particularly in the communal areas.

Although considerable progress has been observed in the provision of communication systems such as telephone and cellular phone network facilities, communal farmers still remain uninformed in terms of new production techniques, market prices. However, access by smallholder farmers to some of the sources of information is still limited. In most cases information is broadcasted and written in Afrikaans and English. This makes the information irrelevant to the majority of communal farmers who understands their local languages only. The poor transfer of knowledge, skills and information is further manifested by limited

interaction of the farmers with extension officers due to poor road networks and resources (Coetzee *et al*., 2004). The lack of extension services is also the major factor that makes farmers not access formal markets.

2.6.2.3 Lack of Human capital

Smallholder farmers are often illiterate, with poor technological skills, which can be serious obstacle in assessing useful formal institution that disseminate technological knowledge (World Bank, 2008). The majority of emerging producers is not capacitated with financial and marketing skills and are unable to meet the quality standards set by fresh produce markets. Lack of production knowledge leads to lower quality in production

2.6.2.4 Long distances between the farms and markets

Makhura (2001), Mahabile *et. al*., (2002) and Nkhori (2004) noted that even if farmers are in areas with good road linkages, the distance from the markets tends to influence transaction costs. The further away the farmers are from markets, the higher the transport costs they incur. Market distance is a constraint in development of most developing countries where the means of communication such as telephones and radio are still scarce especially in the rural areas. The proximity of the farm to the market centres and the access of the farmer to marketing institutions and services are available in those centres has an influence in the decision making capacity concerning alternative marketing opportunities, such as between selling at the market place or selling through an assembling wholesaler. "Better access to crop inputs, technical assistance, and green knowledge not only reduces marketing costs but also facilitates sound farm management and soil sustainability". Meaning that, the longer the distance between a farm business and the nearest market center, the fewer the chances of adopting practices that promote soil sustainability.

2.7 Characteristics of markets for smallholder famers in South Africa

A market system is a systematic process enabling many market players to bid and ask helping buyers and sellers interact and make deals (South African Department of Agriculture, 2007)**.** In South Africa, the marketing system is less competitive and under developed. Pote (2011) stated that the system is characterised by poor market information, lack of identifiable markets, lack of transparency and lack of understanding market fundamentals.

In South Africa, the supply chain of agricultural products typically involves many players and agents with many farmers at one end and consumers on the other end. Generally these

traditional supply chains are tightly linked with social structures. However, smallholder farmers in South Africa are largely concerned with producing their crops or animals without having sufficient knowledge of what consumers really want. By and large, smallholder farmers in the country are not concerned with meeting consumers' needs and are often referred to as price-takers. Smallholder farmers' contact with markets is often limited to dealing with a produce collector or for sales in village market or district markets as the case may be.

Amongst other factors, before choosing a marketing channel, smallholder farmers consider the costs associated with transportation, profits, level of trust among the available brokers and familiarity of the market (Makhura, 2001). In other instances, farmers market their produce through channels offering low prices because they either lack market knowledge or have difficulties in accessing markets that are more rewarding. Most produce from smallholder farmers in South Africa are sold locally, with little or no amount exported. Generally, smallholder farmers market their produce individually in local markets, but make use of market intermediaries in international markets. The marketing channels that are usually followed by smallholder farmers for both crop and livestock can be illustrated in Figure 2.4. below:-

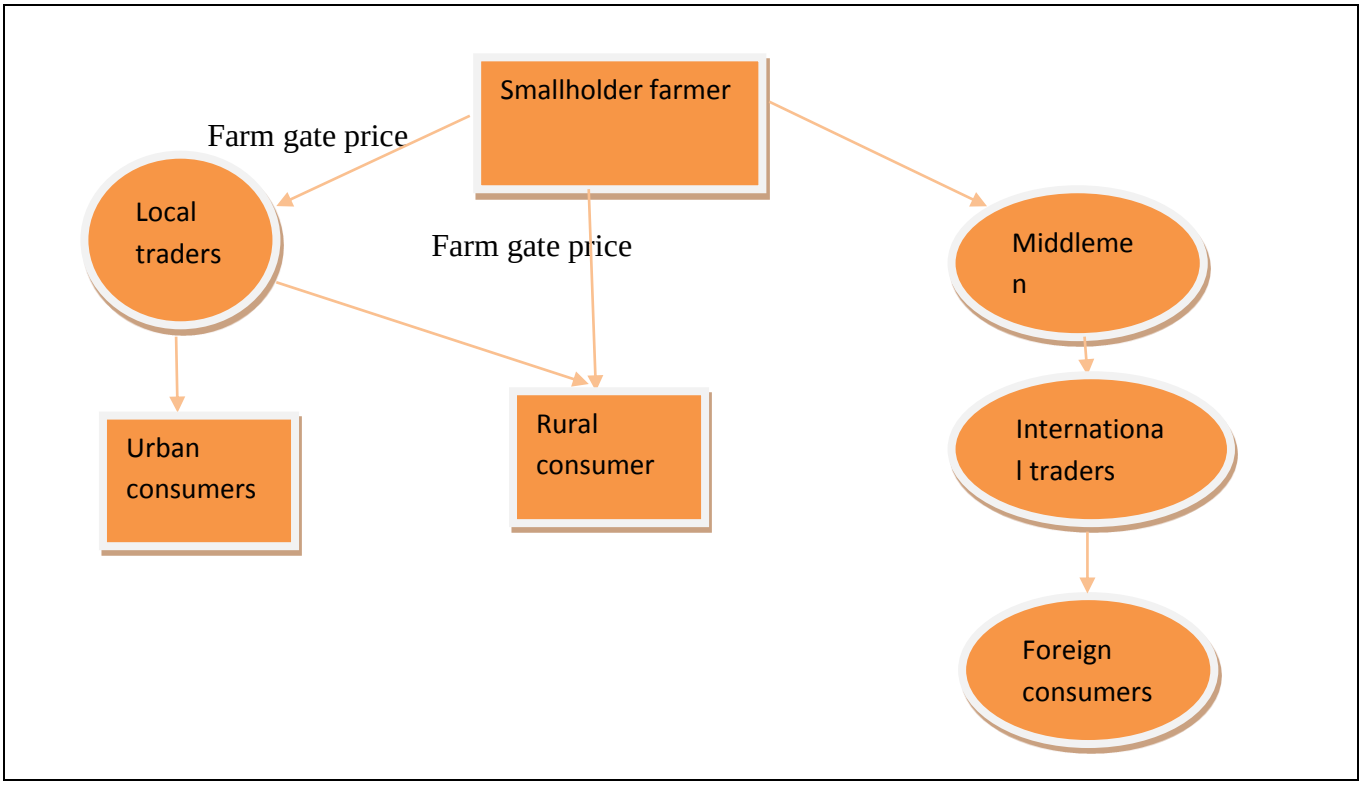

Figure 2.4: Marketing channels for crop farmers
Source: Shiferaw, Obare and Muricho (2006)

The arrows in Figure 2.4 illustrate the different paths that are followed by the produce harvested and are sold by smallholder farmers until they reach the final consumers. Produce from smallholder farmers is sold to consumers and traders at the farm gate, usually through informal transactions where prices and terms of exchange are unofficially negotiated. These transactions between farmers and traders and between farmers and consumers most often occur in spot markets (Kherallah and Minot, 2001 and Ruijs, 2002).

2.8 Government Support programmes for smallholder farmers

South African government and Eastern Cape Provincial legislature have been commitment to promote agrarian reform through the stimulation of agricultural growth of smallholder farmers (Buthelezi, 2007). To stimulate agricultural growth so as to eradicate poverty and improve food security among the rural poor smallholder's farmers in the Province, an integrated programme of Rural Development, Land Reform, and Agrarian changes was initiated (Eastern Cape Department of Rural Development and Agrarian Reform (ECDRDAR, 2011). Three programmes supporting smallholder farmers were developed according to farmer categories. These included "Siyazondla" meaning (feed), "Siyakhula" (growing) and Massive Food Production Programme (MFPP).

2.8.1 Siyazondla Homestead Food Production programme

The word '*Siyazondla*' means 'we feed ourselves; we have a responsibility to see to it that we mutually work to curb hunger by feeding our families and country. We are active participants in providing our own food. We can work together with our own hands to end Poverty' (Blaai-Mdolo, 2009).

2.8.1.1 Objective

- Aim to support poor households to produce their own food through cultivation of homestead gardens.

2.8.1.2 Implementation

The department provides grants of about R2 000 as a starting capital to the farmers (GoSA Information, 2008). The farmers through this programme are also provided with starter packs of farming tools like wheel barrows, forks, spades, rakes and watering cans, and production inputs like seeds, fertilizer, seedlings and insecticides, and irrigation pipes, garden fencing and water harvesting equipment (GoSA Information, 2008). All the support is given to farmers who's their farm plots fall in the category of 12 X 12 meters in size or less than a

hectare. Since the production in home gardens requires less labour handless use of production inputs. Thus farmers have attached more value to "*Siyazondla*" food (Fay, Hebnick and Kondlo, 2011).

2.8.1.3 Outcomes/ progress

Farmers often divert inputs and funds from the *Siyakhula* and Massive Food Production Programme and utilize them in the homestead food gardens. *Siyazondla* programme has realized potential benefits in several communities especially through increased food security and nutrition, transfer of skills and knowledge, adoption of new crop varieties, increased use of purchased inputs, and household incomes (Fay *et al*., 2011). In addition, the programme has triggered farmers 'improved use of existing resources like manure and compost to increase agricultural productivity, resulting in reduced input costs (Fay *et al*., 2011). Despite its positive contribution, it has been noted that the plot size of the *Siyazondla* is insufficient for a substantial increment in farm productivity enough to lift them out of poverty (Fay, 2011).

2.8.2 Siyakhula Step-Up Commercial Food Production Programme

2.8.2.1 Objective of the programme

- The programme is designed to encourage smallholder farmers to expand their field, and catalyse the transition to large-scale commercial agriculture

2.8.2.2 Implementation

Siyakhula programme was designed for smallholder farmers whose interests are to upgrade to commercial farming (GoSA Information, 2008). This programme subsidizes farm inputs and mechanization costs for smallholders with plot size between 1 and 50 hectares through a conditional grant scheme. Other support from the Department of Agriculture included land rental costs (Tregurtha, 2009).

The government provides 100% start-up capital which then is reduced annually by 25% of the production cost for four years (Tregurtha, 2009). Farmers are supposed to pay back the conditional grant in the same proportions starting with 25% deposit at the end of the first year and completion of pay back at the end of the fourth year. At 0% of state support, the project is thought to be self-sufficient both financially and technically.

2.8.2.3 Outcomes/progress

Farmers in this category were faced with low yield in the first two years of the programme and this led to failure to pay back the required 25% of the grant received at the end of the first and second years (Tregurtha, 2009).

2.8.3 Massive Food Production Programme

2.8.3.1 Objective

- In the Eastern Cape Province, among others, the Massive Food Production Programme (MFPP) was introduced to champion increased food security and poverty alleviation (Department of Agriculture, 2008; Manona, 2005; Tregurtha, 2009).

2.8.3.2 Implementation

According to Tregurtha (2009), in 2001 South Africa experienced a localised drought resulting in low food production, and the situation was worsened by depreciation in the exchange rate which led to increased food prices. Low productivity and high food prices led to a short term food scarcity. In response to the situation, the government distributed food parcels to the needy households (Tregurtha, 2009). Distribution of food parcels was short-lived because the government realized that the approach was expensive and unsustainable (Tregurtha, 2009). The provincial agricultural departments were tasked to formulate programmes that encourage households' participation in food production as an alternative solution.

After designing and formulation of the MFPP, the government availed funds for the programme. Increased food security was the fundamental objective of the MFPP through increased productivity and improved nutrition among households (Manona, 2005). By design, the programme scheme was meant to rely on community initiatives and was expected to run for 5 years (Department of Agriculture, 2008).

In addition to food security, more strategies were incorporate in the programme scheme (Tregurtha, 2009) and these included promoting black people economic empowerment, stimulating private sector development and markets in rural areas, and promoting conservation farming for environmental sustainability. Promotion of black people economic empowerment in the agricultural sector was mainly to boost production for local, national and international markets and establishment of agro-industries (Department of Agriculture, 2008).

In this particular programme, government support included, mechanization of the farms, link farmers to micro-finance institutions, infrastructure development, farmers' education and trainings, and research and technology development (Department of Agriculture, 2008; Tregurtha, 2009). The government subsidized inputs like inorganic fertilizers, agro-chemicals and improved seed varieties (Machingura, 2007).

According to Buthelezi (2007) and Tregurtha (2009), the beneficiaries of the MFPP had to observe these conditions: Fields characteristics included an area that receives a mean rainfall of at least 500mm between November and April and has a potential of being irrigated, with soils effective rooting depth of at least 600 mm, and a gentle slope not exceeding 8%. For farmers to enjoy economies of scale, field sizes above 50 ha were required, and for inclusion purposes, the project had to be a contiguous block of land.

Households/farmers had to form cooperatives at village level to ensure that all households participate in the programme and encourage self-reliance after the end of the state support. These cooperatives or trust had to be registered, or in the process of registering as legal entities. Also, farmers had to ensure that the proposed fields were fenced to protect them from risks of crops destruction by livestock. Proposed fields had to be located close to access roads for easy movement of inputs and outputs from and to the market.

Participants had to develop production and marketing plans that indicate viable returns and had to be endorsed by the Department of Agriculture. In the business plan, gross margins should at minimum equal to 10% of the production costs. The Department of Agriculture had all the rights to recommend the best conservation agricultural practices in the production plan. As in the case of *Siyakhula* the government provides 100% start-up capital which then reduces annually by 25% of production cost for over five years as indicated earlier. At 0% state support, farmers were expected to be financially and technically self-sufficient. The roles played by the farmers included harvesting and marketing of their own produce (GRAIN, 2008). Through the *Uvimba* Bank the government would release funds needed by the farmers to purchase inputs and meet other farm expenses (GRAIN, 2008; Tregurtha, 2009)

2.8.3.3 Outcomes/progress

In years 2003/2004 and 2004/2005, the programme experienced heavy losses due to low productivity, averaging 1 ton of maize per hectare (Tregurtha, 2009). The low productivity was mainly attributed to late planting, adverse weather conditions and delayed transfer of funds to farmers to procure the necessary inputs (Tregurtha, 2009). Further, the project sites

did not meet the agronomic conditions set with respect to land size, rainfall and soil-depth, and communal farmers were not willing to give up their individual plot rights. In addition, production plans were poorly implemented, mechanization work was of poor quality, farmers 'resale of inputs, and farmers lacked knowledge of applying agro-chemicals (Tregurtha, 2009).

All these led to farmers' failure to pay back the required deposits in the first 2 years of the programme. Based on these mentioned challenges, the programme implementation strategies were revisited and amended in 2005/2006. These amendments yielded a great improvement in the yields in years thereafter. A study carried out by Tregurtha in 2009 indicated some positive results of the MFPP. These included increased food security, reduced public expenditure on food parcel packages, and improved farmers business and farm production skills. The MFPP also led to expansion of social and economic networks among all stakeholders. Although some successes were observed, by 2009, the programme was still faced with a challenge of farmers' failure to pay back the required deposits (Tregurtha, 2009). The conditional grants are not different from those of the Massive Food Production Programme (MFPP) as indicated later. Also, monitoring and evaluation of both Siyakhula and MFPP was done simultaneously (GoSA Information, 2008; Tregurtha, 2009).

2.9 Models previously used on performance to cooperatives

Moyo (2010) on her study "assess the performance of cooperatives" used descriptive analysis. Chibanda (2009) used cluster analysis in his study. He specified that the basic aim of cluster analysis is to find the "natural groupings", if any, of a set of individuals (cases or variables). He further stated that cluster analysis can be used in several ways, but the kind of cluster analysis utilised in his research was a way to form similar sets of variables rather than similar sets of cooperatives. The purpose of the analysis was, therefore, to draw inferences about theoretical propositions and not about a population of cooperatives.

Although previous studies used descriptive and cluster analysis, this study will make a use of descriptive analysis, linear regression model and propensity score method (PSM). As cooperative membership is likely not randomly distributed in the population, there is a need to be aware of selection bias. With that in mind, three different methods and models were used to reduce potential bias and identify the impact of cooperative membership on farm performance as accurately as possible. The first method was that large vector of control

variables, Xi, were estimated in the regression to reduce potential bias arising from observed heterogeneity being correlated with the error term. These include household demographic characteristics, household asset ownership, a social capital indicator and a market access indicator.

Secondly, a proxy variable was used to capture some unobserved effects. There might be various sources of unobserved heterogeneity, like differences in entrepreneurship, ability, motivation and risk preferences between cooperative members and non-members (Bellemare, 2012). Also, the household's willingness to pay (WTP) to become a cooperative member was used as additional control variable in the regression to proxy for unobserved effects and mitigate unobserved heterogeneity bias. Households' WTP was estimated through a bidding game, as explained above. The WTP measure is a reasonable proxy for unobserved factors like ability, motivation and entrepreneurship. It is likely redundant meaning to say, it is irrelevant for explaining farm performance if cooperative membership and unobserved ability, motivation and entrepreneurship would be controlled for (Wooldridge, 2002). In addition, WTP captures the variation in marginal utility derived from cooperative membership or treatment in general (Bellemare, 2012) and is likely to be closely related to unobserved ability, motivation and entrepreneurship such that potential correlation between the X's and the error term is reduced in equation (2) (Wooldridge, 2002). As unobserved factors such as ability and motivation are likely positively correlated with both cooperative membership and farm performance, this method is expected to lead to more conservative estimations of the main effects.

2.10 Chapter summary

The high population growth that is experienced in developing African countries as well as in South Africa, coupled with unequal allocation of resources and inheritance laws which result in land parcelling, contribute to environmental degradation as the growing pressure on the land pushes farmers (especially rural women) to overexploit wood, water and other resources in order to meet household requirements. Another challenge is that most smallholder producers lose a lot of money due to the quality of their products. The above challenges make traditional cooperative to fail and poverty increase in rural parts of the country. Most of small-scale farmers in South Africa have limited access to instruments of production, credit and information, and markets are often constrained by inadequate property rights and high transaction costs. Literature reveals that to create more jobs in South Africa, wages must be

lowered. As such, the firms (farms) would not hire more workers from the target groups than before. Rather, they would hire those who are not part of the problem to begin with namely, the skilled ones.

CHAPTER THREE

RESERCH METHODOLOGY AND ANALYTICAL FRAMEWORK

3.1 Introduction

The overall objective of the study is to assess the impact of primary agricultural cooperative membership on farm performance. The chapter commences by describing the conceptual framework, the study area in relation to its geographic location, physical features and the main farming activities in the area. The chapter also describes sampling procedures, analytical framework and the overall research process of the project. The chapter presents details of how the data is calibrated and also data models adapted in the analysis and the data specifications of the study.

3.2 Conceptual framework of collective action for smallholder farmers.

This paper assesses the impact of collective action on farm performance and on linking farmers to the market. To do so requires a conceptual framework to identify the commonalities and differences. Figure 3.1 gives a schematic overview of this framework, depicts the process that should lead to collective action and presents outcomes and threats that may result from a collective action. The framework is explained starting from the right-hand-side of the diagram below the dotted line.

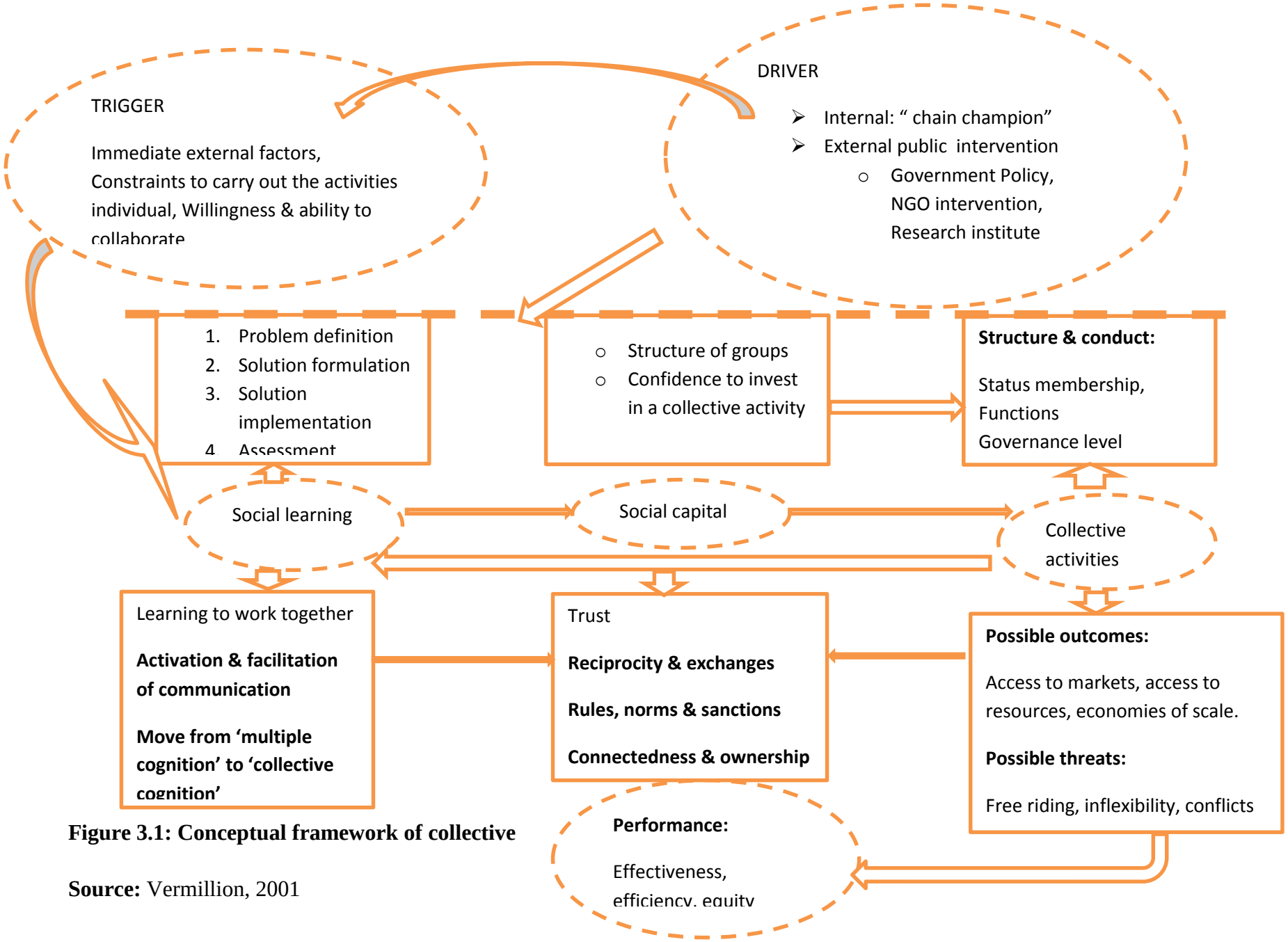

Figure 3.1: Conceptual framework of collective

Source: Vermillion, 2001

Vermillion (2001) defines collective action as "the coordinated behaviour of groups toward a common interest or purpose". In addition, within the groups, there must social capital as the facilitator of cooperation as it is shown in the Figure 3.1 above. People have the confidence to invest in collective activities, knowing that others will also do so. Johnson *et al.,* (2002) stated that where markets fail and transactions costs are high, social capital can make a significant contribution to farm performance by providing access to information and reducing the costs of contracting and coordination. Individuals and groups who can work collaboratively, and establish and maintain both trust-based relationships and networks of contacts will have an advantage over their competitors who are unable to work together.

Pretty and Ward (2001) stated that there are four central aspects in the formation of social capital, namely: (i) relations of trust; (ii) reciprocity and exchanges; (iii) common rules, norms and sanctions; (iv) connectedness, networks and groups. In addition, Koelen and Das (2002) described that the basis for the exchanges between the actors in a collective activity is formed by a process that is referred to as 'social learning', which is "the process through which groups of people (or stakeholders) learn: together they define problems, search for and implement solutions, and assess the value of a solution for a specific practice." This process entails the shift from what the authors refer to as 'multiple cognition' to 'collective cognition'.

Form the Figure 3.1, the initiation of the process of social learning and collective action is caused by a trigger. This can be found in many external factors ranging from natural disasters to price declines, and increased competition which are beyond the control of individual farmers. The performance of a market chain in the S-C-P approach can be measured in terms of the "three Es", namely: Effectiveness, Efficiency and Equity. According to Holtzman (1986) 'effectiveness' is defined as "the matching of supply and demand at each level of the production/marketing system." Effectiveness can be measured by the stability of supply, the maintenance of product quality, the duration of the delivery process, and the product variety and assortment. The term 'efficiency' here refers to a situation wherein resources are used optimally, i.e. where they create the most benefit and prices are in line with costs. The term 'equity' concerns the power relations in the market chain (Keizer, 2003). In an equitable market chain margins, bargaining power, and risk are distributed equally among the actors.

3.3 Mnquma local municipality

This section provides a general description of Mnquma Local Municipality in terms of its geographic location, history, land issues, livelihoods, resources and agricultural potential. This study focused specifically on three towns namely: - Butterworth, Ngqamakhwe and Centane of the municipality where the majority of the small-holder agricultural co-operatives are found.

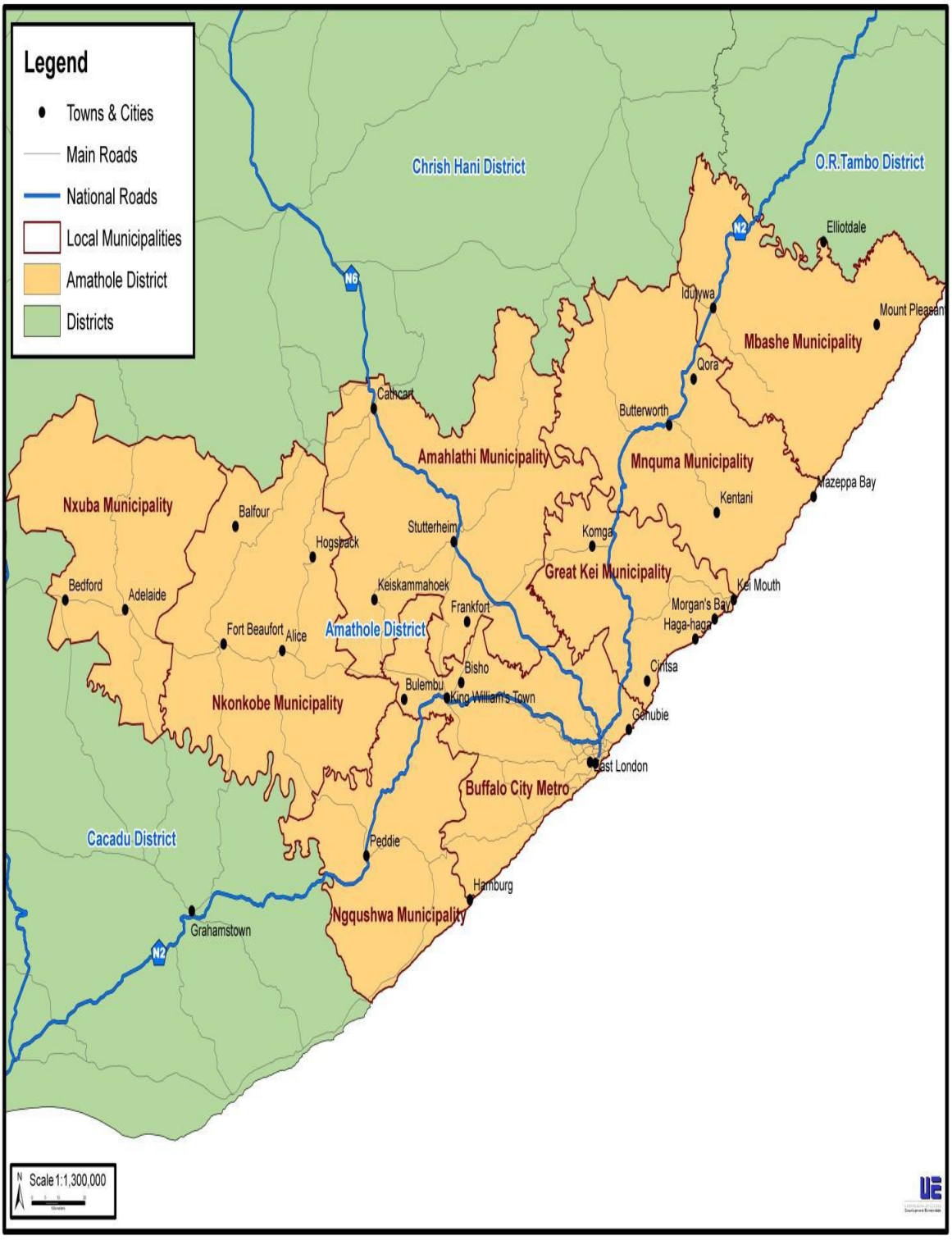

Figure 3.2: Map of the study area
Source: Google maps, 2013.

3.3.1 History background

The municipality falls in the zone of two historically conflicting races, which are the blacks and whites. The racial difference and conflict later manifested themselves in laws favouring whites to access key means of production whereas blacks were resettled in the former homeland reserves of Ciskei and Transkei with limited access to means of production (Nel and Davies, 1999). According to Nel and Davies (1999), Ciskei and Transkei reserves came to be known as *"homelands"*. The formation of these two reserves for the resettlement of thousands of people compounded differences, particularly in terms of the small size of landholdings allocated, increased rural densities and limited access to state support and infrastructure.

Consequently, the former homelands are characterised by extreme overcrowding and frequent environmental collapse. Land appropriation and uneven development regarding service provision characterise the municipality.

3.3.2 Demographic information

According to Stats SA (2011), Mnquma Local Municipality has a population of 252 390 which is 10.7 percent of the total population of Amatole District Municipality. The Municipality covers an area of 3270 square kilometers (Mnquma Municipality, 2011). The average population density is 77 persons per kilometre square (Stats SA, 2011). The majority of the population (81 percent) resides in villages, 0.1 percent on farms and 18.9 percent is in urban areas. Social services and government grants are the largest sources of cash income in the municipality, constituting 50 percent of the Gross Geographic Product. The main language is IsiXhosa spoken by 96.1%, followed by English 1.4%, then 2.5% other languages (Mnquma Municipality, 2011).

3.3.3 Settlement Patterns and Land tenure System

Mnquma local municipality falls under the Amatole District (Map 1), where it is one of the eight local municipalities in the district. Specifically, the study is based in Ngqamakhwe, Centane and Butterworth areas of the Mnquma Municipality, where land ownership is communal. Residential stands are allocated by the headman while grazing land is communally owned. The areas are located on high plateau and are serviced by gravel roads. Livestock get their drinking water from Rivers and small earth dams constructed in the areas. The villages are also benefiting from piped water that is pumped by the local municipality

from Gcuwa dam. Additional water for domestic use is also harvested from house roofs into storage tanks during rainy days.

3.3.4 Climate

The long term mean temperature is 18 degrees Celsius and annual rainfall range between from 600mm and 800mm, with 60 to 75% of the rainfall being received in summer (November to April) (ECDA, 2006). Summer temperatures range from 22 degrees Celsius in higher altitude areas to 27 degrees Celsius in lower altitude areas while winter temperatures range between 3 and 10 degrees Celsius (Gubu *et al.,* 2005). This represents good farming temperatures and can ensure good crop yields if this is complemented by good soils. Very low winter temperatures can result in winter frost in low lying areas.

3.3.5 General Farming Systems

Mnquma local municipality residents practice livestock rearing especially cattle, goats, chicken and sheep (StatsSA, 2011). According to the South African Department of Agriculture, Eastern Cape Province has the largest livestock herd in the country, with 30% of South Africa‘s cattle, 28% of its sheep, 28% poultry and 46% of its goats. Crop farming is also at subsistence level within the villages currently 30%, characterised by backyard gardens and medium sized plots where terrain permits. Studies on land use patterns in Mnquma Local Municipality shows that any crop can be grown in the rich soils given the stable climate that gradually changes from temperate to sub-tropical along the coasts (Gubu *et al.,* 2005). Maize however forms the dominant crop grown under rain fed system.

3.3.6 Irrigation systems

Community Project pumps water from *Gcuwa* dam, community dams and Community Rivers. Some of irrigation schemes are under sprinkler irrigation system powered by petrol generator pumps and networked by hosepipes infield. Some of the farmers in the study area use tanks for irrigation as identified by the picture below.

Figure 3.3: An example of the irrigation system that is used in the area.
Source: Data survey, 2014

3.3.7 Infrastructure

Villages in Mnquma Local Municipality are serviced mainly by gravel roads and very little by tar road to the nearby towns (Idutywa, Ngqamakhwe and Butterworth). Due to the steep terrain and high erosion levels, the gravel roads in the area require regular maintenance due to erosion of which that is rare to find. Land preparation is done using a tractor and oxen. More so, there are tractor drawn equipment at the farm, which includes mould board plough, disc harrow and a planter. The projects sites are not well fenced with barbed wire to protect crops against animal damage.

Figure 3.4: An example of infrastructure in the area.
Source: Data survey, 2014

3.3.8 Farming enterprises

The farmers within the municipality produce a wide range of crops. These include Cabbage, Spinach, Butternut, Pumpkins, Potatoes, and Green pepper, Carrots, Beans and Maize. Farmers decide on crops to be grown at any given time after a certain crop has been harvested or concurrently depending on land availability. A combination of four crop enterprises at any given period has usually been followed. Livestock farming is done individually by farmers to enhance their livelihoods. These include cattle, goats, sheep and chicken. Both on-farm and off–farm marketing of produce is done, as farmers try to maximize returns from their enterprises.

Figure 3.5: Enterprises in the study area.
Source: Data survey, 2014

3.4 Methodology and study instruments

This section summarises the sampling methods, data, data collection method and data analysis tools that were used during the course of the study. The study covers three specific objectives; hence three different techniques have been applied to answer specific questions of the study. The section describes the research design, sampling procedure followed during the study and the survey instruments used to extract data at each stratum.

3.4.1 Research design

The object of the dissertation was to assess the impact of primary cooperative membership of smallholder farm performance in terms of production and marketing of crops in Mnquma local municipality. A qualitative research design was used since this is an exploratory type of research (Marshall and Rossman, 1999). A qualitative research is defined as a systematic subjective approach used to describe life experiences and give them meaning. It examines uniqueness of individual's lived situations whereby each person has own reality; reality is subjective (Ritchie and Lewis, 2003).

3.4.2 Sampling procedure

A stratified random sampling technique was applied to select farmers from the Mnquma Local Municipality. Stratified sampling is a probability sampling technique whereby the researcher divides the entire population into different subgroups called strata, then randomly selects the final subjects proportionally from the different strata (Ritchie and Lewis, 2003). The research had two strata (cooperative farmers and non-farmer cooperatives), with 100 populations in each. The researcher chose a sampling fraction of ½. Then, 50 from each stratum were randomly selected. The sample size was the representative of smallholder crop farmers in Mnquma Local Municipality.

Figure 3.6: Numerators administering questionnaire using convenience method
Source: Data survey, 2014

3.4.3 Selection of the study area

The aim of the study was to assess the impact of primary cooperative membership on smallholder farm performance. The area was chosen because they have higher percentage of smallholder farmers on crop production and also the existence of cooperative with good potential.

3.4.4 Sample size

As way of improving data quality, a semi-structured questionnaire consisting of both close-ended and open-ended questions was administered for data collection. A total of 100 farmers were sampled for the purposes of this study, and household heads were interviewed. The random sample was composed of 50 households of cooperative farmers and 50 from non-cooperative farmers. The composition of the sample is shown in the Table 3.1 below:

Table 3.1: Sample size of the study cooperative members and non-members

Name of the area	Sampled cooperative members	Sample of non-cooperative members
Ngqamakhwe		
Ward 20	7	10
Ward 21	16	9
Sub total	23	19
Butterworth		
Ward 12	6	6
Ward 8	4	5
Ward 3	4	7
Sub total	18	14
Centane		
Ward 22	13	13
Sub total	13	13
Grand total	50	50

Source: Data survey, 2014

3.5 Survey data

A wide array of data sets was collected during the survey. Data pertaining to household head demographics was collected to enable farmer profiling and quantification of their production and marketing systems. Production and market related data was also collected to enable to check the challenges faced. The study utilized both categorical and continuous data. More so, a total of 100 smallholder farmers were interviewed. Table 3.2 presents a summary of the data that was collected during the study.

3.5.1 Dependent variables of the models

The study used farm performance as a dependent variable in the models. Farm performance was estimated using farm income, revenue and total value of inputs used during production process.

3.5.2 Explanatory variables of the models

Sixteen explanatory variables were collected to determine the impact of cooperative membership on smallholder performance. These include, age of household head, number of years spent at school, gender of household head, market access, access of capital, type of market, distance to market, availability of transport, size of land, access to credit, access to extension officer, access to information, farming experience, cooperative membership, labour availability and region.

Table 3.2: Definition and measurement of key variables modelled

Item	Variable measurement	Expected sign
Dependent variables		
Farm performance	Crop revenue	
	Value of inputs used	
	Farm income	
Independent variable		
Member of coop	Yes = 1 No = 0	+
Age of a HH	Year born	+/-
Farming experience	Number of years	+
Level of education	Number of years	+
Gender of HH	Yes = 1 No = 0	+
Willingness to pay	Actual amount (R)	-
Land size	Actual number in (Ha)	+
Access to credit	Yes= 1, No= 0	+
Access to information	Yes= 1, No= 0	+
Access to extension service	Yes= 1, No= 0	+
Access to markets	Yes= 1, No= 0	+
Type of market	Formal = 0, informal = 1	-
Distance to market	Km	+/-
Region	1 = NGK, 2 = BW, 3 = CNT	+

Source: Data survey, 2014

Age (AGE): This variable measures the actual age of the household head in years. Older farmers are more knowledgeable and are believed to be more efficient when it comes to the use of resources. Therefore, it is hypothesised that age of household head and performance are positively correlated.

Gender of household head: this variable is measured as dummy, where a value of 1 takes households headed by males and 0 females**.** Agriculture in communal areas usually revolves around women as men often migrate to urban areas to seek employment. Women are left in charge of the fields and livestock (FAO, 1995). It was expected that crop production would be more prevalent in female headed households than male headed households. A positive or negative sign was expected.

Number of years spent in school: this variable is measured as continuous**.** According to Najafi (2003), number of years spent at school by the household head could lead to awareness of the possible advantages of crop diversification. Najafi (2003) adds that education enables farmers to modernize agriculture by means of technological inputs because they are able to read instructions on input packs and understand the rationale behind different farming operations. As such number of years spent at school was expected to have a positive influence on farmer performance.

Access to credit: this variable is measured as dummy, where a value of 1 takes households that have access to credit and 0 otherwise. It is expected to influence performance positively because of the assumption that it improves the financial stability of household enabling smallholder farmers to purchase inputs so as to improve production.

Type of market: this variable is measured as dummy, where a value of 1 takes households that sell of formal markets and 0 for informal markets. A negative sign was expected, on the basis of the assumption that farmers who sell their produce on formal markets will be negatively affected on their performance.

Farming experience: This variable measures the number of years a farmer has been engaged in farming. It can be hypothesised that farmers with more experience are likely to allocate resources efficiently which then can result to higher crop yield and hence more revenue from the output sales. Thus, there is a positive correlation between farm performance and farming experience.

Distance to the market (MKTDISTANCE): Referring to the distance to the output buyers. The greater the distance to the market, the more severe the logistical problems such as transport and transport cost. Remote located farmers are likely to poor performance.

The co-operation (COOP): Indicated by sample households consisted of production and marketing advice, and is expected to have a positive impact on crop yield and revenues.

The size of land (LAND): Is included because transaction costs are largely fixed costs which can be spread across more output on larger farms.

Extension contact (EXTC): This variable measures whether farmers are in contact with extension officers more than twice a month or not. Extension service is an important

The dummy variable (DISTRICT): Is used to capture agronomic differences between the three study areas and is expected to have a positive impact because Ngqamakhwe (region = 1) is more fertile than Butterworth (region = 2) and Centane (region = 3).

The variable reflecting access to market information (MKTINFO): Access to information has been set as a dummy variable, where a household with access to information takes the value of one and a household that has no access to information takes a value of zero. Access to information was expected to influence farmer performance to production and marketing of crops.

3.6 Data collection

The research relied on both primary and secondary data. Sample survey techniques were followed where enumerators are trained to administer questionnaires to the research subject.

3.6.1 Primary data collection

Primary data collection employed various tools and methods namely personal interviews, observation and focus group discussions. Primary field survey of sampled farmers who are members and non-members was conducted to gather information about production and marketing activities. The data collection was made during the period of July and October 2014. Two enumerators were appointed for the purpose of data collection.

3.6.2 Method of data collection

A structured questionnaire was designed and administered within the study area. The questionnaires were mainly open-ended and closed questions written in English. This allowed the respondents to elaborate and support their answers, as this is exploratory type of research. Though the questionnaires were written in English, they were administered by the researcher and a colleague, interpreting them in Xhosa where there is a need.

3.6.3 Secondary data collection

Data from published and unpublished was obtained from Department of Agriculture and from the internet. Any information relevant information related with the research objectives.

3.7. Methods of data analysis

This section seeks to answer the major objectives of the study, whose aim is to give insight on what it means to be cooperative member and non-members. Data analysis techniques adopted give a detailed coverage of the farmer's characteristics and benefits from cooperative and their challenges on production and marketing of crops. Table 3.4 presents a summary of the objectives and the analytical tools used in the study:

Table 3.3: Summary of study objectives and analytical tools

Specific objective	**Analytical tool**
1. Describe and assess the main characteristics of the smallholder farm sector in Mnquma Municipality of the Eastern Cape in South Africa.	Descriptive statistics Cross tabulation
2. To assess the impact of primary cooperative membership on smallholder farm performance	Linear regression (LM) Propensity score matching (PSM)
3. To describe the marketing channels of the smallholder farmers in the study area	Descriptive statistics Cross tabulation
4. To identify key constraints for the study famers.	Descriptive statistics

3.7.1 Descriptive statistics

Descriptive statistics are important to have clear picture of the characteristics of sample units. By applying descriptive statistics one can compare and contrast different categories of sample units with respect to the desired characteristics. In this study, descriptive statistics such as mean, standard deviation, percentages and frequency of occurrence were used along the econometric model to analyse the collected primary data. Moreover, descriptive statistics was used to describe socio-economic characteristics of small-scale farmers, crop production and marketing, input output levels and income obtained from crop sales. Tables and figures were used to demonstrate in the performance indicators for non-members and members. That provided on how the members and non-members differ in terms of production and marketing behaviour.

3.7.2 Model specification

The main objective of the study is to assess the impact of cooperative membership on farm performance amongst crop farmers. A linear regression model was chosen for this study because of the dependent variable being of count data. Different studies have pointed out that farm performance can be determined by the level of revenue, farm income and the total value of inputs used.

In addition, the propensity score matching (PSM) was used to analyse the same objective to avoid biasness. The PSM measures the causal effect of cooperative membership to improve performance. The impact of cooperative membership on outcomes such as performance is assessed at the household level. Both models are specified below.

3.7.2.1 Linear regression models

In order to assess the impact of cooperative membership and socio-economic variables on farm performance (revenue, income and value of inputs used), a two simple linear regression models ware used in the following type:

Y = F (age, gender, farm experience, level of education, cooperative membership, access to extension service, access to information, access to credit, distance to market, type of market, ward, labour, and capital)

The model is specified as:

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_{8,\ldots\ldots} X_n + \mu)$ ..... (1)

Where *Y* is an index of farm performance, which is based on the crop revenue, value of inputs used and farm income generated by the farmers. The *X's* represent various socio-economic and production and environmental factors which are expected to exert some influence on the household farm performance. The error term, μ, is included to represent the unexplained variations.

The equation (1) can then be specified as follows:

$$Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Economic theory predicts direct relationships between a vast array of socio-economic and community variables and the results of labour force participation, in this case engagement in agricultural production of smallholder farmers. The elements of the specific equation (2) can be defined as follows:

β_0 = Intercept
$\beta_1, \beta_2, \ldots\ldots\ldots \beta_8$ = Regression coefficient
$X_1, X_2, \ldots\ldots\ldots X_8$ = Independent variables
μ = error term

The model was estimated to identify the impact of cooperative membership on crop revenue, value of inputs used, and farm income. Since many variables were included in the analysis, the likelihood of correlation among independent or predictor variables is high. For this reason, the test of multicollinearity was applied. Assuming two variables, X_1 and X_2, collinearity is suggested if:

$$X_1 = \lambda X_2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

However, equation (3) demands that a more robust function be developed to cater for the several predictor variables in the model. This can be presented as:

$$\lambda_1X_{1i} + \lambda_2X_{2i} + \lambda_3X_3 + \lambda_4X_4 + \lambda_5X_5 + \lambda_6X_6 + \lambda_7X_7 + \lambda_8X_8 = 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where λ_1 are constants and X_{1i} are the exploratory variables that might be linearly correlated.

3.7.2.2 Propensity score matching (PSM)

The study considers the selection bias as a sample selection problem and applies propensity score matching (PSM) to estimate the average treatment effect (ATE) of cooperative membership. This involves matching cooperative members or treated households with non-members or control households that are similar in terms of observable characteristics (Angrist and Imbens; 1996; Imbens, 2004; Caliendo and Kopeinig, 2008). PSM refers to the pairing of treatment and control units with similar values on the propensity score, and possibly other covariates, and the discarding of all unmatched units (Rubin, 2001). It is primarily used to compare two groups of subjects but can be applied to analyses of more than two groups.

Generally, if a treated subject and a control subject have the same propensity score, the observed covariates are automatically controlled for. Therefore, any differences between the treatment and control groups will be accounted for and will not be a result of the observed covariates. Following the notation in the evaluation literature, let:

Y_0 = Outcomes of non-treated subject

Y_1 = Outcome of the treated

It is also important to define the following two treatment status variables for the same population unit:

D_0 = if the farmers do not receive treatment

D_1 = if the farmers receive treatment

For each group of farmers, we have $D_0 + D_1 = 1$ because each group of farmers can only receive one treatment at the same time. Hence,

$D_0 = 1 - D_1$

It is important to note that the two potential outcomes, and defined above are not simultaneously observable for any given group of farmers. Only the potential outcome that correspond to the treatment status which has its value equal 1 is observed.

What one always observes unconditionally for any given population unit are the three treatment status variables D_0 and D_1 and the outcome variable Y. However, the observed outcome variable y can be written as a function of unobserved potential outcome variables and the treatment status variables as:

$Y = D_1 Y_1 + (1 - D_2) Y_1$ …… (1)

The differences $Y_1 - Y_0$ give us the unit level impacts of cooperative membership.

Since two of the potential outcomes (the counterfactuals) are always missing, one cannot compute the unit level treatment effects. However, it is possible to estimate the mean of the distribution of each unit level treatment effect in the farmers. This mean is referred to in the literature as average treatment effects (ATE).

The following two average treatment effects parameters measure respectively the mean impact of cooperative membership compared to non-membership. See equation 2 below.

$ATE_{1\rightarrow 0} = E(Y_1 - Y_0)$……..…… (2)

For this study, kernel matching methods was used in the analysis of the data. In this method, every treated subject is matched with the weighted average of the control subjects. The weights are inversely proportional to the distance between the treated (members of cooperative) and control group's (non-members) propensity scores.

The essence is to explore impact assessment where it exists. The main aim was to identify the average treatment effect on the treated (i.e., the effect of cooperative membership on farm performance).

$\Delta = E(Y_1 - Y_0 // D = 1) = E(Y_1 // D = 1) - E(Y_0 // D = 1)$ ……..…….. (3)

The first term on the right hand side of equation 3 is observable. However, the second term on the right hand side cannot be observed (i.e., what the members of cooperative would have experienced had they not been members and received support). Matching was used to estimate $E(Y_0 / D=1)$. However, for matching to be valid, certain assumptions must hold. The fundamental assumption underlying matching estimators is ignorable treatment assignment (ITA) (Rosenbaum and Rubin, 1983).

This assumption is represented by

$(Y, Y) \perp D // X^*$ ……... (4)

Where X^* is a vector of variables that are unaffected by the treatment. This assumption states that, conditional on a set of observables X^*, the respective treatment outcome is independent

of actual treatment status. In empirical work, X^* usually contains pre-treatment variables and time-invariant individual characteristics.

Since the study was estimating the average treatment effect on the treated, condition (3.2) can be weakened to the following mean independence assumption involving only Y_0.

$E(Y_0 // X^*, D) = E(Y0 // X^*)$…… (5)

Counterfactual. What would have happened to the participants' group had they not participated? The key assumption of this framework is that individuals selected into treatment and non-treatment groups have potential outcomes in both states: the one in which they are observed and the one in which they are not observed (Rubin, 1978).

Propensity score is the probability of taking treatment given a vector of observed variables.

$P(x) = Pr[D=1|X=x]$…….…….. (6)

If say take individuals with the same propensity score, and divide them into two groups (those who were and were not treated), the groups will be approximately balanced on the variables predicting the propensity score.

Unconfoundedness Assumption. This implies that the treatment (membership in cooperative) is random conditional on some set of observed characteristics (X). This allows for "selection on observables". The common support assumption guarantees that each treated unit (a participant/member) can be matched with a corresponding control unit (non-participant/ non-members). The average treatment effect is then calculated as the mean within-match difference in the outcome variable between the treated and untreated units. Unlike regression techniques, matching estimators do not impose any functional form restrictions, nor do they assume a homogenous treatment effect across populations (Zhao, 2005).

3.8 Reliability and validity

Reliability and validity are used in connection with measurement of data, and influence what is learned about phenomenon being studied and the meaningfulness of conclusions drawn from data collected (Leady and Ormrod, 2005). Even though Sheppard (2004) suggested that reliability and validly were frequently related to quantitative research, however (Duffy, 1987)

opposed that reliability is not a preserve of quantitative research alone and that both qualitative and quantitative researchers seek reliable and valid results but use different approaches. For Lewis and Ritchie (2003), the concept reliability meant sustainable while validity denoted well grounded. However, in the opinion of Sheppard (2004), a qualitative researcher focuses more on valid data that represent a true picture of what is being investigated, while the quantitative researcher focuses heavily on reliability.

Leedy and Ormrod (2005) stated that there is no measure that has perfect validity and reliability. In support of this statement, Sheppard (2004) and other authors like Cohen, Manion and Morrison (2007) explained that it was not possible for research to be 100% valid because of in-built standard error in quantitative research and bias from subjectivity, opinions and attitudes under qualitative research. Reliability and validity of data need to be maximised through the use of appropriate data collection techniques that yield information that is relevant to the research (Neuman, 2006).

3.8.1 Reliability

The goal of reliability in a study was to minimise errors and biases (Yin, 1989). According to Sheppard (2004), reliability has to do with how reliable the instruments are and the conditions under which the tool is used. Described differently, reliability has to do with stability, and assesses the results that would be yielded if a data collection tool was administered to the same individual on different occasions. Reliability ensures that the instruments gather measurements that are consistent.

Reliability in quantitative research differs from that in qualitative research (Cohen *et al*., 2007). On the one hand, reliability in quantitative research is considered replicability, consistency and dependability over time, instruments and respondents (groups). It is also concerned with how precise and accurate the measurements are and ensure stability and consistency. On the other hand, reliability in qualitative research is considered debatable and while some authors have argued that qualitative research cannot be replicated or validated, others hold on that reliability can be addressed by striving for accuracy in data reporting.

In this study, reliability was improved by having clearly defined constructs, using precise levels of measurement and using multiple indicators. Data collection instruments (questionnaire and interviews) developed was pre-tested to ensure accuracy and consistency.

Cohen *et al.,* (2007) stated that reliability is a necessary precondition of validity and validity may be a sufficient but not a necessary condition for reliability.

3.8.2 Validity

Validity in relation to research is a judgment regarding the degree to which the components of the research reflect the theory, concept, or variable under study (Streiner and Norman, 1996). The validity of the instrument used and validity of the research design as whole are important criteria in evaluating the worth of the results of the results conducted. In addition, validity assesses the accuracy, correctness or precision of whether measures attained for an attribute are what are supposed to be measured (Leedy and Ormrod, 2005). Internal validity refers to the likelihood that experimental manipulation indeed was responsible for the differences observed. While the external validity refers to the extent to which the results of the study can be generalized to the larger population. Moreover, validity also entails demonstrating some correlations with other related variables (Bovaird and Embretson, 2009).

However, Cooper and Schindler (2003) contended that it is challenging to satisfy the test of validity as often the researcher does not know the true differences without confirming knowledge. Specific threats to validity have thus been advanced to improve validity of data namely internal, external and construct validity, content validity, and criterion related validity and construct validity. The main threats to validity are discussed below.

3.8.2.1 Construct validity

Construct validity pertains to the accuracy of the instruments for data collection and how well the results measured fit the theories being tested (Gravetter and Forzano, 2009). The researcher made predictions based on existing theoretical background and linked them to relationships in similar conditions (Sheppard, 2004). Where the characteristics being measured were not being directly observed, they were inferred from the behaviours of farmers (Leedy and Ormrod, 2005), for example satisfaction with information services.

According to McBurney and White (2007), threats to construct validity are caused by the relationship to theories. Construct validity is difficult to achieve because there may be many theories accounting for a relationship. Two main areas that pose threats to construct validity include loose connection between theory and method and ambiguous effect of independent variables. The latter may occur where all the respondents do not understand the

circumstances of the research in the same way, leading to ambiguity. The informants may also choose to act according to what they think the researcher wants instead of basing their actions on the purpose of the research. In this study, construct validity was addressed by presenting the operational definitions of both dependent and independent variable. Furthermore, data collection an instrument was also be pre-tested.

3.8.2.2 Criterion-related validity

Criterion-related validity measures the extent to which the results of an assessment instrument are related to another related standard that compares the measures to ensure that the construct is accurately represented (Leedy and Ormrod, 2005). There were two types of criterion-related validity, namely predictive and concurrent validity. Therefore this study addressed criterion-related validity through triangulation of data collection methods and instruments including a questionnaire, interviews and secondary data.

3.8.2.3 Internal validity

Internal validity looks at the research design and how well it eliminates bias (Lowe *et al*., 2002). In addition, it assesses the degree to which the independent variables interfere with the dependent variable (Beins, 2004). Internal validity applies to qualitative and quantitative research and examines the manner in which data obtained explains a particular issue and how alternative plausible explanations are excluded. Threats to internal validity include history, maturation, testing, instrumentation, statistical regression, selection, mortality, interactions with selection, ambiguity about the direction of causal influence and imitation of treatments.

3.8.2.4 External validity

External validity seeks to define the domains to which the study was generalised beyond the context of the study (Lowe *et al*., 2002). External validity measures how well the findings are related to other situations. In this study, all the data was collected within the same period to avoid external validity.

3.8.2.5 Face validity

Sekaran (2003) considered face validity to be a basic and minor index of content validity. Face validity focuses on expert judgement of the extent to which the instrument measures key dimensions of what they theoretically represent (Sheppard *et al*., 2004). According to Neuman (2006), face validity is the most basic kind of validity and the easiest to achieve, as the indicator used is the judgement by the scientific community. Face validity in this study

was addressed by having some structured interviews with a uniform format and sequence. The study improved face validity by pre-testing the data collection instruments to minimise bias and to ensure that the questions on the instruments measured the true value of the variable.

3.8.2.6 Content validity

Content validity measures the extent to which a data collection instrument reflects the content domain in appropriate proportions, ideas or areas in the conceptual domain (Leedy and Ormrod, 2005). The present study addressed content validity by using data collection instruments that were fairly detailed and comprehensive, and encompassing the key areas covered in the research questions. Content validity was also addressed by providing definitions of key concepts and constructs that were studied (Neuman, 2006).

3.9 Ethics consideration

Ethical issues arise throughout the research process from the nature of the problem being investigated, the data being collected and from the data collection methods (Shaughnessy, Zechmeister and Zechmeister, 2003). Peil and Rimmer (1995) argued that in carrying out good science, scientists face challenges with gaining access, obtaining informed consent and ensuring that the effects after the research do not damage the individuals or the community.

Cooper and Schindler (2003) defined ethics as norms or standards of behaviour that guide moral choices about our behaviour or our relationships with others, and guide against harm or adverse consequences from research activities. Sekaran (2003) equated ethics to a code of conduct or expected societal norm of behaviour while conducting research and pointed out that ethical conduct applied to the researcher, participant, sponsor and the analyst. Therefore, failure to adhere to ethical standards could undermine the entire research process and may result in painful legal or financial consequences (Shaughnessy, Zechmeister and Zechmeister, 2003).

Ethics committees have been established to review research and professional ethical codes of ethics and standards have been formulated to assist members of specific associations or professions. Examples include the code of ethics for social scientists that highlight the decision to conduct the research, informed consent, provision of information, voluntary consent, and protection of rights and welfare of participants, deception, confidentiality and anonymity, benefits to participants, effects on communities and interpretations and reporting

of research results. Another example is the ethical guidelines and principles drawn up by the UFH that provides guidance to authors and researchers regarding what is required and problems to avoid. The UFH has also set up an ethics committee that ensures research proposals address ethical issues. In this regard, the proposal for the present research was cleared by the UFH research committee.

The researcher was guide by the epistemic imperative of science and obtained the consent of respondents before gathering data, at all the times. In the research report the anonymity, confidentiality and dignity of the respondents was carefully protected. No direct attempts were be made to implicate or incriminate any particular individual or organisation in the study and participants would be given access to the final report. The researcher sought the informed consent of all respondents. It was clarified to the participants that their participation is of voluntarily basis and that they are free to discontinue their participation at any time during the research process.

3.10 Chapter summary

In this chapter, the methods that were used to analyse data were presented and discussed. The study was conducted in Ngqamakhwe, Centane and Butterworth villages in Mnquma Local Municipality of Eastern Cape. Household questionnaires were administered in the villages. Cooperative farmers and non-cooperative farmers were interviewed. A total of 100 participants were sampled. A stratified random sampling procedure was applied in order to select a sample from cooperative and non-cooperative members. To collect the data, a questionnaire was administered to the respondents through face-to-face interviews. The advantages that are associated with face-to-face interviews have been highlighted within the chapter. For analysing data, descriptive statistics, linear regression model and propensity score matching were chosen and their advantages have been highlighted. The results of the research are presented in the next chapter.

CHAPTER 4
PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the results of the analyses of the survey data. The chapter begins with the presentation of descriptive analysis on the demographic and socio-economic characteristics of the smallholder farm sector of Ngqamakhwe, Butterworth and Centane all of Mnquma Local Municipality of the Eastern Cape. However, in order to assess the impact of cooperative membership on farm performance, the study utilised the data on the head of the households' demographic backgrounds, farm production costs and output market access.

4.2 Demographic and socio-economic characteristics of the smallholder farm sector

The overall objective of this study is to assess the impact of cooperative membership on farm performance. The specific aim is to identify the marketing channels that are used by the farmers in the area and also their major constraints with regards to crop production and marketing. To achieve this aim, a field survey was conducted on smallholder crop producers. In this chapter the results of the analysis of survey data based on the foregoing objectives and research questions are presented. The findings presented in this chapter are in respect to the demographic and socio-economic settings followed by a presentation of the findings in respect of the specific objective to undertake a comprehensive description of the farming system. The cropping patterns, assets ownership and resource use as well as challenges are identified. The results of the inferential analysis form the last part of this chapter.

4.2.1 Demographic characteristics

The demographic characteristics are important in determining the extent to which they influence farmers' responses in the study. In this section, household head's aspects such as gender, age, marital status and number of years spent at school are discussed. Makhura (2001) mentioned that these aspects are important because the main household activities are coordinated by the household head and the head's decisions are most likely to be influenced by such demographic aspects. The section further presents and analyses results of the household sizes and dependency values. According to Randela (2005), demographic characteristics of households are essential when analysing economic data because such factors influence the households' economic behaviour. As such, it is relevant to include household demographic attributes in analysing the impact of cooperative membership on

production and marketing of crops in Mnquma local Municipality. Characteristics of both members and non-members of cooperatives are analysed. Table 4.1, shows the demographic characteristics of household heads.

Table 4.1: Demographic characteristics of sampled farmers

VARIABLE	**NON-COOPERATIVE MEMBERS(n=50)**				**COOPERATIVE MEMBERS (n=50)**			
Age	**MAX**	**MIN**	**MEAN**	**SD**	**MAX**	**MIN**	**MEAN**	**SD**
	1984	1928	1959	12.94	1980	1940	1958	10.49
Gender	**Non Cooperative Members (%)**				**Cooperative Members (%)**			
Male	43.1				56.9			
Female	67.9				32.2			
Level of education (years)	**MAX**	**MIN**	**MEAN**	**SD**	**MAX**	**MIN**	**MEAN**	**SD**
	15	0	7.160	4.15	20	2	8.240	4.65
House Hold Size	**MAX**	**MIN**	**MEAN**	**SD**	**MAX**	**MIN**	**MEAN**	**SD**
	12	3	5.80	2.03	13	1	6.10	2.44
Primary Occupation	**Non- coop Members (%)**				**Non- coop Members (%)**			
Farmer	64				72			
Wage Employment	18				18			
Unemployed	18				10			
Marital status	**Non- coop Members (n = 50)**				**Non- coop Members (n = 50)**			
Single	7				16			
Married	28				29			
Divorced	13				4			
Widowed	2				1			

Source: Results from SPSS (Version 22) generated from field survey, 2014
Key: Maximum (MAX); Minimum (MIN); Standard deviation (SD)

4.2.1.1 Age

The household heads 'age can be used as a proxy to explain the farmer's experience in farming. In other words, age of the household head is a very crucial factor since it reflects whether the household benefits from the experience of the older person or based on their decisions on the risk taking attitudes of younger farmers (Makhura and Mokoena, 2003).

Table 4.1 shows the age characteristics of the interviewed households. The minimum age of household heads on non-cooperative members and members was 1928 and 1940 respectively. The maximum age of household heads on non-cooperative members and members was 1984 and 1980 respectively. The mean age of interviewed farmers was 1959.18 for non-cooperative members and 1985.08 for cooperative members. In overall, the dominated age group of the interviewed farmers in both groups was old age with a mode of 1958 on non-members and 1955 for members.

These findings suggest that agriculture in the rural smallholder farming is mostly done by older people. The age of the farmers is likely to indicate the farming experience and may improve exposure to farming practices. The results also suggest that younger farmers may not be interested in participating on agricultural activities, or they might be migrating to urban areas in search of jobs on non-agricultural industries.

4.2.1.2 Gender

Prakash (2003) revealed that gender is an important factor due to its influence on traditional farming. However, when it comes to farm performance it is difficult to predict. There could be so many factors affecting farm performance like the type of farming system or access to resources like credit and extension services. Table 4.1 summarises the gender distribution of the interviewed smallholder farmers who are members and non-members of cooperatives in Mnquma. Also the results are presented by the Figure 4.1 below.

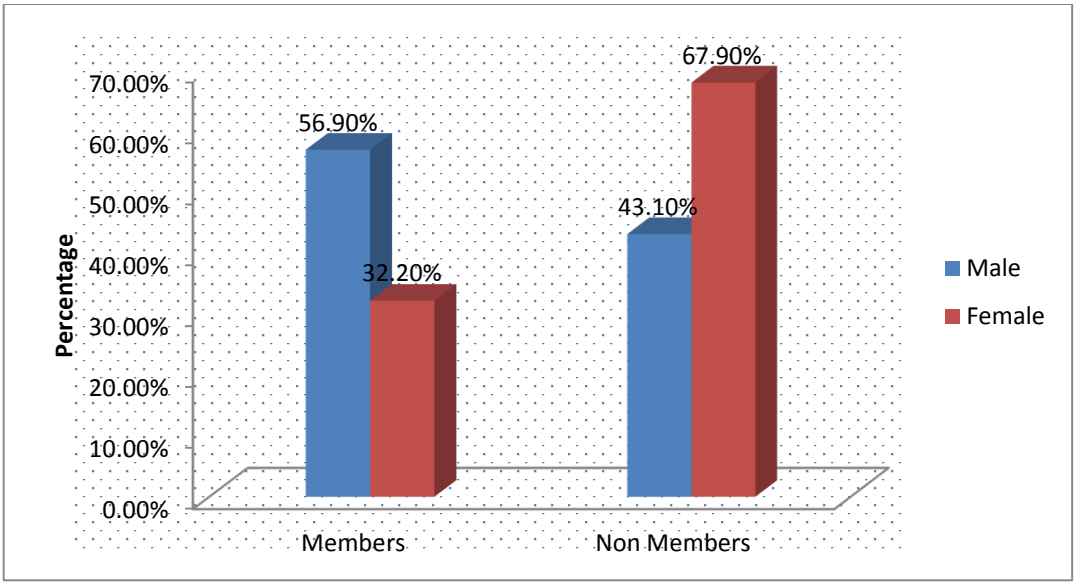

Figure 4.1: Gender of household head
Source: Results from SPSS (Version 22) generated from field survey, 2014

In both groups, there was a fair distribution of gender of male-female; on non-members (43.1% - 67.9%) and members (56.9% - 32.2%). However, there were more males participated in the study than females on members. This can be attributed to the fact that most of the households in the study area were headed by men; therefore males were the most likely to be the respondents. There was a slight difference in the case of non-members where 56.9% were females and 32.2% were males.

Tazeze et al., (2012) stated that male headed households are more likely to adapt to crop variety and crop diversification thus male headed households perform better. The reason behind is that male headed household are quite flexible when it comes to searching improved crop varieties. In addition, male headed households have higher probability to adapt to unfavourable conditions because; much of the farming is done by males while females are involved in processing.

4.2.1.3 Household size

Availability of labour to carry out "labour-intensive" agricultural operations is greatly influenced by household size. The household size values have an influence on marketing since they affect consumption and production (Randela, 2005). Larger household size discourages selling because the household needs to supply household consumption before it decides to sell. It becomes even more difficult to produce and sell where the household is comprised of either very old or very young members who cannot assist with farming.

In this study, household size was considered as the number of individuals who resides with the respondents. The distribution of respondents by their household size is presented in Table 4.1. The mean household sizes were (5.80) on non-members and (6.10) to members. The study also revealed that household sizes were in the range of 1 to 13 per household. The maximum household size was 12 people per household under non-members and 13 on members. The household size is an indication of the quantity of labour available for use by households. Specifically, the mean household size for cooperative was 6.10 while that of non-members was 5.80 in the study area.

Taking household size as a proxy for labour availability to carry out farm activities, it can be inferred that the study farmers in the area had no problems with labour. Larger families mean that a variety of labour is available in the form of young, middle and elderly members (Phororo, 2001). Labour is an important factor when it comes to smallholder farming, because in most cases smallholder agriculture is labour intensive rather than capital intensive (Kirsten and Van Zyl, 1998). The results from the study indicated that farmers in the area had access to family labour and this may increase performance of farmers.

4.2.1.4 Education level of respondents

The level of education attained by a household head is important in farming given that it plays a crucial role in the adoption of new technologies. Also, the level of education is expected to enhance efficiency (Manciya, 2012). Similarly, according to (Bembridge, 1987), education contributes to the knowledge acquired by farmers which they can effectively put to use in their farming operations.

Education level attained by households head relates to the human capital and the ability to cope with modern farm “decision making” processes. Mather and Adelzader, (1998) noted that people with higher educational attainment are more knowledgeable and efficient in interpreting agricultural information. Therefore, it can be assumed that the ability of smallholder farmers to appreciate agricultural market trends is a strong driving force towards output maximization by smallholder farmers. However, Table 4.1 gives a profile of the household educational levels in showing the general literacy levels in the area.

The results indicated that the average mean for a number of years spent in school, for cooperative members is higher (8.2) compared to (7.2). The maximum number of years spent at school by non-members is 15 years and minimum is zero. This clearly shows that there are

farmers who did not even went to school who are not members of cooperatives. On the other hand, the maximum number of years spent at school by cooperative members is 20 years and the minimum is 2 years. This indicates that cooperative members are more educated than non-members. In clear essence, it can be implied that educated farmers are the one that mostly participate in cooperative business. It therefore means that the non-members may not be aware of the benefits for being part of cooperative members due to low levels of educational attainment

4.2.1.5 Description of households by occupation

From the study, occupation of respondents is important since income helps them to purchase some items for farming. Employment in off-farm and non-farm activities is important for diversification of sources of farm households' livelihoods (FAO, 1996). It enables households to modernize their production by giving them an opportunity to apply proper inputs and reduce the risk of food shortage during periods of drought. The results are presented in the Table 4.1.

For this study, occupation was divided into farmers, wage employment and the unemployed. The results indicated that cooperative members have higher number (72%) of people whom their primary occupation is farming compared to (72%) of non-members. In terms of wage employment both categories had the same number (18%). On the other hand, the unemployment rate was high by (10%) for members, while it was less (9%) for non-cooperative members.

The overall occupation results shows that, the majority of study farmers fall under the category of farmers (67%), wage employment (17%) and unemployed (16%). This shows that the majority of the study respondents were real farmers. The results are shown in the Figure 8 below.

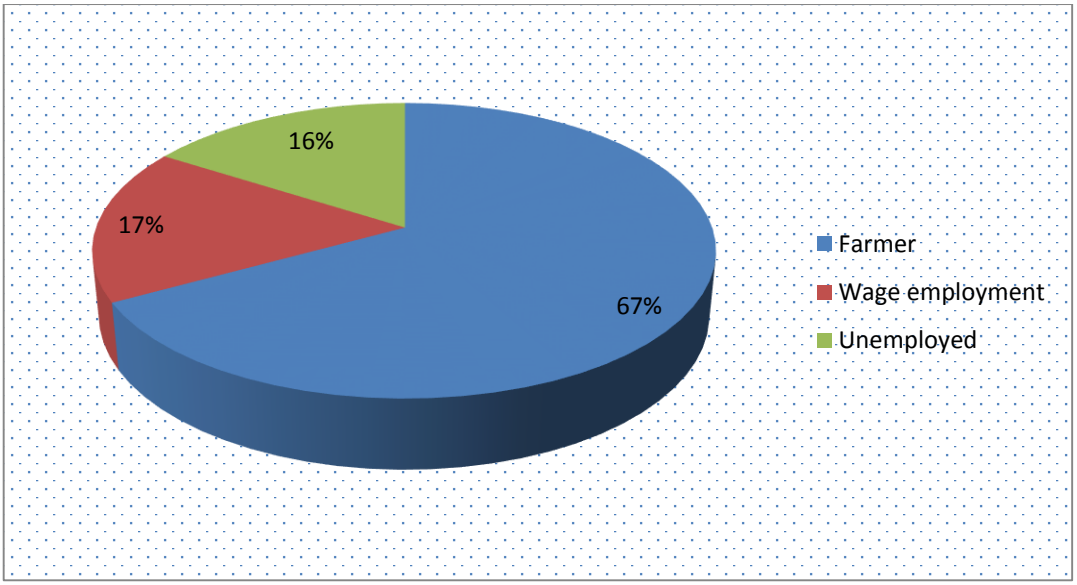

Figure 4.2: Overall employment status
Source: Results from SPSS (Version 22) generated from field survey, 2014

4.2.1.6 Marital status of households respondents

The marital status of households is usually used to determine the stability of a household in African families. It is normally believed that married household heads tend to be more stable in farming activities than unmarried heads. If this holds true, the marital status of household heads will affect agricultural production and hence, marketing. The results are presented on Table 4.1 and Figure 4.4 below.

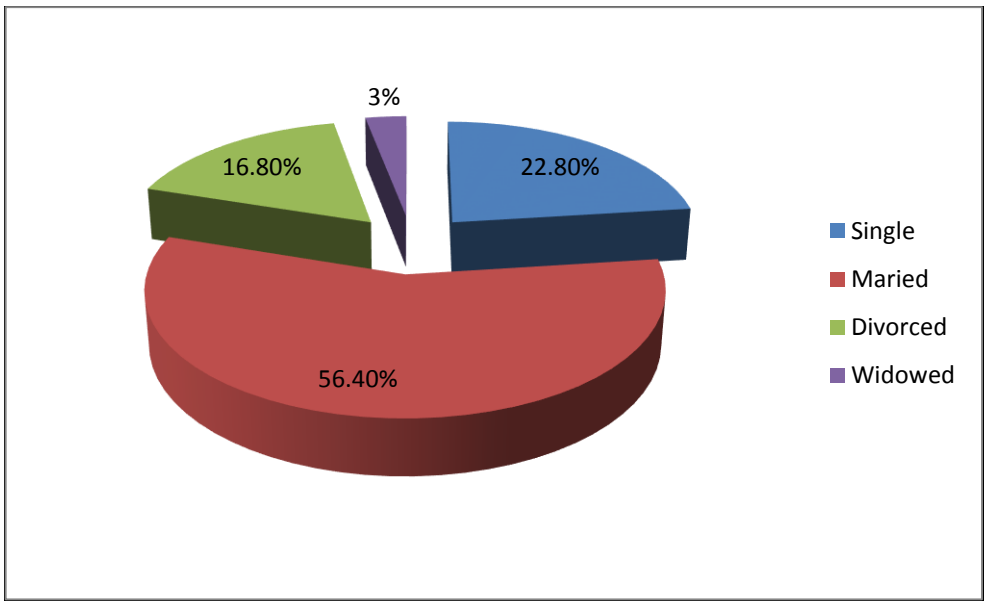

Figure 4.3: Marital status
Source: Results from SPSS (Version 22) generated from field survey, 2014

The findings indicated that the marital status of the respondents was divided into four main groups namely single, married, widowed and divorced. Figure 9 shows that 56.4 percent of the respondents are married, which indicate that such households are relatively stable in Mnquma municipality. The remaining percentage (43.6%) of respondents falls into the single divorced or widowed groups.

4.2.1.7 Farming experience

In this research, variable farming experience measured the number of years a farmer has been engaged in farming. It can be hypothesised that farmers with more experience are likely to allocate resources efficiently which then can result to higher crop yield and hence more revenue from the output sales. The results are presented in the Table 4.1 above.

The results in Table 4.1 above indicated that the overall farming experience is 25 years compared to 11 years for members of cooperative and 10 years for non-members. This means that the members of cooperatives are more experienced in terms of farm activities than non-members.

4.2.2.1 Source of income

Previous studies show that the majority of small-scale farmers have limited other sources of income because, their primary occupation is farming. However, although agriculture has been playing a major role in providing employment in rural areas, it has been paying low wages (Simbi and Aliber, 2000). The results of the study indicated that in most cases, they depend on government support such as social grants child grants, pensions, old age grant and disability grant. The results are presented in Table 4.2 below.

Table 4.2: Distribution of household's source of income

Variables	Non-cooperative members		Cooperative members	
	%	Mean R/year	%	Mean R/year
Disability grant	45.8	3432.00	54.2	4056.00
Salary	56.5	32470.00	43.5	80480.00
Old pension	49.1	9984.00	50.9	9048.00
Remittances cash	40	1040.00	60	1620.00
Child support	47.1	2952.00	52.9	3818.04
Hawking food	50	40.00	50	96.00
Spaza shop	83.3	584.00	16.7	1440.00
Taxi	33.3	960.00	66.7	1080.00
Plumbing	36.4	720.00	63.6	2760.00
Building houses	57.1	1320.00	42.9	1080.00
Crops kind	10.0	166.667	90.0	352.941
Crops cash	49.5	1089.13	50.5	1242.03
Animal cash	38.9	1837.00	61.1	3156.00
Animal kind	9.1	468.00	90.9	840.00

Source: Results from SPSS (Version 22) generated from field survey, 2014

From the results, non-cooperative members relied mostly on old age pension grant, which contributed to a mean of R9984.00 per year, followed by disability grant with a mean of R3432.00. On the other hand, members of cooperative households relied on salary, contributed to an average of R80480.00 per year to household income. However, in terms of cash crops, the members of cooperatives had higher income mean average of R1242.03 compared to R1089.13 of non-members per year. This shows that the members of cooperative benefited from being members since their income are much higher that those who are non-members.

4.3 Household assets ownership

Stroebel (2004) stated that the availability of agricultural related assets influences production and marketing decisions among smallholder farmers. That is, farmers who own farming related assets are more likely to produce and market their produce than those who lack assets. In this section, the household asset ownership results for smallholder cooperative members

and non-members are presented and analysed. The main aspects that are discussed include land ownership, farming implements and market transport.

4.3.1 Land

According to Ngqangweni and Delgado (2003), land that is available to smallholder farmers in South Africa is usually shared between residential and farming purposes. This situation leaves less arable land for farming purposes. In addition, most smallholder farmers do not own the land they farm on, even though they have rights to use it. Table 4.3 shows the minimum, maximum and mean land areas available to farmers.

Table 4: Distribution of household by land area used

Household size	**Non-cooperative members N = 50**	**Cooperative members N = 50**
Mean	5.80	6.10
Median	5.50	5.50
Standard deviation	2.0304	2.4432
Maximum	6	7
Minimum	1	3

Source: Results from SPSS (Version 22) generated from field survey, 2014

As shown in Table 4.3, the total amount of land available to farmers varies with the membership in a cooperative where farmer members have larger pieces of land. The larger pieces of land used by the cooperative members to grow crops in the 2013/14 season explain that these farmers practise agriculture on a larger scale compared to non-members.

The results indicated that the overall average size of arable land is 5.8 hectares for non-members and it is 6.10 for members of cooperatives. The maximum land used by cooperative members is higher 7 with the minimum of 3, while that of members is low 6 with the minimum of 1. This implies that the output produced by cooperative members was expected to be high since they are using a little bit more land.

The farmers were further interviewed on the ownership of the land they use for agricultural purposes and the results are illustrated in Figure 4.4

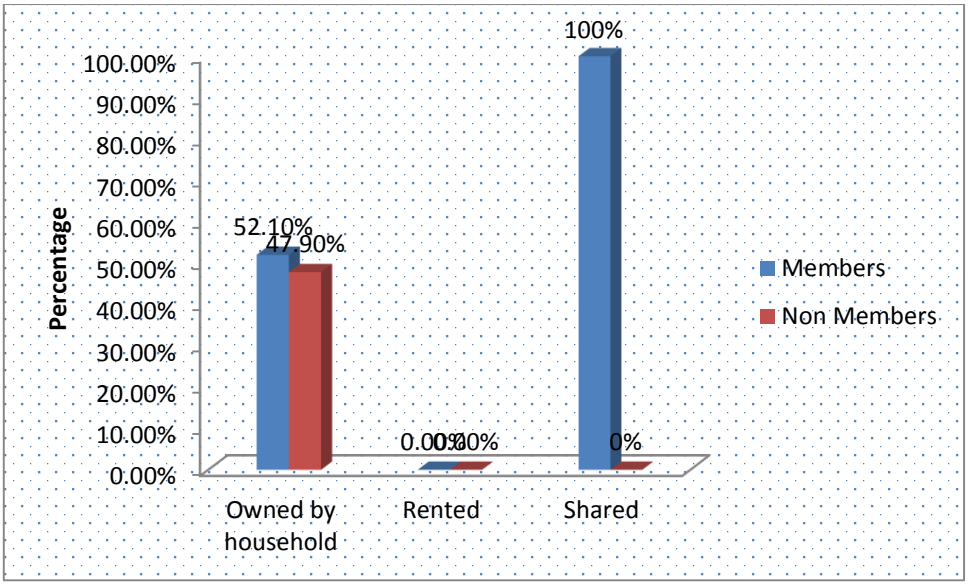

Figure 4.4: Land tenure system
Source: Results from SPSS (Version 22) generated from field survey, 2014.

Figure 4.4 shows that (50) 100 percent of the smallholder cooperative members interviewed shared the land. On the other hand, out of (50) 100 percent, only 47.9 percent shared the land while the rest (52.1%) owned the land. There were no farmers in the study area that shared land.

4.3.2 Cultivation implements

Availability of cultivation implements such as tractors, ploughs and hoes is expected to influence total output and hence marketing. Thus, farmers who own cultivation implements are more likely to cultivate all of the land available to them. In addition, ownership of ploughing equipment can lead to timely planting, which may lead to a larger total output. Of equal importance is the development of the technology that is used to cultivate the land by the smallholder farmers.

Table 5: Land cultivation implements

	Non-cooperative members		**Cooperative members**	
	Frequency	**%**	**Frequency**	**%**
Tractor	14	38.9%	22	61.1%
Work cow	21	40.4%	31	59.6%
Work horse	3	100.0%	0	10
Donkey	10	100.0%	0	0

Source: Results from SPSS (Version 22) generated from field survey, 2014

Table 4.4. Showed how cooperative and non-cooperative members in the Mnquma Local Municipality cultivated their land. From the results, it is evident that the farmers have not yet adopted improved methods of cultivations especially the non-members of cooperatives since only 38.9% used tractors and at least 61.1% of cooperative members used tractors. This indicates that the importance of production technology is not known among the sampled farmers. However, from the overall farmers who used tractors for cultivation, only 28% owned the tractors, whereas the remaining 72% hire and rented the tractors for use. Further investigation was made on the cultivation costs per hour, and it was discovered that the costs range from R250 to R300. Those farmers who use their own tractors for cultivation incurred lower costs compared to those who use hired tractors.

4.3.3 Market transport

Market transport is very important because it links the farmers to the consumers. The availability of own market transport influences the timely delivery of produce to the markets. This is unlike households who depend on hired transport, where transport can be unreliable, leading to delivery delays. In addition, the type of transport that is used by the farmers to the market determines how fast and in what condition the produce reaches the market. The type and availability of transport mainly affects the fresh produce because they deteriorate faster, once they are harvested (Bachmann and Earles, 2000). The results of the survey on market transport and the transport problems faced by smallholder are illustrated in Table 4.5.

Table 6: Transport used by farmers to markets and problems associated

Variable		Non-cooperative members (%)	Cooperative members(%)
Type of transport	Bike	0	0
	Truck	80	20
	Tractor	100	0
	Car	44.9	55.1
Ownership of transport	Hired individual	87	13
	Hired group	12.5	87.5
	Own transport	44.4	55.6
	Public transport	100	0
Problems	No problems	0	100
	Small size	10.3	89.7
	Lack of availability	93.1	6.9
	High cost	100	0
	other	37.5	62.5

Source: Results from SPSS (Version 22) generated from field survey, 2014

Table 4.5 shows that the majority of non-members use tractors (100%) and (80%). Only 44.9% of non-members use cars to transport their produce. For the members of cooperatives, the majority uses cars (backkie) (55.1%), while only 20% of them use trucks. In addition, the majority of non-members used public transport (100%) and hired transport individually (87%). Whereas, the members of cooperatives mostly used hired vehicle (group) (87.5%) and they own cars (55.6%).

The findings of this study with regard to problems of transporting the produce (see Table 4.5) showed that farmers had problems such as small transport size, high transport cost, lack of transport. Some of the farmers explained that some of the roads were impossible to use during the rainy season, especially the gravel roads. As a result of this problem, marketing of produce outside the communities is expected to be difficult. Farmers further stated that they did not have solutions to these marketing challenges. The results indicated that the main challenge that cooperative farmers were experiencing was small size of transport (89.7%)

while those that are non-members of cooperative indicated that the lack of transport was their main challenge to market their produce (93.1%).

4.3.4 Water resource for crop production

Water availability for both domestic and agricultural purposes is one of the key elements in determining the habitability of an area. While rain water is critical for crop and animal production, perennial rivers and dams are very important for sustainable domestic water supply in any community. However, increase in population, climate change and increased industrial and agricultural usage of water has created an ever increasing demand for the scarce resource. The results are presented in the Table 4.6 below.

Table 7: Source of water for crop production

Source of water	Non-cooperative members		Cooperative members	
	Frequency	%	Frequency	%
Tap/windmill	36	61	23	39
Tanker	4	18.2	18	81.8
River	4	30.8	9	69.2
Well	0	0	0	0
Rain	6	100	0	0
Spring	0	0	0	0

Source: Results from SPSS (Version 22) generated from field survey, 2014

From the result above (Table 4.6) indicated that households have access to domestic water, with majority of the households using more than one source of drinking water. In other words, dominant sources are piped water /taps, rivers and rainwater tanks. However, households are exposed to unsafe water sources such as rivers and dams when there is interruption in treated water supply.

4.4 Household socio-economic factors

Socio-economic factors involve the social and economic environment under which households operate. Understanding the factors under which smallholder cooperative members and non-members operate, is useful in understanding their market participation behaviour.

This section looks at factors related to labour, extension services, market information accessibility, social networks and market infrastructure.

4.4.1 Variable inputs used

The aim of this section was to check the differences between cooperative and non-cooperative members on the basis of inputs used during production of crops. The literature indicated that one of the most important roles cooperatives play is to purchase inputs collectively at a lower cost than non-members. The results are presented in the Table 4.7 below.

Table 4.7: Inputs used by farmers for crop production

Inputs	Description	Non-cooperative members (Freq. n=50)	Cooperative members (Freq. n=50)	Overall %	T-test
Hired labour	Yes	26	23	50	0.548
	No	24	27	50	
Seed	Yes	50	48	96	0.153*
	No	0	2	4	
Fertilizers	Yes	48	39	85.3	0.007***
	No	2	11	14.7	
Chemicals	Yes	34	25	54.8	0.012***
	No	16	25	42.2	
Other	Yes	45	40	83.3	0.161*
	No	5	10	16.7	

Note: *statistically significant 10% level,

**statistically significant 5% level,

***statistically significant 1% level.

Source: Results from SPSS (Version 22) generated from field survey, 2014

The results indicated that, overall smallholder farmers in Ngqamakhwe, Butterworth and Centane used most of the essential inputs in crop production. Improved seeds (96%), fertilizer (85.3%), Other which includes tractor (83.3%) for mainly clearing and ploughing for fields are among inputs used by smallholder farmers, chemicals (herbicide and pesticides)

(54.8%), and labour (50%). The independent t-test results indicate that there is a significant difference in the use of seeds and tractor between cooperative members and non-members at 5% and 1% levels respectively. Cooperatives had more access to seeds and chemicals than non-members. The results are presented in Table 4.7.

In addition, a t-test was carried in order to compare the two groups in terms of the farm income and farm revenues from crop production. The results are presented in Table 4.8.

Table 4.8: T-test for farm incomes and revenue obtained from crop production

Variable	Sample	p-value	T-test
Farm income	Cooperative members(50)	1.90	0.051***
	Non-cooperative members(50)	0.22	0.853
Farm revenue	Cooperative members(50)	1.53	0.11*
	Non-cooperative members(50)	1.02	0.963

Note: *statistically significant 10% level,

**statistically significant 5% level,

***statistically significant 1% level.

Source: Results from SPSS (Version 22) generated from field survey, 2014

Table 4.8 presents the results of the t-test amongst the two groups of farmers. The results indicated that farm income and revenues on cooperative members was significant at 1% and 10% levels respectively.

4.4.2. Market distance and road conditions

Farmers who are located closer to marketing points are more likely to market their produce compared to those who are located far away. This is because such farmers are more familiar with the markets and they face lower transportation costs (Dorward, Poole, Morrison, Kydd and Urey, 2003). Furthermore, the availability and conditions of the road to the nearest to marketing points determine accessibility of markets. In contrast, a lack of road connectivity can lead to delays in transferring produce to market areas, which can lead to quantitative and qualitative losses in farm produce. The results are shown in Figure 4.5.

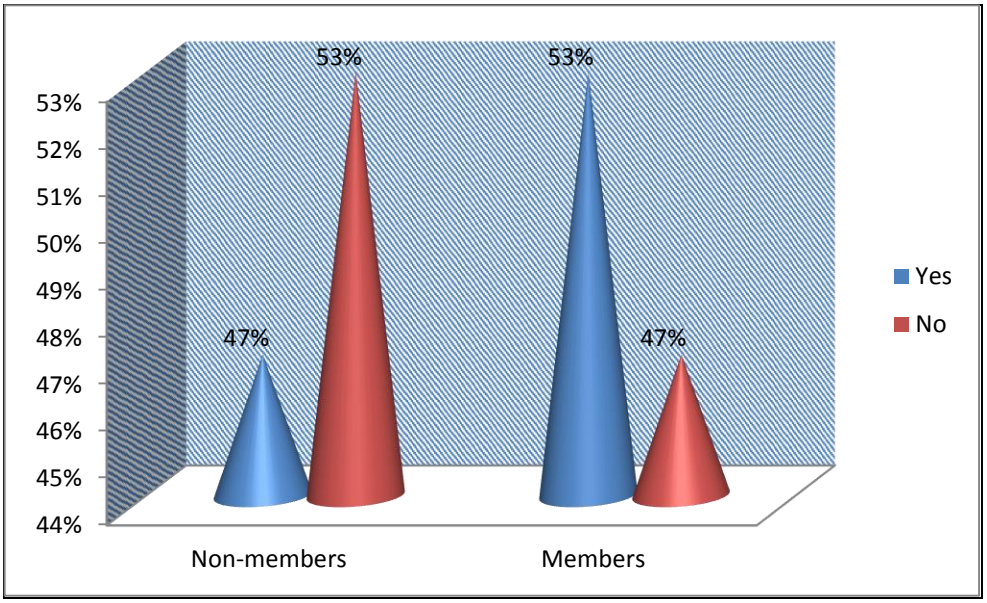

Figure 4.5: Access to good roads
Source: Results from SPSS (Version 22) generated from field survey, 2014

In this study, only 52.6%, and 47.6% of non-cooperative and cooperative members respectively have access to good roads. Some of the farmers explained that some of the roads are impassable during the rainy season, especially the gravel roads.

The respondents were also asked about the price they pay for a trip. The results indicated that members of cooperatives pay less (R30.56/trip) for transport, whereas non-members pay (R120/trip). This is because, members of cooperative travel less than a km to the marketing point since they sell to cooperatives and they market as groups. On the other hand, non-members of cooperatives pay higher cost since there is a huge distance between the production point and the selling point. They have to travel (30km) to get the market.

4.4.3. Market information

Market information is vital to market participation behaviour of smallholder farmers. Availability of market information boosts confidence of households who are willing to market their produce. In other words, market information allows farmers to take informed decisions. Thus, farmers who are more informed are more likely to participate in marketing. Also of equal importance is the source of market information because it determines accuracy of the information.

The results indicated that most of the farmers (65%) had access to market information and only 35% they did not have. In addition, most of the farmers who had an access to such

information were cooperative members (56.9%). Such farmers are more likely to participate in marketing because they are informed on the prevailing market conditions. With the given resources, these farmers can produce and provide the right type of goods that are required at the market.

Farmers were also interviewed on their main sources of information and the results are illustrated in Figure 4.6.

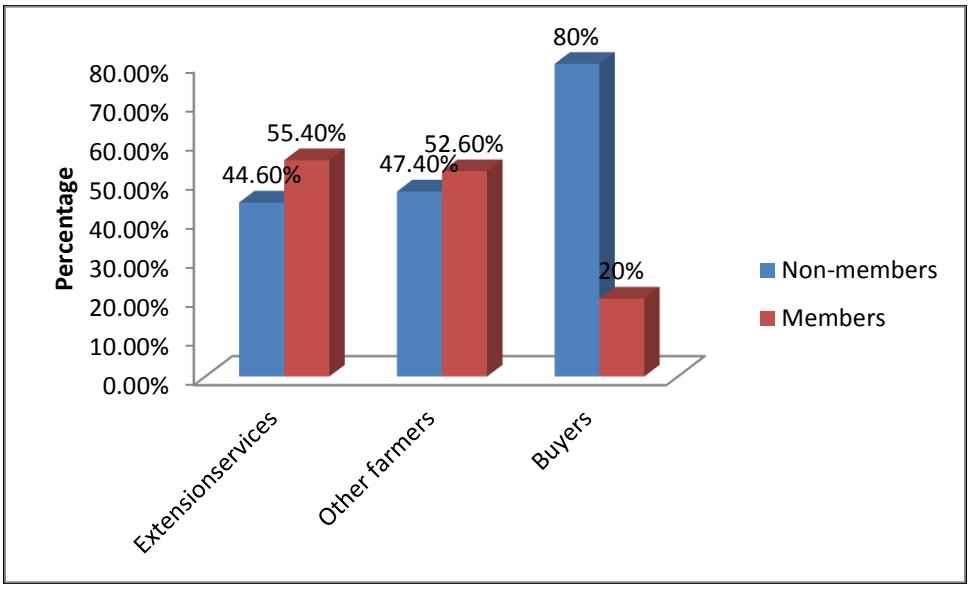

Figure 4.6: Main source of information
Source: Results from SPSS (Version 22) generated from field survey, 2014

The results from the research indicated that cooperative members mainly rely on farmer extension services (55.4%) market information. This is a true reflection that, extension officers in the study area mainly visit farmer groups than individual farmers. On the other hand, non-members of cooperatives depend mostly on buyers (80%) for market information.

4.4.5 Access to credit

Okurut *et al (*2004) mentioned that credit is an important instrument for improving the welfare of the poor directly through consumption smoothening that reduces their vulnerability to short-term income. It also enhances productive capacity of the poor through financing investment in their human and physical capital.

According to the results presented on Table 4.8, 56.9% and 43.1% of sampled cooperative members and no-cooperative members respectively had access to credit. This is a true reflection that one of the main functions for cooperatives is to provide credit at a lowest interest to their members. However, In South Africa, Spio (2002) points out that, financial intermediaries have not been able to accommodate small-scale rural farmers because it is

risky, costly and a difficult task associated with high transaction costs. Lack of information prevented large formal lenders who had capacity to serve the small farmers and the poor from doing so.

4.4.6 Access to extension service

Ngemntu (2011) mentioned that extension offices are considered the most crucial source of information among farmers. If this holds true, interaction with them is of great benefit to the farmers. The provision of extension officers in South Africa, particular Mnquma where the study has taken place is the government role. However, from the results, it appeared that there are smallholder farmers who do not have access to extension services. As shown in the Table 4.9; only 50% and 34% of cooperative members and non-cooperative members respectively received credit service. On the other hand, only 36% and 32% of cooperative members and non-cooperative members respectively received extension service.

Table 8 : Services provided to farmers

Service type		**Non-cooperative members**		**Cooperative members**		**Overall Sample**
		Freq. n= 50	**%**	**Freq. n= 50**	**%**	**%**
Access to credit	Yes	17	34	25	50	42
	No	33	66	25	50	58
Access to extension service	Yes	16	32	18	36	34
	No	34	68	32	64	66

Source: Results from SPSS (Version 22) generated from field survey, 2014

4.4.7 Farmer training

Training in agricultural technical skills remains a critical function of human capital development. This factor is however not getting attention in Mnquma Municipality. Villagers believe that government extension officers only offer much help to cooperatives and not individual farmers. This was revealed by training gaps in almost all farm operations that included planting and crop spraying. Most use their own experience to perform operations, but this has greatly affected critical operations like crop spraying. Survey data showed that farmers do not spray chemicals to protect their crops from pest damage due to lack of knowledge and resources as well. This compromises farmers ‘yields and quality, and consequently their participation in markets.

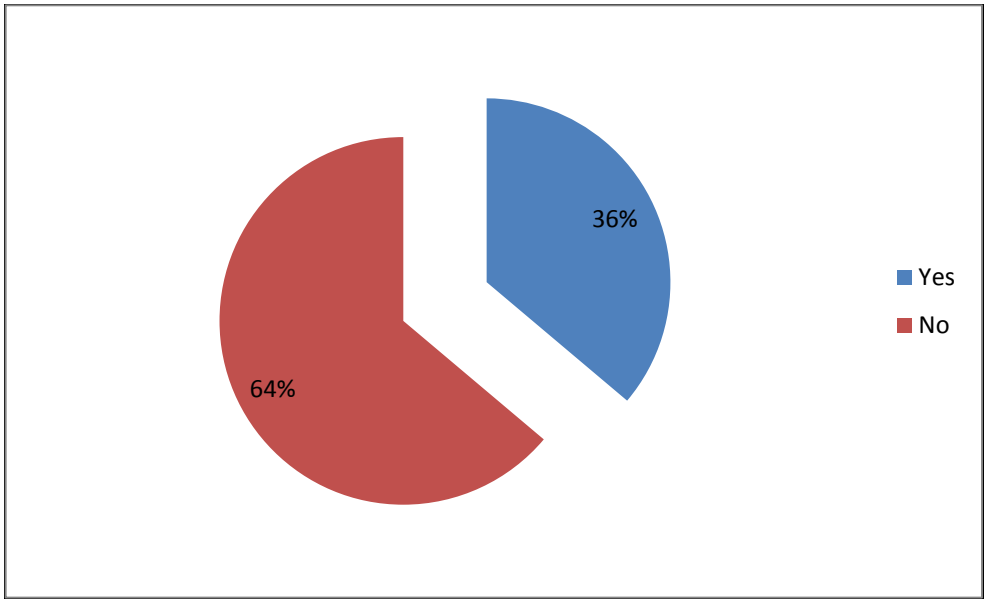

Figure 4.7: Farmer training received by farmers
Source: Results from SPSS (Version 22) generated from field survey, 2014

Farmers were also interviewed on their main sources of training and the results are illustrated in figure 4.8.

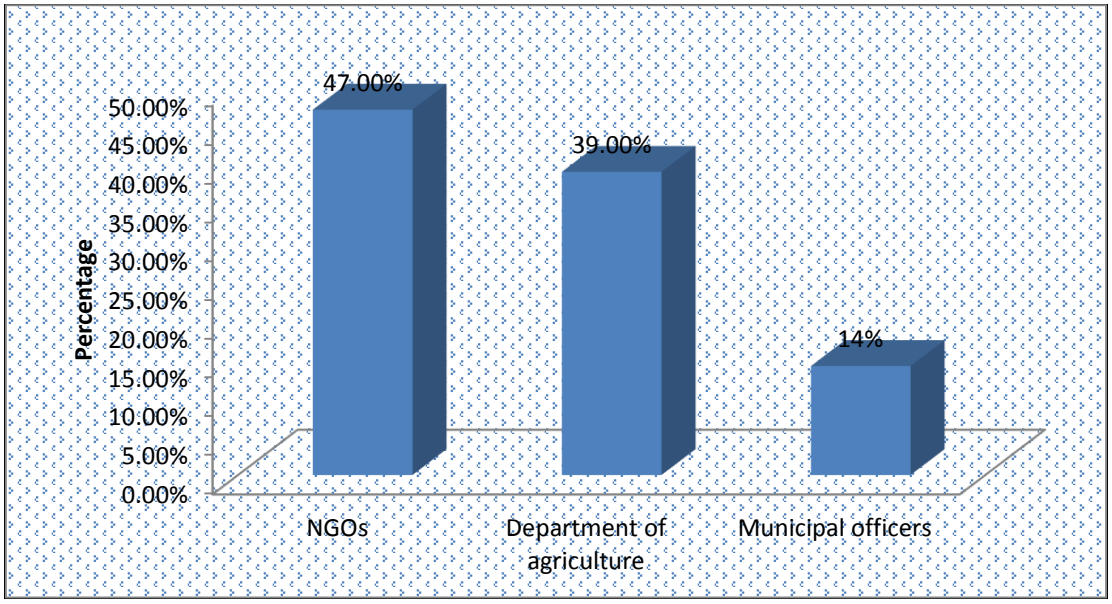

Figure 4.8: Source of training
Source: Results from SPSS (Version 22) generated from field survey, 2014

The results from the research indicated that cooperative members mainly receive training from NGOs (47%). The remaining farmers (53%) receive training from the Department of Agriculture and Municipality. Farmers also indicated that they receive training once in a

year. This could be one of the factors that affect production and marketing of crops within the area.

4.4.8 Crop grown by households

Farmers in both groups appeared to have different goals for engaging in crop and vegetable production. The crops grown in the study areas are shown in Table 4.9. Large plots of smallholder farmers in the area were planted maize, Beans, cabbage, potatoes and spinach. The small portions were occupied by others crops like butternut, pumpkins, carrots, peppers and onion. When comparing the two groups, cooperative members grew mostly potatoes (68.9%), cabbage (60.5%), spinach (59.1) and maize (47.4%) while non-members grew mostly maize (52.6%), spinach (40.9%), cabbage (39.5%) and potatoes (31.1%). The information is presented on the Table 4.10 below.

Table 9 : Crops grown by smallholder farmers in the area

Crops	Non-cooperative members		Cooperative members		Overall %
	Frequency	%	Frequency	%	%
Cabbage	17	39.5	26	60.5	49
Maize	50	52.6	45	47.4	93
Spinach	18	40.9	26	59.1	44
Potato	14	31.1	31	68.9	45
Carrot	6	25.0	18	75	24
Pepper	4	21.1	15	78.9	19
Tomato	5	50	5	50	9.8
Butternut	7	53.8	6	46.2	13
Pumpkin	17	32.1	36	67.9	52
Onion	6	27.3	16	72.7	22

Source: Results from SPSS (Version 22) generated from field survey, 2014

In overall, the proportion of crops grown by farmer's maize was at 93%, 49 of cabbage, 45% of potatoes, and 44% of spinach. The other crops were grown in small quantities by the farmers as it is indicated in the Table 4.10.

Although most of the selected crops are grown throughout the year, most of vegetables are grown during winter season especially potatoes and maize in summer. Farmers in the study

area are doing crop rotation, where they grow maize and Beans from October end to December and usually harvest during winter season around May. Vegetable crops such as potatoes, spinach and cabbages are grown during May to end August (Cousins, 2013). Non cooperative members concentrate more on maize production whereas cooperative members concentrated on potatoes, cabbage and spinach production. Cabbage, spinach and other crops normally demand more water and care as compared to other crops grown. This is why the cooperative members find it easier to grow such crops since their goal is to sell not consumption mostly. Even though they grow all crops, they are not consistent. They produce large quantities of maize, beans, cabbage, spinach and potatoes.

4.4.9 Reasons for growing such crops

The farmers indicated different reasons why they are growing such crops. Findings presented in the Table 4.11 indicated that overall, smallholder farmers grow crops because they obtain income (32.4%), staple food (27.5%), easy to find market (13.6%) and are easy to grow (10.8%). Reasons for high yields (5.9%), community grow such crops (5.9%) and feed for livestock (3.9%) did not count much as motivators behind growing crops.

Table 10 : Reason for growing such crops

Reasons	Non-cooperative members		Cooperative members		Overall
	Frequency	%	Frequency	%	%
Staple food	12	42.9	16	57.1	27.5
Income	16	48.5	17	5105	32.4
Easy to grow	4	36.4	7	63.6	10.8
Community grow such crops	5	83.3	1	16.7	5.9
Feed for livestock	2	25	3	75	3.9
High yields	3	50	3	50	5.9
Easy to find market	8	72.7	3	27.3	13.6

Source: Results from SPSS (Version 22) generated from field survey, 2014

4.4.10 Crop marketing channels

Simelane (2012) mentioned that, the marketing channels and marketing outlets are crucial in describing the marketing system. In Mnquma municipality, there are two marketing channels that are used by the farmers to market crops; formal and informal marketing channels. The results from survey data indicated that informal marketing channel was the major channel

that the smallholder farmers are using in the study area. More than 60% of crops were marketed through informal markets (Figure 4.9). The marketing of crops involves direct sales from the farmers to consumers in the communities, sales to traders, individuals and to cooperatives. Most of farmers prefer informal markets because of the fact that there are no controls with regards to the quality that the farmers have to comply with.

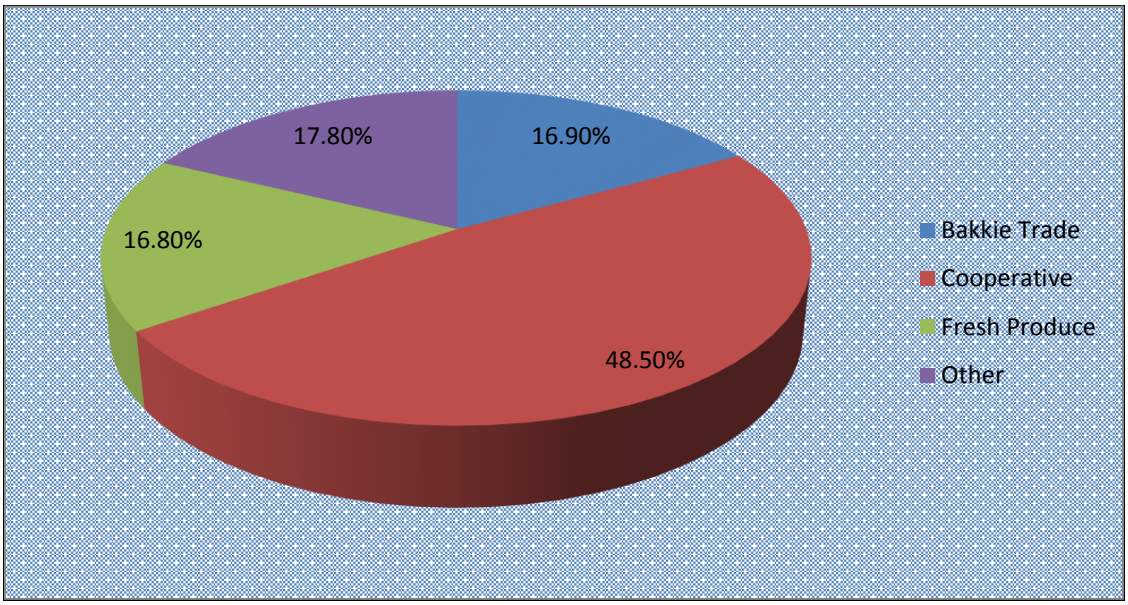

Figure 4.9: Marketing outlets for crops
Source: Results from SPSS (Version 22) generated from field survey, 2014

The primary market outlets studied in the area are presented in the Figure 4.9. The results indicated that 48.5% of farmers sell their produce to cooperatives, 17, 8% sold to other (farm gate and direct to consumers), 16.8% sold to backkie traders, and 16.8% sold to fresh produce.

4.4.11 Marketing channels

Marketing channels used by farmers differ greatly across municipalities depending on the needs of the farmers. In South Africa most rural farmers have five marketing channels in which they can market their crops, which are cooperatives, fresh produce, backkie trade and others.

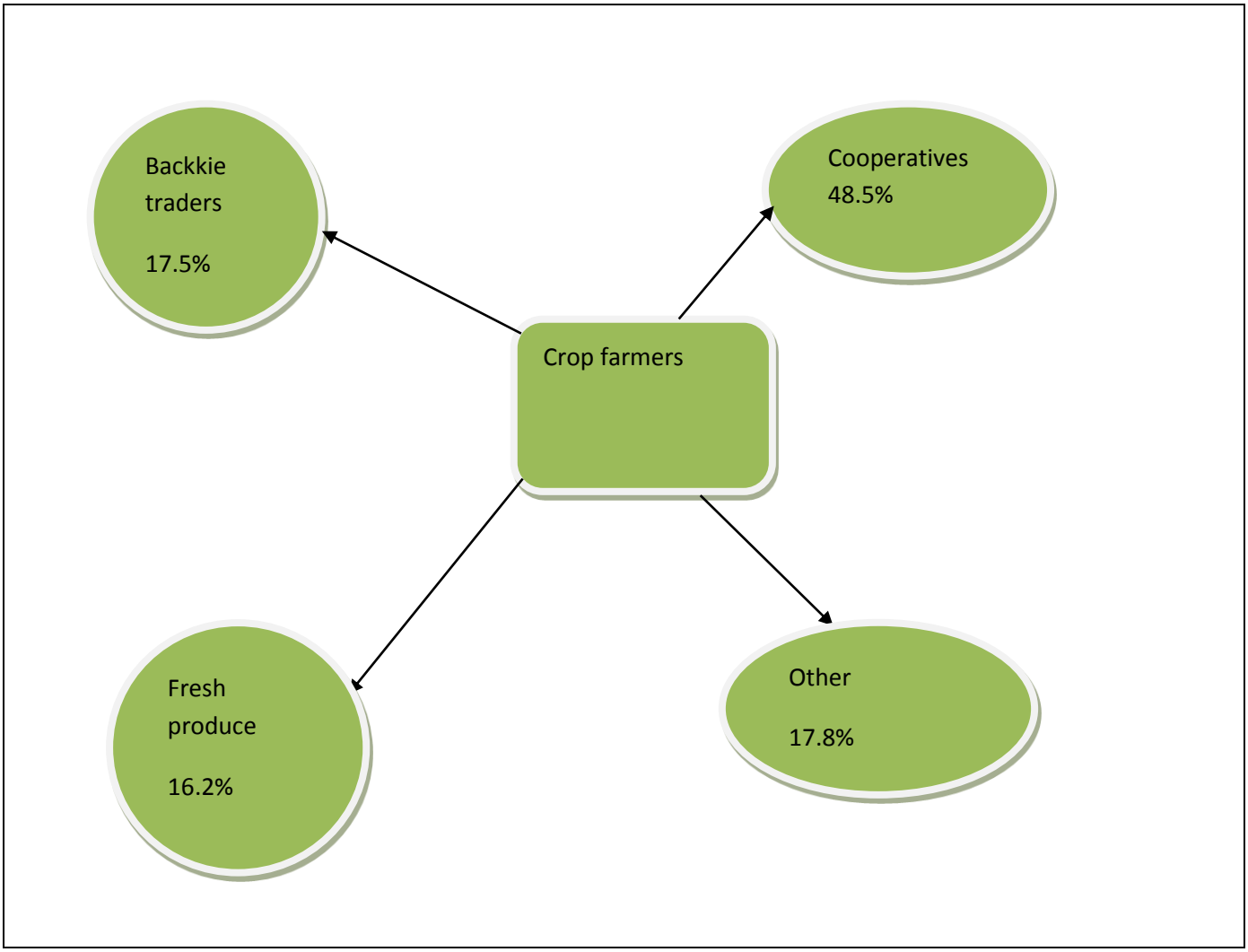

Figure 4.10: Crop marketing channels for farmers in the study area
Source: Results from SPSS (Version 22) generated from field survey, 2014

The results in Figure 4.10 indicated that crop farmers use different marketing channels for different reasons where 48.5 percent of the farmers sell to cooperatives, 17.5 percent sell to backkie traders, 17.8 percent at the roadside and 16.2 percent in Ngumbela fruit and veg. Farmers who sell at the cooperatives, around villages and at the roadside explained that they prefer selling from there because there is no transportation cost associated. They also pointed out that it is convenient to sell from their homes because they do not have access to marketing stalls. When asked on their knowledge of produce grades and standards, it was found that less than half (41.9%) respondents knew about grades and standards, whereas 25.6 percent used their own knowledge for grading.

4.4.12 Prices for products

Non-cooperative members usually set their prices when selling to consumers; however, they

negotiate when selling to backkie traders. The price is determined by the cost of production, competitors price and as well as the demand and supply of crops within the area. The prices vary according to places. For the places near to town, the prices are high because of the high demand, and for deep rural areas the prices tend to be low. For cooperative members, the price is set by their cooperative management. Whereby all the crops from different members are sold with the same price.

4.5 Benefits of being a cooperative member

Cooperatives empower people to improve their quality of life and enhance their economic opportunities through self-help (Manciya, 2012). Cooperative members were asked to state the benefit they obtain by being members of cooperatives compared to benefits as they would obtain when they farm individually. The results from the study indicated that cooperatives offer a wild range of benefits to members. It is evident from the results (Figure 4.11) that the main benefit that the cooperative members receive is provision of farm input (30%), marketing (25%), income provision (20%), credit (15%) and skills and training (10%).

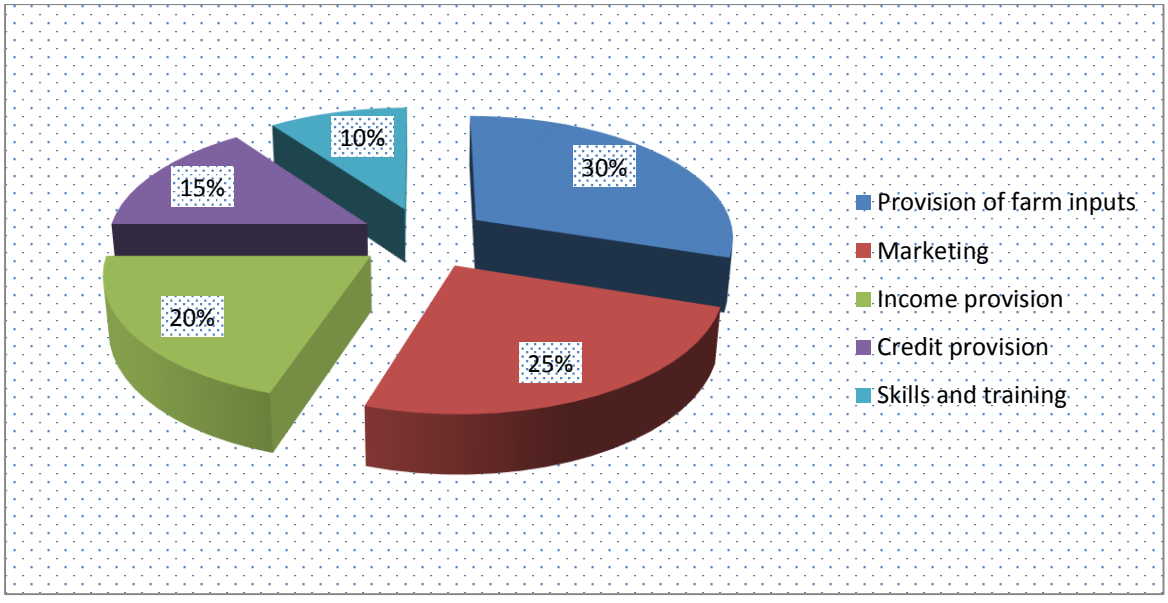

Figure 4.11: Benefits obtained by members on cooperatives
Source: Results from SPSS (Version 22) generated from field survey, 2014

4.6 Dividend payment

Majority of the sample respondents comprising 70% replied as cooperatives paid regular dividends to their members. The remaining 30% of the respondents argued that the dividend

payment was not paid regularly. The dividend payment is based upon on the level of profit generated. And, all of the respondents, who said there was dividend payment by the cooperatives, explained that dividend is paid on an annual basis.

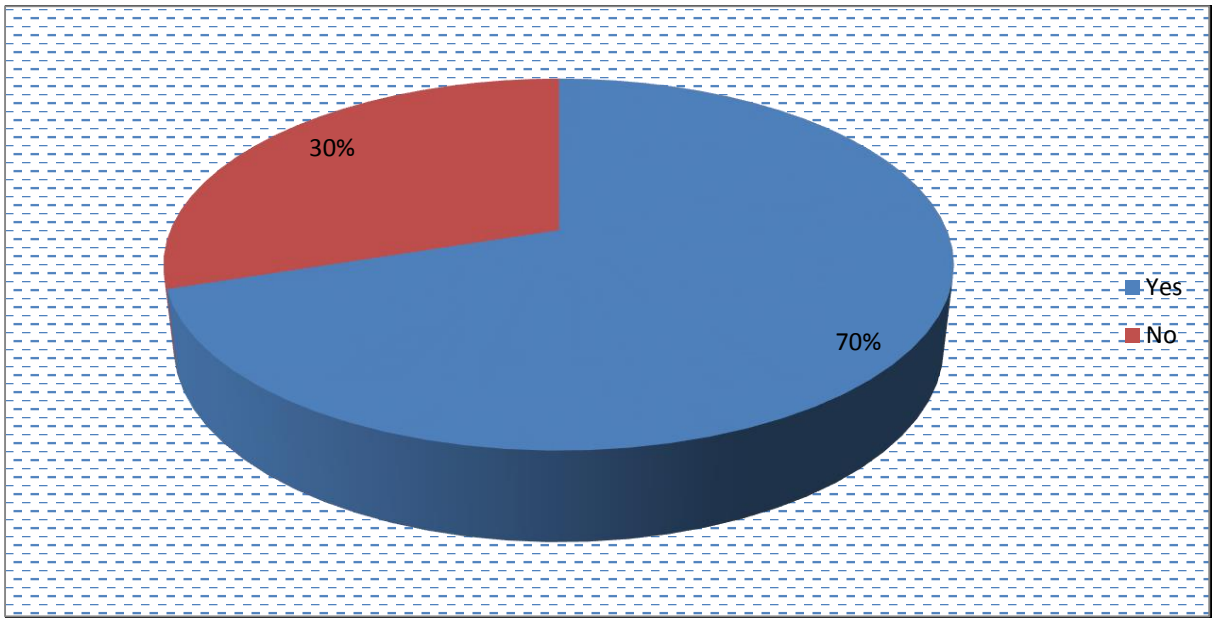

Figure 4.12: Dividend payment to members
Source: Results from SPSS (Version 22) generated from field survey, 2014

4.7 Constraints faced by crop farmers

Farmers were asked to give their view on the major constraints on production and marketing of crops. The farmers identified 11 major constraints that affect their performance. More importantly, the sample respondent's opinion on the constraints was categorized as not important, important and very important with a value of 1, 2, and 3 respectively (Table 4.12).

Table 11 : Constraints faced by members

Constraints	Not important		Important		Very important	
	n= 50	%	n = 50	%	n = 50	%
Poor management	12	24	21	42	17	34
Transport problem	9	18	26	52	15	30
Corruption	10	20	20	40	20	40
Member participation	10	20	23	46	17	34
Poor market system	10	20	21	42	19	38
Lack of technical support by promoters	10	20	20	40	20	40
Not enough training	10	20	19	38	21	42
Illiterate membership	11	22	24	48	15	30
Drought	12	24	27	54	11	22
Inadequate market infrastructure	12	24	26	52	12	24
Lack of members confidence on their cooperative	13	26	22	44	15	30

Source: Results from SPSS (Version 22) generated from field survey, 2014

4.8 Empirical results

This section presents the results obtained from the model to determine the impact of cooperative membership on farm performance. This has been achieved by using income from crop sales, farm revenue and value of inputs (labour, fertilizer, chemicals and seeds) as performance indicators. A linear regression model was used for this test through SPSS version 22. In addition, the study used propensity score matching method (PSM) to estimate the average treatment effect (ATE) of cooperative membership on farm performance. This was done to overcome biasness that would have been made when running regression. The PSM and ATE were run using Stata version 13.

4.8.1 Impact of cooperative membership on farm performance.

The different estimations are referred to as model 1 (regression on X), model 2 (regression on X and WTP), model 3 (PSM with X as conditioning variables) and model 4 (PSM with X and WTP as conditioning variables).

Table 4.13: Impact of cooperative membership and other covariates on farm performance, full regression without (WTP)

Outcome variable	**Log (farm income)**	**Log (farm revenue)**	**Variable inputs used (R)**
Ward	0.808	0.383	0.023**
Membership in a cooperative	0.004**	0.124*	0.230
Gender of HHH	0.568	0.461	0.528
Year born HHH	0.990	0.411	0.074*
No. of years spent in school HHH	0.084*	0.029	0.068*
Electricity	0.471	0.988	0.213
Size of land (Ha)	0.032**	0.007***	0.023**
Farming experience of HH in years	0.249	0.394	0.913
Distance to market in km	0.742	0.406	0.215
Credit access	0.630	0.913	0.296
Access to extension service	0.673	0.920	0.354
Access to market information	0.288	0.110*	0.096*
Willingness to pay for cooperative (WTP)	-	-	-
R2	0.186	0.254	0.283
Adjusted R2	0.074	0.151	0.185
Prob > F	0.091	0.008	0.002

Source: Results from SPSS (Version 22) generated from field survey, 2014

Note: *statistically significant 10% level,

**statistically significant 5% level,

***statistically significant 1% level.

Table 4.14: Impact of cooperative membership and other covariates on farm performance, full regression with (WTP)

Outcome variable	Log (farm income)	Log (farm revenue)	Variable inputs used (R)
Ward	0.679	0.707	0.118*
Membership in a cooperative	0.007**	0.138**	0.303
Gender of HHH	0.565	0.443	0.490
Year born HHH	0.913	0.571	0.147*
No. of years spent in school HHH	0.093*	0.035**	0.083*
Electricity	0.481	0.959	0.172*
Size of land (Ha)	0.032**	0.006***	0.016***
Farming experience of HH in years	0.245	0.367	0.953
Distance to market in km	0.774	0.463	0.260
Credit access	0.665	0.814	0.196*
Access to extension service	0.721	0.785	0.215
Access to market information	0.257	0.067*	0.038**
Willingness to pay for cooperative (WTP)	0.464	0.048**	0.002***
R2	0.191	0.287	0.359
Adjusted R2	0.069	0.180	0.262
Prob > F	0.112	0.003	0.000

Note: *statistically significant 10% level,

**statistically significant 5% level,

***statistically significant 1% level.

Source: Results from SPSS (Version 22) generated from field survey, 2014

According to the results presented in both regressions, all the independent variables of the model i.e. ; ward, age, farming experience, level of education, gender, land size, access to credit, access to information, type of market used, access to market and distance to market were positively related to farm income, revenue and value of inputs used as expected.

It should be noted that, in most cases, the estimated coefficients of cooperative membership are lower in model 1 (0.004, 0.124, 0.230) than in model 2 (0.007, 0.138, 0.303), which indicates that including willingness to pay (WTP) as a proxy variable for differences in unobserved factors reduces selection bias at some point. Likewise, the estimated effects of the PSM methods in model 3 and 4 are mostly lower than the effects in regression models 1 and 2 respectively, which is in line with PSM methods generally giving more conservative estimates (Wooldridge, 2002).

The results in Tables 4.13 and 4.14 shows that cooperative membership in general has a strong positive effect on farm performance. The study revealed that there are large and significant positive effects on the farm income effects range between (p = 0.004) and (p = 0.007) and are significant at the 1% level. In addition, cooperative membership also has a positive effect on gross farm revenue and net farm income. Taking the most conservative results, participation in cooperatives increases gross farm revenue with (p = 0.124) and (p = 0.138) and is significant at 10% level. The value of inputs ranges form (p = 0.230) to (p = 0.303) and it is not significant at 1%, 5% and 10% level. This implies that membership does not influence the total value of inputs.

Age of household head exhibited a positive relationship with farm income, revenue and value of inputs used as it was expected. However, age was found highly significant to total value of inputs used in both regressions in Tables 4.13 and 4.14 at 10% level (p = 0.074) and (p =0.147). This implies that cooperative members are not reluctant to purchase inputs so as to expect high yields and revenue since the majority of them are youth, with the youngest person having an age of 26 years. These categories of farmers tend to be risk referrers.

In Table 4.13 above, the number of years spent at school by the household head exhibited a positive relationship to farm income, revenue and value of inputs used as it was estimated and it was significant at 10% with p = 0.084, p = 0.0290 and p = 068 respectively.

Table 4.14 also indicated that education level of study farmers has a positive relationship to farm income, revenue and value of inputs used at 10% significant level by (p = 0.093), (p = 0.035) and (p = 0.083) respectively. This implies that cooperative members have high education attainment than those who are non-members contributing to high adoption levels of technology, able to read on newspapers about information of the market (input and output

markets) and also being able to write and interpret. Thus enhances incomes, revenues and the use of inputs.

Access to information significantly increases the revenue and value of inputs used. It was significant at a 10% level by (p = 0.110) and (p = 0.096). In this case, information is represented by the extension service, which is the number of visits by an extension officer per year. This implies that an increase of access to information by 10% causes a 0.110 of farm revenue and 0.096 of value of inputs used by farmers. The extension service broadens farmer's knowledge, especially with respect to improved production technologies.

In Tables 4.13 and 4.14, land size owned by household exhibited a positive relationship to farm income, revenue and value of inputs used as it was estimated and it was significant at 1% level with (p = 0.032), (p = 0.007) and (p = 0.023) in regression one. This implies that an increase of 1% of land causes a 0.032 of farm income, 0.007 of farm revenue, and 0.023 of value of inputs used by farmers. In regression two, farm income was found to significant at 1% level with (p = 0.032). This means that a 1% increase of land will ultimately cause farm income to increase by 0.032. Both farm revenue and value of inputs used were found significant at 5% with p = 0.006 and p = 0.016 respectively. This implies that if there is an increase of 5% of farmers land, revenues and level of inputs used by farmers will increase by 0.006 and 0.016 respectively.

Factors such as farm experience, access to credit, market distance and gender were expected to have a positive impact and significantly impact on revenues, incomes and on inputs. However, the results found that these factors were positive related to revenues, incomes and on value of inputs but not significant at 1%, 5% and 10% levels. It was expected that older farmers with experience as well as access to credit would sell more and get more income from crop production.

4.8.2 Impact of cooperative membership on farm performance using (PSM) and (ATE).

The estimated average treatment effects (ATE) are presented in Table 4.15. The results were obtained using kernel matching. As mentioned in chapter three that in this method, every treated subject is matched with the weighted average of the control subjects. The weights are inversely proportional to the distance between the treated (members of cooperative) and control group's (non-members) propensity scores.

It is important to note that the estimated ATEs are consistent over different matching techniques (whether using simple nearest, three nearest, kernel matching or local linear matching) and thus indicates the robustness of the PSM estimates. The estimated effect of cooperative membership on farm income, revenue and value of inputs used are significantly positive and similar in magnitude across all the matching methods. The results indicate that cooperative membership increases farm income by (p = 0.006), revenue by (p = 0.088) and total value of inputs used by (p = 0.182). This implies that if farmers are members of cooperatives, there is a likelihood of an increased performance with farm income by 0.006, farm revenue by 0.088 and value of inputs used by 0.182. These are large, significant and important effects that lead to the conclusion that agricultural cooperatives are effective in improving farmer's performance in the study area.

Table 4.15: Estimated average treatment of cooperative membership on farm performance

Dependent variables	Coefficient	Standard error	Z	P > /z/
Revenue	320.24	187.8404	1.70	0.088*
Farm income	424.92	155.3539	2.74	0.006***
Value of inputs	-104.68	78.44456	-1.33	0.182*

Source: Results from Stata (Version 13) generated from field survey, 2014
Significant effects are indicated with *: $p \leq 0.1$; **: $p \leq 0.05$; ***: $p \leq 0.01$.

4.9. Chapter Summary

This chapter presented and discussed the results of descriptive analysis of the smallholder farmers. Within this chapter, descriptive statistics such as mean values; frequencies, percentages and graphs were used. Demographic characteristics, farm activities, land sizes, and other socio-economic variables such as market access, access to credit and access to extension support were covered.

The study results indicated that the majorities of smallholder farmers in the area were males. However, the results indicated that the number of years spent in school among the sampled farmers is generally high in both groups. This was found to be inconsistent with the results from statistics South Africa since they revealed that there are more females compared to males in the municipality. On the other hand, the study revealed that there were a lower percentage of the female headed households among cooperative members compared to non-members. In terms of education attainment, the results indicated that the maximum number of

years spent at school is 20 year and the minimum is zero. Household sizes from the sample respondents were found to have a median of 5.50.

The results also showed that the majority of farmers in the study area fall in the category of farming as their primary occupation. However, it was found contracting because most of the farmers relied on government support grants for their livelihoods. Farming was the second source of income for the study farmers. The farmers indicated that during dry seasons farming is bound to be crop failure and this means that they will be left only with government support grants and other non-farm activities. Therefore, with these unfavourable factors such as droughts, farmers in the study area are likely to perform less than expected.

Farmers in the study area grew a variety of crops. The main crops that were identified include maize, potatoes, cabbage, spinach, beans, pumpkin, pepper, butternut, carrot and onions of which the majority of the farmers grew maize as a staple food. Cabbage, spinach, potatoes and beans were also significant crops grown by all farmers in all communities studied. They indicated the reasons to grow such crops, but most importantly they said they grew crops for income and because the communities are growing such crops. Crop diversification can be a very important factor for farm performance as farmers can easily switch to crops that can survive even under harsh conditions and not to waste resources on crops that are not adapting.

In terms of market access, the majority of respondents indicated they had no access to formal markets. The most limiting for accessing market was distance to both input and output markets especially to those farmers who are not part of cooperatives. Improving markets access increases chances of better performance as farmers become exposed to information about prices, demand on the market and other external factors. Access to input markets also enables farmers to buy updated inputs and improved technologies so as to enhance production and productivity.

The results generally showed that the majority of interviewed farmers in the study area had no access to extension services. Even the small percentage that agreed to have an access to extension mentioned that it is not frequent, maybe one visit a year. Extension services can play a vital role in empowering farmers about farming knowledge, skills and techniques for production and productivity. Therefore, extension services can positively influence farm revenues and farm incomes. Access to credit increases financial resources of farmers and their ability to overcome transaction costs associated with production. However, the results indicated that access to credit is still a challenge for most of rural smallholder farmers.

In terms of infrastructure, half of the study farmers indicated that they had access to good roads and half indicated that they had no access to good roads. Poor road infrastructures can negatively influence the purchase of inputs and the marketing of products by farmers. In terms of access to electricity, farmers from Ngqamakhwe and other parts of Centane had no access to electricity. The use of irrigation system that are capital intensive increase production, hence it is difficult for those who have no access to electricity to perform better. The majority of farmers from Butterworth and Centane indicated that they had access to tractors for cultivation and those who hired tractors revealed that it is cheaper. For farmers who were from Ngqamakhwe indicated that they make use of draft animals to cultivate. They indicated that tractor is too expensive and charges R350 per hour.

The results from linear regression analysis indicated that, cooperative membership in general has a strong positive effect on farm performance. The study find out that cooperative membership results in increased agricultural intensification. It was found large and significant positive effects on the value of inputs effects range between 6.12 and 8.6 and are significant at the 5% level. In addition, cooperative membership also has a positive effect on gross farm revenue and net farm income. Taking the most conservative results, participation in cooperatives increases gross farm revenue with 59%, and also net farm income with 25%.

According to the results presented in both regressions, all the independent variables of the model i.e ; ward, age, farming experience, level of education, gender, land size, access to credit, access to information, type of market used, access to market and distance to market were positively related to farm income, revenue and value of inputs used as expected. The variables used both significant and non-significant expected signs.

Average treatment effect and propensity score matching were used to test the relationship between independent variables and dependent variables. The results from average treatment effects (ATE) and propensity score matching (PSM) indicated that that cooperative membership increases farm income by 0.006, revenue by 0.088 and total value of inputs used by 0.182. These are large, significant and important effects that lead to the conclusion that agricultural cooperatives are effective in improving farmer's performance in the study area.

Based on the results, although cooperative membership have made a positive contribution to farm revenue and farm income, there are factors hindering them from better performance like the opportunistic and free riding problem of members. This therefore means that considerable support from government and NGOs is needed for improvement of cooperatives so as to

enhance their effectiveness by providing necessary services like credit and weekly visits by extension officers to farmers.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter therefore gives the summary and conclusions arrived based on the findings of the study. Finally, the chapter puts forward some recommendations which are believed to be of future benefit to development of smallholder farmers which may intend to obtain on the employment and poverty reduction.

5.2 Summary

The thesis was divided into 5 chapters which covered the background of the study and problem to be address, the literature review, methodology and the presentation of results for this research. In this section, each of the foregoing chapters will be summarized, highlighting the main issues covered and how that links to the overall theme of the thesis. These summaries are presented in the next several sub-sections.

5.2.1 Background and Problem statement

Agriculture's contribution to the South Africa's Gross Domestic Product (GDP) is falling – currently 2.2% compared to 2.5% of the year 2012. With the commercial farmers make up the smallest number of agricultural households in South Africa, they contribute to the majority of production than small-scale farmers. In order to boost agricultural productivity, particularly amongst the black rural population, agricultural co-operatives have been identified as one of the key policies to address the problems faced by small-scale farmers. However, the performance and sustainability of the co-operatives has been a great challenge.

Smallholder farm production as relating to problems of access to production resources includes inputs like water, power, fertilizers, feeds, capital, extension services, and information as well as access to markets. More so, smallholder agriculture in Eastern Cape is associated with inadequate value addition. Smallholder farmers normally produce raw fresh products and sell at the farm gate with very minimal value addition, hence the failure to meet the demand for domestic markets. Therefore, reducing these challenges that are faced by smallholder farmers can help to improve growth of the agricultural sector as well as economic development of the Province.

Smallholder agriculture is argued to remain important for economic development and poverty reduction in developing countries including South Africa but its development is challenged by the need for institutional innovations to overcome market failures. To overcome such challenges, the South African government has in one way or the other been promoting farmers' association such as agricultural co-operatives. However, it is foreseen that collective action would enhance smallholder farmer participation to market their produce effectively and efficiently thereby enhancing growth in rural areas. In addition, collective action could assist smallholder farmers to further access markets down the chain by meeting their contract requirements. Moreover, small rural farmers could become competitive by forming agricultural co-operatives where they can pool resources together such as trucks in order to establish a joint processing and storage facilities which are not cost effective for individual farmers. In a similar manner, a group of farmers can form a co-operative to pool their products and find larger markets that are more stable yet with greater rewards.

There is therefore, a need to better understand the extent to which agricultural primary cooperatives are performing, so as to stimulate the development of the smallholder farming sector. In this study, we assess the impact of cooperative membership on farm performance in Mnquma. This will be done through the assessment of their contributions towards production and marketing of the selected crops.

5.2.2 Literature review

The literature reviewed suggests that, cooperatives have been long promoted in many developing countries including South Africa as a way of driving agricultural growth and rural development. There have been a lot of scholarly views about the definition of cooperatives. However, this study used the definition of the ICA. International Co-operative Alliance defines a co-operative as a large number of people who are united voluntarily to meet their common objective. Such objectives may include economic, legal, political and organizational, goals to acquire access to meet other social needs through a jointly owned and democratically controlled enterprise organised and operated on co-operative principles.

The cooperative values compass-common values on which all cooperatives are based. However, they may be interpreted by different traditions of cooperatives according to their operating conditions, type and specific environments. But still, it is possible to identify certain common characteristics and features of cooperative organizations though there are distinctive traits for every type of cooperative. The general conception is that cooperatives are

private sector enterprises set up to meet their members' needs. They are owned and democratically controlled by their members. In principle, they are based on values of self-help, self-reliance, democracy, equality, equity and solidarity. They cover a wide range of activities including: agriculture, financial services, manufacturing, transport, utilities, health care and funerals.

The cooperatives in South Africa are registered by the Department of Trade and Industry (DTI) under the Act No. 14 of 2005. The registrar of cooperatives registers the cooperative if: The application satisfies all the requirements in the Cooperatives Act, the constitution of the cooperative meets all the requirements in the Cooperatives Act, the constitution of the cooperative adheres to the cooperative principles and the proposed name of the cooperative follows the rules in the cooperatives Act. Each cooperative must have a constitution according to the Cooperatives Act of 2005.

Agricultural cooperatives play significant role in enhancing rural development. Cooperatives are helpful in overcoming barriers to assets, information, input and output markets. Farmers producing crops which are marketed by co-operatives are gainfully employed because they can account for their labour input by the revenue they earn during the marketing seasons. Also agricultural co-operatives maintain higher levels of income, making small farmers able to construct decent houses, send their children to school and provide health insurance to sustain rural livelihoods.

Although agricultural cooperatives had opportunities. They are constrained by a number of factors linked to the institutional environments and arrangements operating in the region. These factors are not only hindering agricultural cooperative but also smallholder farmers.

5.2.3 Study methodology

The study was conducted in Mnquma Local Municipality in three regions. The regions include Ngqamakhwe, Butterworth and Centane. Mnquma is characterised by high levels of poverty and unemployment and also low level of literacy that are a common characteristic of the whole rural Eastern Cape landscape. The sample comprised of 100 farmers drawn from Ngqamakhwe, Butterworth and Centane areas. Farmers were classified into two groups: members and non-members of the co-operatives. Stratified sampling was used where farmers were clustered according to geographical location because the three communal areas consisted of many villages and the sample had to be representative of the whole areas of

Mnquma, Butterworth and Centane. After grouping, the farmer's location was identified and simple random sampling was used to represent each target group in each selected village. As way of improving data quality, a semi-structured questionnaire consisting of both closed ended questions open-ended question were used for data collection.

The data on their production and marketing activities was collected through questionnaires and coded and entered to Microsoft Excel 2010 before being analysed using SPSS v21 and Stata 13.

The results were included descriptive statistics which explains some measures of central tendency and dispersion. These include means, standard deviations and variances. Also, a T-test of independent samples was used to compare the means for the crop yields and revenues for non-members and members of the co-operative. A linear regression model was fitted to model to determine whether cooperative membership has positive impact on farm performance of smallholder farmers. In our study crop yields and crop revenue were treated as the response variables and all the other variables on the questionnaire were treated as predictor variables.

5.2.4 Presentation of results

As mentioned earlier that the participants were both members and non-members of the co-operative who are the household representatives, they all had to be 18 years and older and had to reside in village of Ngqamakhwe, Butterworth and Centane in Mnquma Local Municipality. The age limitation was to ensure only members and non-members of the co-operatives who influence the household head's food production decision were included in the study. The descriptive statistics of the demographic and socio-economic characteristics in respect to the categorical variables were presented in details.

The study showed that, the mean age of household heads range 1928 to 1984. The year born of household heads is usually associated with a number of years spent at school because generally older farmers have low levels of education; however it does not mean they lack the potential of being good farm managers, because they also have indigenous knowledge especially non-members.

The results indicated that about 71% of participants were males and only 29% were female. This is a clear indication that women do not participate much in agricultural activities in the

region. Also, it was revealed that most smallholder farmers, both members and non-members of the co-operative spent 0 to 20 years at school. The mean average of years spent at school was 7.160 and 8.240 for non-members and members of cooperatives respectively. This suggests that most of these farmers, especially the non-members have little knowledge about how to manage their farming practices which results in the reduction of yields. It was also revealed that 56.4% of the members and non-members of the co-operation are married people while only 43.6% of both members and non-members were divorced, single and widowed.

The results of the linear regression model showed that cooperatives membership do play a role on farm performance of smallholder farmers in Mnquma Local Municipality of the Eastern Cape Province, although the contribution of cooperative to its members is not noticeable. The hypothesis that farmers who are members of cooperative perform better is true in terms of performance. Crops grown are not significant different between the two groups. Cooperative members spend less on inputs per crop than non-members, attributed to pooling of resources as well as other services provided by cooperatives. All the explanatory variables on the model were found positively related to farm performance but the one that were significant are cooperative membership, age, number of years spent at school, access to information, type of market, ward and the willingness to pay to become members of cooperative. Also the propensity score matching has indicated that membership in a cooperative has a positively significant impact on farm incomes and revenues.

5.3 Conclusions

Conclusions are formulated on the extent to which agricultural cooperative membership influence farm performance. Cooperative membership has made a positive contribution on farm performance of farmers, even though its contribution is not significant as compared to cooperative membership in other countries. The study results indicated that cooperative members produce more than the individual farmers. This could be attributed by the assumption that cooperative farmers have bigger plots of land and also receive farm inputs support. Training provided through extension visits to cooperative may have contributed to better performance of these types of farmers. Farmers in the area, irrespective of their group belonging are still challenged by the access of credit so as to improve their production capacities.

Overall, cooperative membership have played a positive role in stimulating production, linking farmers to competitive markets, and also members received inputs and developed skills with regards to farming. Farm incomes, revenues and total value of input used has increased.

5.4 Policy recommendations

Based on the study results, the following recommendations are made so as to improve performance of farmers in Mnquma Local Municipality of the Eastern Cape Province.

From the literature reviewed and also the results obtained, it suggests that the success of smallholder crop farming depends on a series of factors which include the provision of farm inputs, government support, and socio-economic factors. There is a need for support programmes that would help to motivate individual farmers and farmers who are members of cooperatives for better performance. The programmes include infrastructure developments, research and extension activities, access to credit and value chain activities. Also the concept of making markets work for the poor should be put into practice. Even though there has been so many arguments about cooperative failures in developing countries, the results of the study confirms that collective action is still the solution to most of the problems faced by smallholder farmers. The study concludes that cooperative membership indeed improves the welfare of participating farmers. The implication of these findings is that group farming can reduce rather than entrench rural poverty as some studies have suggested. Policies and strategies which will make it easier for smallholder farmers to participate in cooperatives should be pursued. These include policies that target improvement of rural infrastructure especially roads and land issues in rural areas. The finding that poor farmers are less likely to participate in farming and even on cooperatives due to risks involved calls for policies and strategies that target the inclusion of such farmers group farming. All these programmes will positively contribute to better performance of the smallholder farmers.

5.5 Implication for future research

1. The impact of cooperative membership on agricultural performance was conducted in Mnquma Local Municipality only. So it is suggested that more or less similar studies may be conducted in the whole Province of Eastern Cape as there are a lot of smallholder farmers and agricultural cooperatives.

2. The study focus was on agricultural crop cooperatives. Further research can be conducted on all cooperatives in the province, checking their impact on production and marketing.
3. It is also suggested the study on the factors affecting the efficiency of smallholder agricultural cooperatives could be conducted.

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APPENDIX: QUESTIONNAIRE

Assessing the impact of primary agricultural co-operative membership on smallholder farm performance (crops) in Mnquma Local Municipality of the Eastern Cape Province.

University of Fort Hare
Together in Excellence

IDENTIFICATION

Municipality.....

Ward.....

Location.....

Member/ not a member of cooperative.....

Questionnaire code no.....

PART 1: HOUSEHOLDS CHARACTERISTICS

1. Please list the members of your family including you.

Names in the family and other HH members(HHH first)	Relation to HHH (code)	Gender (M/F)	Yr. born	No. Of yrs spent in school	Occupation (code)	If F, No of childrens	If not born in HH		
							Yr. came	From where (code)	Province (code)

Rel to HHH

1. Husband
2. Wife
3. Mother
4. Father
5. Son
6. Daughter
7. Cousin
8. Niece
9. Nephew
10. Uncle
11. Aunt
12. Brother
13. Sister
14. Friend
15. Grandson
16. Grand daughter
17. Grand father
18. Grand mother
19. Other, specify
20. .....

Occupation

1. Farmers
2. Wage employment
3. Unemployed
4. Other, specify
5. .....

Where

1. Town
2. Township
3. Village
4. .....

Province

1. Eastern cape
2. Gauteng
3. Northern cape
4. Mpumalanga
5. KZN
6. Limpopo
7. North west
8. Free state
9. Western cape

2. What does HH have?

Item		**Ans.**	**Codes**	
1. House	No of houses		**Tenancy**	**Water source**
	Total No. Of rooms		1. Own	1. Tap/windmill
	Tenancy		2. Rent	2. Tanker
	Roof type (code)			3. River
	Wall type (code)		**Roof**	4. Well
2. water source (code)			1. Zinc	5. Rain
			2. Thatch	6. Spring
3. Electricity (Y/N)			3. Asbestos	
			4.	**Toilet**
4. Toilet type (code)				1. Flash
			Wall	2. Pit
5. Trans veh. Type (code)			1. Mud	3. Bucket
			2. Brick	4. Bush
6. Phone (Y/N)			3. Zinc	5. .....
			4. Wood	
			5.	**Transport**
				1. Bus/bakkie/car
				2. Scooter
				3. Bicycle

				4. Animal carts

3. Do you own land? **No** ☐ **Yes** ☐

4. If yes, size of land holding cultivated in 2013/14 cropping year.

Owned by the household ☐

Rented ☐

Shared ☐

5. Other than land, what other fixed assets are available for your use?

Fixed asset	No. avail	Period avail	Acq method(code)	Payment		**Code**
				Amt	Period (code)	Period
Tractor						1. once off 2. monthly 3. Yearly
Work cow						
Work horse						Method
Donkey						1. Inheritance

Other						2. Purchased 3. Rented 4. allocated by chief 5. Communal tenure

6. Farming experience in full years (head of household's) _____years

7. What are the major crops grown in your farm in 2013/14 crop year?

Crops grown	Y/N	Area (Ha) planted	Area wish to plant (Ha)	Rank in terms of cash	Rank in terms of food	Reason for difference
Maize						
Beans						
Spinach						
Cabbage						
Potato						
Carrot						
Pepper						
Tomato						

Butternut						
Pumpkin						
Onion						
Other (specify)						

8. Fertility status of the plots as perceived by the respondent

Poor ☐ Good ☐

9. If you applied any of listed inputs to plot of any crop, how much did you spend on each?

Crop	Hired labour	Seed	Fertilizer	Chemical	Other
Maize					
Beans					
Spinach					
Cabbage					
Potato					
Pepper					
Carrot					

Butternut					
Pumpkin					
Onion					
Other					

10. Do you feel that your holding is sufficient to satisfy for home consumption and for other goods you need? **No** ☐ **Yes** ☐

11. What sources you raise income?

Source	Cycle	Income per cycle (R)	No. Of cycles per yr.	Net income p.a (R/annum)
Remittances (cash)				
Remittances (kind)				

Salaries and wages				
Old age pension				
Disability grant				
Child support grant				
Other, specify				
Hawking (food)				
Hawking (other)				
Spaza shop				
Taxi				
Lending money				
Plumbing				
Building houses				
Crops (kind)				
Crops (cash)				
Animal (cash)				
Animal (kind)				

12. In the season 2013/14, how much of each crop did you harvest from individual HH plot? How many portions of harvest did you sell? How many portions would you have wished to sell? What is the reason for the difference if any?

Crops harvest	Qty harvested	(Code) measure	Sold		Wished to sell		
			Portion out of 10	Amt realized	Portion out of 10	Reason for difference	
Maize							**Measure code**
Beans							
Spinach							1. 50kg
Cabbage							2. 20kg
Potato							3. 10kg
Carrot							4. kg
Pepper							5. Bunch
Tomato							6. Head
Butternut							
Pumpkin							
Onion							
Other							

13. Distance to the market in (km)

14. How is your crop moved to the marketing points? (Tick as appropriate)

	Transport type				
	Bike	Truck	Tractor	Car	Other (specify)
Hired vehicle (individual)					
Hired vehicle (group)					
Own transport					
Public transport					

15. How much do you pay for a single trip to the market?

16. What general problem do you experience in moving your produce?

Small size of transport	Lack of transport	High transport cost	Other (Specify)

17. What are the condition of the road linking the village and market?

Excellent ☐ good ☐ fair ☐ poor ☐

PART 2: PROVISION OF SERVICES

Training

18. Have you ever received training pertaining to crop production?

Yes ☐ No ☐

19. If yes, specify the type of training and the organization responsible for the training

Training type	**Organization**

20. Has the training been helpful in terms of gaining knowledge about production and marketing of crops?

Yes ☐ No ☐

21. Source of market information

Source	**Tick**
Extension officer	
NGOs	

Cooperative	

Credit

22. Do you have the experience of using credit? No ☐ Yes ☐

23. If yes, for how long did you use credit? In years.

24. If your answer is yes, for what purpose? Purchase of seeds ☐ Purchase of fertilizer ☐

Purchase of chemicals ☐ Purchase of oxen ☐ Purchase of farm implements ☐

Purchase of grain for consumption ☐ For family consumption ☐ Social obligation ☐

Others (specify)

25. What is your source of credit? Relative ☐ money lender ☐ Coop.☐

Others (specify) _____

Extension services

26. Do you have an extension officer operating in your area?

No ☐ Yes ☐

27. How many visits in a year

Once ☐ 2-5 ☐ 5-10 ☐ not at all ☐

28. Has the visit been helpful?

No ☐ Yes ☐

PART 3. COOPERATIVE MEMBERS

Membership of cooperative and benefits obtained

29. What were the reasons of joining a cooperative?

Reasons	**Tick**
To get dividend	
To get inputs	
To have access on credit	
Other (specify)	

Benefits of being a member of cooperative

30. Ways in which the cooperative has been helpful to you

Ways	**Tick**
Marketing of crops	
Income benefit	
Credit accessibility	
Skills and training	

Constraints in the production and marketing by cooperatives

31. Rate the constraints in the production and marketing of crops by cooperatives in their order of Importance

No	Suggestion	Less important (0)	Important (1)	Very important (2)
1	Poor management			
2	Transport			
3	Corruption			
4	Member participation			
5	Poor marketing			
6	Lack of technical support			
7	Not enough training			
8	Illiterate membership			

(All farmers must answer)

General constraints to production and marketing of crops in the area

32 What are the main constraints observed?

	Production constraints	Tick	Marketing constraints	Tick
1	Irrigation facilities		Distance to market	
2	Inadequacy water supply		Lack of markets	
3	Drought		Inadequate market information	
4	Climate changes		Transportation of the produce	
5	Other			

33. Opportunities available to the farmers

34. Suggestions to improve crop production and marketing in the area

	Improve crop production	Improve crop marketing

.....END.....THANK YOU FOR PARTICIPATION.....