Farmers' attitudes towards the formation of cooperatives in rural areas: A study of irrigation schemes in Makhado Local Municipality

By

Raselabe Thato Vincent Lesley

(11625185)

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School of Agriculture

University of Venda

Thohoyandou, Limpopo

South Africa

Supervisor: Dr E.N Raidimi

Co-supervisor: Prof F.D.K Anim

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DECLARATION

I, Raselabe Thato Vincent Lesley (11625185); hereby declare that this research dissertation for Master of Science in Agriculture (Agricultural Economics) at the University of Venda hereby submitted by me, has not been submitted previously for a degree at this or any other university, that it is my own work in design and in execution, and that all reference material contained therein has been duly acknowledged.

…… Date: ……..

Researcher: Mr Raselabe T.V.L

……. Date: …….

Supervisor: Dr E.N Raidimi

…… Date: ……..

Co-supervisor: Prof F.D.K Anim

DEDICATION

I dedicate this dissertation to the Lord God Almighty Jesus Christ who because of His sufficient grace, I was able to do and complete this study. I also dedicate this to my Mother Raselabe L.J and my two brothers Raselabe G.V and Raselabe C.I who have supported me through out and my nephew Raselabe L.V.

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ABSTRACT

Agricultural cooperatives are important tools for enhancing the living standards of farmers in rural areas. It is therefore very clear that cooperatives are for the benefit of the farmers. However, the development of cooperatives in the study area is not at a desired level yet; hence, it is necessary to determine the farmers' attitudes towards forming cooperatives. The research was carried out in Makhado Local Municipality, Vhembe District in Limpopo Province. Three irrigation schemes were selected for the study, which consist of a total of 215 smallholder farmers. However, only 152 smallholder irrigation farmers were used for the study. The mixed research design method was used for this study. The sampling technique used is purposive sampling. Data was collected through a structured questionnaire. Interviews were also made using key informants (Extension Office). The Statistical Package for Social Sciences (SPSS) was used to analyse the data. Cross tabulations and the logistic regression were used to analyse the data.

The study revealed that the socioeconomic characteristics smallholder irrigation farmers has an impact on their willingness to form cooperatives. The study also revealed that the attitudes of farmers have an impact on their willingness to form cooperatives. The study further revealed that the constraints such as trainings, hired service providers, costs of inputs, access to agricultural information, access to adequate land and access to markets have an impact on their willingness to form cooperatives. The study recommended that strategies can be implemented on how cooperatives can be formed and enhance their success. The study also shows that future research can be done in youth participation in agriculture and cooperatives, cooperatives partnering with agricultural companies and other organisations.

Keywords: Attitudes, Cooperatives, Key informants, Logistic regression, Smallholder

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LIST OF ABBREVIATIONS

DAFF:	Department of Agriculture, Forestry and Fisheries
DTI:	Department of Trade and Industry
FAO:	Food and Agriculture Organisation
IBM:	International Business Machines
ICA:	International Cooperative Alliance
ILO:	International Labour Organisation
MLEDS:	Makhado Local Economic Development Strategy
NCES:	National Centre for Educational Statistics
SMME:	Small Medium and Micro Enterprises
SPSS:	Statistical Package for Social Sciences
USDA:	United States Department of Agriculture

CHAPTER 1

INTRODUCTION

1.1. Introduction and background

The modern history of South Africa cannot ignore the role that cooperatives have played in the development of economic foundations (Satgar, 2007). The importance of the cooperative model in social and economic development has been emphasised over the years. After South Africa's transition to democracy in 1994, the new government adopted the cooperative model as one of the strategies for alleviating the triple challenges of poverty, unemployment and inequality (Okem and Lawrence, 2013). Agriculture has been described as a primary source of employment and income for people in rural areas, where agricultural cooperatives play a role in rural agricultural development (Mbanza, 2013).

This shows that, a cooperative is an important tool in the development of the lives of the people involved as well as their communities. Cooperatives must be promoted to alleviate the challenge of poverty, inequality and unemployment. This is because cooperatives bring about development and improved living standards for people. Therefore, their implementation can be justified, as this is one of the major macro-economic goals for countries.

Agricultural cooperatives are ideal institutions for people to create employment and empower people to improve their socioeconomics conditions (ILO, 2007). This is because cooperatives can be instrumental in giving poor women, youth and marginalised members of a community a purpose and pride, as a result of their financial independence and contribution to the economy of the country. Individual farmers cannot consistently and reliably control the price that they receive for their

agricultural products or the prices they pay for the input required by these goods (Robbins et al, 2008). Therefore, in order to enhance the economic market power, farmers therefore often form cooperatives.

Farmers need to group themselves into cooperatives so that they can acquire available assistance from various programmes of government departments. Furthermore, farmers need to create and develop farmers' organisations/cooperatives (build their own organisations) which articulate their needs. These will enable them to form partnerships with government in service delivery, and use this organisation for mutual support and information dissemination.

The importance of forming and developing farmers' organisations/cooperatives is to ensure that farmers have sustained livelihoods, create jobs, mobilise resources, generate investments for economic empowerment, enhance social reform and food security and promote Small, Medium and Micro-sized Enterprises (SMME). According to Markelova *et al* (2009), smallholder organizations in farmers' groups are seen as a possible institutional solution to overcome high transaction costs and other market failures in developing countries. Grootaert and Van Bastelaer (2001), noted that, collective action has been shown to be a core resource for agricultural cooperatives. This is because cooperatives create social relations that enable individuals to achieve goals that they would not have been able achieve individually. They also empower their members economically and socially, by involving them in decision-making processes that create additional rural employment opportunities, or enable them to become more resilient to economic and environmental shocks (FAO, 2012). There are many reasons why farmers could wish to form agricultural cooperatives; such as to supply inputs or provide processing and marketing services. People also form agricultural cooperatives to improve their income or economic position.

A cooperative is a business owned and controlled by the people who use its services and whose benefits are shared by the users on the basis of use (USDA, 2002). It is a group of people who work together voluntarily to meet their common economic, social, and cultural needs through a jointly owned and democratically controlled enterprise. This study aims to determine the attitudes of smallholder irrigation farmers towards the formation of cooperatives.

1.2. Problem Statement

Taking into consideration the market economics and achieving the economic liberalization, agricultural cooperatives have become a necessity to achieve agricultural development. Indeed, cooperatives have been considered to be some of the tools for organizing rural people in order to overcome poverty, improve living standards and foster development (Gasana, 2011). Economic and social studies have emphasized that, agricultural cooperatives are the most suitable tools to implement the plans of agricultural development. A rural society, with its future problems and hopes, emphasizes the fact that cooperatives are the proper tool for public participation and mobilising self-efforts, in order to implement the development process plans.

The agricultural sector in the Limpopo Province is a vital engine for economic growth and a source of income for thousands of smallholder farmers. As in the other provinces in South Africa and in other developing countries as well, smallholder farmers in Limpopo Province and specifically in the study areas, are faced with some common challenges, such as gaining access to inputs, limited access to credits, lack of transport, long distance to markets, small quantities and qualities of products, lack of collective efforts, market information, high transactions costs and access to product markets (DAFF, 2012 and Baloyi, 2010).

Therefore, cooperative organisation (collective action) can be a useful vehicle in facilitating the above services and are cheaper than when farmers use such services individually. In view of the advantages of cooperatives and the fact that the South African government is promoting the establishment of cooperatives among rural communities (DAFF, 2012), cooperative development in the study area is not at a desired level yet; hence, it is necessary to determine farmers' attitudes towards cooperatives, that will bring an understanding to farmers willingness or unwillingness to form cooperatives. Adoption of cooperatives is low among the smallholder farmers in the irrigation schemes in Makhado Local Municipality. In addition, in the selected irrigation schemes farmers are not involved in cooperatives. Hence this study aims at determining attitudes of smallholder farmers towards formation of cooperatives.

1.3. Significance of the study

The study is significant for the various stakeholders interested in cooperatives. For the government it will provide insights that they can incorporate into encouraging smallholder farmers in forming cooperatives. For district authorities, the research findings are important for they constitute requisite information for the authorities who have to have a sense on the attitudes of smallholder irrigation farmers on forming cooperatives. The study will also add to the body of knowledge of cooperatives and this is beneficial to researchers and academics. Local government will also understand how to approach the farmers when it comes to forming cooperatives and helping farmers overcome different challenges.

1.4. Research objectives

1.4.1. Main objective

The main objective of this study is to determine farmers' attitudes towards the formation of cooperatives.

1.4.2. Specific objectives

The following are the specific objectives:

i. To identify the socioeconomic characteristics of smallholder irrigation farmers that influence their attitudes towards forming cooperatives.

ii. To determine smallholder irrigation farmer's attitudes towards forming cooperatives.

iii. To identify the constraints that smallholder irrigation farmers face that influence their attitudes towards forming cooperatives.

1.4.3. Research questions

i. Which of the socioeconomic characteristics of smallholder irrigation farmers influence their attitudes towards forming cooperatives?

ii. What are smallholder irrigation farmers' attitudes towards forming cooperatives?

iii. Which constraints influence smallholder irrigation farmers' attitudes towards forming cooperatives?

1.4.4. Research hypotheses

i. Socioeconomic characteristics of smallholder irrigation farmers' influence their attitudes towards forming cooperatives.

ii. Attitudes towards forming cooperatives will be differ among Smallholder irrigation farmers.

iii. Smallholder irrigation farmers face constraints that influence their attitudes towards forming cooperatives.

1.5. Definition of keywords

1.5.1. Smallholder farmers

A review of the literature, revels a number of terms used to refer to the smallholder farmers, as well as to characterise them. The definition of smallholder farmer in South Africa is highly contested among researchers and academics (Greenberg and Paradza, 2013). In general, the term “smallholder farmer” is often used to refer to a group of farms with inadequate resource endowment, in comparison to their respective counterparts in the farming sector (Barlow and van Dijk, 2013). Chikazunga and Paradza (2012), point out that, defining smallholder in South Africa remains a sticking point in both the political and academic sphere. In the public debate, a smallholder farmer is synonymous with a Black farmer. In reality, the smallholder farmers’ category is a continuum of farm types ranging from subsistence to commercial. This means that a smallholder farmer might be resource-rich, resource-poor or somewhere in between and could be involved in commercial production, semi-subsistence production or somewhere in between. In South Africa, the term “smallholder” has been used to denote smallholder small-scale farms (Cousins, 2010). The same term has been used to describe “the rural poor” and “emerging commercial farmers” by Wiggins and Keats (2013). The term smallholder farmer” is alternatively used to refer to “communal farmer”, “emerging farmer” and “black farmer” (Chingadzunga and Paradza, 2012).

According to DAFF (2012), a smallholder farmer is also defined as a farmer owning small-based plots of land on which he/she grows subsistence crops and one or two cash crops, relying almost exclusively on family labour. One of the main characteristics of production systems of a smallholder farmer is simple, out-dated technologies, low returns, high seasonal labour fluctuations and women playing a vital role in production. A smallholder farmer in communal areas of South Africa has limited access to factors

of production including credit and information. Markets are often constrained by inadequate property rights and high transaction costs. Despite these problems, some smallholder farmers have managed to produce food for own consumption and for the market (Ortmann and King, 2007).

This study recognises the way in which Gradl *et al* (2012) and Boomsma *et al* (2013) characterise smallholder farmers, which is accepted as being more modern and flexible. They identify and characterise smallholder farmers as owning small farms with limited land, usually up to two hectors or less, producing either cops and livestock, usually a few animals engaging in commercial and or subsistent production, with the majority producing for subsistence, having limited market links and access, producer of one or two cash crops or those who sell surplus food crops.

For the purpose of this study, a smallholder farmer will be referring to those farmers sharing a space of land in which they have divided plots equally for them to grow subsistence crops and one or two cash crops relying almost exclusively on family labour.

1.5.2. Socio-economic factors

These are economic and sociologically combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others based on income, education and occupation (NCES, 2008). Socio-economic status is typically broken into three level namely high, middle and low to describe the three places a family or and individual may fall into (Werner *et al*, 2007).

1.5.3. Cooperative

A cooperative can be defined as an autonomous, association of persons united voluntary to meet their common, economic, social, and cultural needs and aspirations through jointly owned and democratically controlled enterprise (Abdulquadri and Mohammed, 2012). A cooperative is a business owned and controlled by the people who use its services and whose benefits are shared by the users on the basis of use (USDA, 2002). It is a group of people who work together voluntarily to meet their common economic, social, and cultural needs through a jointly-owned and democratically-controlled enterprise.

1.5.4. Attitude

It can be defined as a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation. Attitude influences an individual's choice of action, and responses to challenges, incentives, and rewards (together called stimuli (Hogg and Vaughan, 2005).

1.6. Limitations and delimitations of the study

Limitations encountered during the study included lack of cooperation and unwillingness of respondents to participate in the study. There were also farmers that were not active on their irrigation scheme plot. This was a critical challenge as it played a role in the sample that was used in the research. Transport was another issue as one of the irrigation schemes was not easily accessible. Another challenge concerned smallholder farmers who usually do not keep records and it becomes very difficult to get accurate information. This influenced the accuracy of the data collected. Finally, the study was limited to three irrigation schemes. This affected generalisation of the findings to other situation/contexts.

1.7. Structure of the study

This study is divided into five chapters as discussed below: The first chapter introduces the research topic and articulates the problem statement, significance of the study and objectives of the study. Chapter two covers literature review which contains the general perspective on defining, formation and principles of agricultural cooperatives and also a review on irrigation schemes, socioeconomic characteristics of smallholder farmers, their attitudes towards cooperatives and the constraints they face. Chapter three discusses research methodology adopted for the study and that includes data collection, data analysis and ethical considerations. Chapter four discusses and interpret results obtained from respondents and the regression analysis. Chapter five draws summary, conclusions, recommendations and future research opportunities.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews literature on cooperatives and smallholder farmers. The chapter firstly gives a broad definition of a cooperative, its formation and principles. This is followed by a discussion on irrigation schemes. Then, the chapter looks at the socioeconomic characteristics of smallholder farmers, their perceptions and the constraints they face that influence their willingness to form cooperatives.

2.1. Definition, formation and principles of cooperatives

2.1.1. Definition of cooperative

Despite the advances in the study of cooperatives, various definitions of a cooperative have been used (Porter and Lyon, 2006). A cooperative is a business that is owned and controlled by the people who use its services and whose benefits are shared by the users on the basis of use (USDA, 2002). It is a group of people who work together voluntarily to meet their common economic, social, and cultural needs through a jointly owned and democratically controlled enterprise. An agricultural cooperative, known as a farmers' co-op, is a cooperative where farmers pool their resources in certain areas of activity. An agricultural cooperative is an association in which individuals voluntarily get organised to provide themselves and others with goods and services via democratic control and for mutually shared benefit (Birchall, 1997).

Agricultural cooperatives need to have membership and the potential to develop economically. This means that the farmer must be able to access sufficient land and affordable credit and develop knowledge and techniques. The farmer needs to access market information and networks. Subsistence farming does not normally provide a scope for cooperative development and contributes little to poverty reduction. Thus,

differentiated strategies must be put in place to address the poverty of farmers (Fatemeh, 2011). Rural poverty will not diminish dramatically as long as developing countries do not commit themselves to achieving better wealth distribution. In a couple of decades there could be far fewer people in the rural areas. However, the fight against poverty in the countryside depends on the macroeconomic development of the nations (Pinto, 2009).

According to DAFF (2012), the South African government has identified cooperatives as some of the central pivots to reduce poverty, unemployment and high levels of inequality as well as to accelerate empowerment and development for the benefit of the previously disadvantaged majority. Agriculture, including farming, forestry, fisheries and livestock, are the main sources of employment and income in rural areas, where there is a majority of poor and hungry people living there. It shows that agricultural cooperatives play a crucial role in enhancing productivity of smallholder farmers.

Agricultural cooperatives have played an important role in rural communities, where they are an integral part of the social fabric. They encourage democratic decision-making processes, leadership development and education (USDA, 2002). Furthermore, cooperatives provide real economic benefits to farm families by increasing the stability of the farming sector, improving market access for their products and strengthening the farmers' position in the agro-food chain. As agriculture remains the major source of income and employment in rural areas and the majority of cooperatives are found in the agricultural sector, cooperatives are significant in providing jobs to rural communities (ILO, 2007). This is because the smallholder farmers are constrained by many challenges, including poor access to modern inputs, inadequate credit facilities, poor infrastructure, inadequate access to markets,

environmental degradation, and inadequate agricultural extension services (Veerakumaran, 2005). In an effort to overcome some of these issues, donor agencies and governments have re-emphasised the establishment of cooperatives as a strategy to promote collective action to strengthen smallholders' livelihoods, by linking them to national and international markets (Yamusa and Adefila, 2014).

2.1.2. Cooperative formation

Cooperatives are established by like-minded persons to pursue mutually beneficial economic interest and they provide a unique tool for achieving one or more economic goals in an increasingly competitive global economy (Yamusa and Adefila, 2014). Forming or joining cooperatives can help smallholder farmers increase their access and improve their negotiating power with respect to acquiring a wide range of services, including knowledge and extension services; productive assets such as seeds and tools; and marketing information and skills to capture greater value from the sale of their products. They can also improve empowerment by facilitating smallholder participation in decision-making processes, support them in securing land-use rights, and negotiate better terms for engagement in value chains or contract farming. The challenge remains to scale up successful projects. It may be necessary for farmers to develop alternative institutional and management structures and learn from the experience of successful smallholder farmer organisations. This may ensure that the benefits of cooperation materialise on a wide scale (Poole and de Frece, 2010).

In addition, agricultural cooperatives need to have membership and the potential to develop economically. This means that the farmer must be able to access sufficient land and affordable credit and develop knowledge and techniques. Furthermore, the farmer needs to access market information and networks (Fatemeh, 2011). The strength of a cooperative depends, in part, upon its ability to mobilise its resources

and members, not only in gaining market share and achieve economic growth, but also in maintaining member commitment, satisfaction and retaining them (Dakurah *et al*, 2005). The purpose of agricultural cooperatives is to help farmers increase their yields and incomes by pooling their resources to support collective service provisions and economic empowerment. Given their primary remit to contribute to smallholder farmer production, agricultural cooperatives are seen as critical in achieving the government's development targets in the Growth and Transformation Plan (Chiyoge, 2014).

Government has acknowledged that cooperatives have potential benefits over other types of enterprises; hence, the focus on their development. Their development is shaped and influenced by the following aspects: economies of scale, through the cooperatives, independent entrepreneurs, rural and urban households, as well as workers who can use joint purchasing (bulk-buying) and marketing strength (DTI, 2012). Main categories of agricultural cooperatives fall into mainstream activities of agricultural undertaking, including the supply of agricultural inputs, joint production and agricultural marketing. Input supply includes the distribution of seeds and fertilizers to farmers (Chiyoge, 2014). Cooperatives in joint agricultural production assume that members operate the cooperative on jointly owned agricultural plots. The third category consists of joint agricultural marketing of producer crops, where farmers pool resources for the transformation, packaging, distribution and marketing of an identified agricultural commodity (Chiyoge, 2014). For a cooperative to have a right foundation to make it successful, its members must have a common goal. This makes it easier for the cooperative to achieve what it is aimed for. Through cooperatives farmers now have more of an input in the successful outcome of their farming practices as they presently collectively work for one purpose. If government has acknowledged that

cooperatives are beneficial than other enterprises, this means that more cooperatives should be formed and successfully managed for these smallholder farmers in order for the improvement of their livelihood and their respective communities.

2.1.3. Principles of cooperatives

There are seven internationally recognized cooperative principles.

i. The first Principle is Voluntary and Open Membership.

This means that cooperatives are voluntary organisations; open to all persons to use their services and willing to accept the responsibilities of membership without gender, social, racial, political or religious discrimination (Virendra *et al,* 2015).

ii. The second Principle is Democratic Member Control.

Cooperatives are democratic organisations, 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 also organised in a democratic manner (Virendra *et al*, 2015).

iii. The third Principle is Member Economic Participation.

This means that members contribute fairly and equally to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. Surpluses are allocated to share gains equitably for all members and utilize capital to further cooperative's long-term goals (Jenkins, 2009).

iv. The fourth principle is Autonomy and Independence.

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 (ICA, 2014).

v. The fifth Principle is Education, Training and Information.

Cooperatives provide education and training for their members, elected representatives, managers, and employees, so that they can contribute effectively to the development of their cooperatives (Virendra *et al*, 2015). They provide training and education to allow members and employees to satisfy their responsibilities (Jenkins, 2009). They inform the general public – particularly young people and opinion leaders – about the nature and benefits of cooperation.

vi. The sixth Principle is Cooperation among Cooperatives.

Cooperatives serve their members most effectively and strengthen the Cooperative Movement by working together through local, national, regional and international structures. Furthermore, cooperatives serve their members most effectively when they work together with others that know and value the cooperative business model. Build relationships with local cooperatives to protect local economies and create increased member value (Jenkins, 2009), and

vii. The seventh Principle is the Concern for the Community.

Cooperatives work for the aim of sustainable development of their communities through policies approved by their members (Cardoso-Cancado *et al*, 2014). A cooperative is a central rallying point in the village and therefore it must perform much towards social responsibility and such activities can bring the general community closer to the cooperative.

2.2. View on irrigation schemes

According to Van Averbeke *et al* (2011), an irrigation scheme can be defined as an agricultural project involving multiple holdings that depend on a shared distribution system for access to irrigation water and, in some cases, on a shared water storage or diversion facility. The term 'irrigation scheme' is also used more broadly to refer to a multitude of entities that correspond to this definition, when these entities share the same bulk conveyance system (Reinders *et al*, 2010). The water deficit caused by low and erratic rainfall and high evaporative demand limits dryland crop production in most of South Africa. Irrigated agriculture presents an attractive alternative under these conditions. Irrigation refers to the artificial application of water to land for the purpose of enhancing plant production (Van Averbeke *et al*, 2011).

It has been agreed by several authors that in order to reach the Millennium Development Goal (MDG) of alleviating poverty and hunger requires giving high priority to smallholder agriculture (Tshuma, 2012). According to Van Averbeke *et al* (2011); smallholder irrigation has the potential to create employment in these underdeveloped rural areas, both directly and indirectly through forward and backward linkages. However, there has been reports from many researchers that despite its potential, smallholder irrigation has failed to meet the rural development and poverty reduction objectives in South Africa (Van Averbeke *et al*, 2011). A general consensus is that, smallholder irrigation remains a feasible and key strategy for achieving improved agricultural production, household food security and rural poverty reduction in the developing world (Gebregziabher *et al*, 2009; Bacha *et al*, 2011). Seeing that irrigation schemes can be a solution for smallholder farmers in rural areas it was suggested by Sinyolo *et al*, 2014, that the investment on irrigation schemes by the government should continue.

Access to irrigation increases the area under cultivation and crop intensity, and decreases crop losses (Namara *et al*, 2010). Moreover, it leads to poverty reduction by expanding opportunities for higher and more stable incomes, and by increasing prospects for multiple cropping and crop diversification (Hussain and Wijerathna, 2004). The potential of irrigated agriculture in enhancing food security and alleviating poverty has led the South African Government to prioritise irrigation development (Van Averbeke *et al*, 2011). The establishment, rehabilitation and revitalisation of smallholder irrigation schemes were made possible through the investment of large amounts of public resources (Denison and Manona, 2007). Smallholder irrigation schemes continue to be a major budget item on many developmental and district municipality financial plans (Denison and Manona, 2007).

According to DAFF (2015), smallholder irrigation schemes have the potential to make a significant local socio-economic impact by contributing to improved food security, poverty alleviation and increased employment. Indeed, in many instances, they are the main economic activities in their areas. Unfortunately, a large number of smallholder irrigation schemes have collapsed while the rest are suffering reduced efficiency due to various reasons. Due to the importance of these schemes, their effective revitalization is extremely important.

2.3. Socioeconomic characteristics which influence smallholder farmers' attitudes towards formation of cooperatives

i. Age of farmers.

A study conducted by Karli *et al* (2006), showed that the probability of farmers becoming members of a cooperative decline with age. This means that the older the farmers become, the less probable to join a cooperative. This means that younger

farmers are more likely to enter agricultural cooperatives than elderly farmers. According to Uneze (2013), household size did not have a significant effect on smallholder farmers' membership in cooperative. However, a closer look at the number of people, over the age of 18 years, in the sampled household who worked on the farm, revealed that there was a significant effect on smallholder membership in cooperative. Ogunleye *et al* (2015); showed that younger people participated more in agricultural and community development activities such as co-operative. According to DAFF (2011), challenges that are faced in agricultural the age of farmers. Older farmers were reluctant to join cooperatives than younger farmers.

ii. Household size.

A study by Karli *et al*, (2006); showed that when the household size is large, it is less probable for farmers to join cooperatives. It also indicated that if one more person in the household began working on the farm, the probability of a farmer being a member of a cooperative increases. Household size was also a good indicator for the available labour for production. This indicated that cooperative members tend to assign more labour for production; hence, produce more. Abate *et al*. (2013), found that the propensity to become a member of agricultural cooperatives is high for households with large family size. A study by Sikawa and Mugisha's (2013); results indicate that the higher the number of adults (age) in the household, the more likely a cooperative channel will be selected.

iii. Gross income.

The review showed that when the gross income of the farmer is high, farmers are less willing to join cooperative, meaning that the more the gross income of the farmer, the less probability of the farmer joining a cooperative (Karli *et al*, 2006).

iv. Educational level.

A study by Karli *et al* (2006); showed that farmers with high educational levels were willing to join cooperatives. This can be because they are aware of the benefits of cooperatives and have a good knowledge of its advantages. The increased probabilities of the decision to enter agricultural cooperatives with higher educational attainment was presumably due in large part to foreseeing the diversification and making the use of available opportunities provided by the cooperatives. Farmers with high communication level with cooperatives were willing to form cooperatives and this could be because they realise how the cooperatives are helping those farmers and their households (Hacer and Mustafa, 2010). As the education levels of the producers increase, so do the member/non-member ratio of any agricultural organization. Stated in another words, the farmers with high education levels are more likely to become members of agricultural organizations (Hacer and Mustafa, 2010). The same results were found by Dejen and Matthews (2016), who showed that education had an effect on farmers' cooperative membership increment. For this reason, extension activities should be raised in order to increase the organization levels. According to DAFF (2011), challenges that are faced in agricultural cooperatives low literacy levels.

v. Gender.

According to a study conducted by Njiru *et al* (2015), the gender of the household had a positive significant effect on smallholder farmers' membership in cooperative. The positive significance indicated that being male increased the probability of a farmer being a member of a cooperative. These results indicated that women remained under-represented at the membership level in cooperatives. This might be due to the asset ownership patterns as per the findings of Majurin (2012). This was also

supported by Agbo (2009), showing that the membership of cooperatives was dominated by male farmers. Uneze (2013), showed that more males than females were involved in cooperatives.

2.4. Attitudes of farmers towards cooperatives

Beliefs and knowledge influence members' attitude and ultimately their behaviour. It is said that many times members may have a negative attitude due to a lack of clear communication between members and management regarding the direction of the cooperative, or a lack of members' education on financial or operating matters (Bhuyan, 2007). Such miscommunication or lack of proper members' education may result in misunderstandings between members and cooperative management and eventually negative members' attitude. In terms of the linkage between intention and behaviour, while a member may have the desirable intentions, such as trying to be an active member by regularly attending meetings and voting, often situational factors derail such good intentions before a member (or the cooperative management) realizes his/her adverse behaviour (Bhuyan, 2007). Therefore, a cooperative's acceptance and adoption by the farmers depends on their attitudes and behaviour towards it. Thus, proper information, education and awareness on cooperatives should be available for the farmers. When a cooperative is already established, every member in any position in the cooperative must be involved in every activity and decision-making, as this makes the people prevent negative attitudes and lack of commitments from cooperative members.

According to Dejen and Matthews (2016), the study showed that, cooperatives were taken as a threat, a source of insecurity and burden. The rapid expansion of cooperatives, without adequate preparations and full consideration of their basic principles and potential for economic viability, led to many problems and failures.

Following the collapse of socialism in Ethiopia, many people distrusted cooperative societies. They considered cooperatives as a manifestation of socialism. As a result, the cooperative movement was among those bearing the scars from wounds inflicted in earlier times. They were perceived as communist institutions that had no place in the free market economy and their members had lost faith in the cooperative idea which had been discredited by the former governments. According to Agbo (2009), farmers were reluctant to join cooperatives because they had no knowledge about them and also did not believe that cooperatives would solve any of their problems. Farmers also did not trust government programmes.

People's behaviour can be explained in terms of two dominant interests: economic gain and social acceptance. Thus, economic gain and social acceptance can be the reasons for organising cooperatives (Hacer and Mustafa, 2010). In addition, there is a significant relationship between income and believing in the benefits of being a member, and the willingness to become a member. The study showed that if members see an opportunity of more income in cooperatives, they are more likely to become members. Zakić *et al* (2013) explained the preference of earning revenue. If members preferred to realise the largest part of their income (under the equal market conditions) through a cooperative; that would mean that, their motivation for taking part and commitment in the cooperative is high. Otherwise, participation and engagement in a co-operative would be peripheral or an irrelevant activity. The results showed a very high level of response in favour of earning income through cooperatives. This was also supported by Agbo (2009), showing that, farmers became members of cooperatives as result of government prompting and other benefits government attached to membership of cooperative societies. The sense of trust of the farmers in organizations is not very high. In this research, the sense of trust to one cooperative

is high; however, the sense of trust to other three cooperatives are rather low (Hacer and Mustafa, 2010). In order to gain the trust of farmers, organizations must meet the expectations of their members, and their managers should be trustworthy and educated; therefore, importance should be attached to the characteristics of the managers.

2.5. Constraints which influence smallholder farmers' attitudes towards formation of cooperatives

2.5.1. Constraints which influence smallholder famers to form cooperatives

Most smallholder farmers produce small quantities for sale, but find that, the local trader is only prepared to pay low prices for their goods, compared with the wholesale price. As individual farmers have little bargaining power with traders, they often accept almost any price offered. On the other hand, large-scale commercial farmers do not suffer the same problems (Robbins *et al*, 2008). This is because they can produce large quantities of each crop of a consistent quality standard. For this reason, they have no difficulty in attracting buyers and will receive the true market price for their output. The only way smallholder farmers can compete with these large farms is to co-operate with each other to form an association or farmers' group (Robbins *et al*, 2008). Smallholder farmers mostly use old farming ways; meaning that, they are still inclined to manual operations rather than using recent technologies and other inputs because they cannot afford to purchase them. Furthermore, smallholder farmers usually have no access to market and producing for markets is not their aim. Therefore, there is no pressure of producing a certain quality and quantity of products. This may be one of the reasons why they are unable to sell their products in the price of their own but forced to accept any price from the local trader. If smallholder farmers can find certain

ways of improving their practices and produce more quality products, this can be helpful for them to try to secure supply chain contracts.

According to Njiru *et al* (2015), the results of the study showed that the challenge of distance to the nearest market had a positive significant effect on smallholder farmers' membership to cooperative. This implied that with an increase in the distance to market, there was increased probability of a farmer being a member of a cooperative. This meant that the further away one is from the nearest reliable produce market, the more likely it will be for the farmers to become a cooperative member in order to access that market through the cooperative. It can be difficult as an individual market to access a markets as a results of lack of funds or own transport. The study results concurred with the findings of Bardhan *et al* (2012), who found that the distance to the market significantly and positively increased the likelihood of joining a cooperative. Another challenge that had a positive significant impact on small holder farmer's membership was access to credit. This indicated that, if the farmer has access to credit, that would increase the probability of the farmer becoming a member of a cooperative.

These results concurred with the findings of Alema (2008), showing that credit accessed through cooperatives was essential for farmers to purchase better feeds, improve housing and care for animals and better dairy breeds. Njiru *et al* (2015), also found that farm size (hectares) had a positive impact on the probability level. This non-linearity relationship showed that as farm size-measured as hectares-increases, gross income, producers show less willingness to be members of agricultural cooperatives. The end result showed that the probability of the membership decreases with increases in the farm size. It also showed that when a farmer has a large size farm

and is using higher technology variables, the farmer will be less willing to join a cooperative (Karli et al, 2006).

2.5.2. Constraints which influence smallholder farmers not to form cooperatives

Collective action in general faces three main challenges. These include members addressing their personal needs than members' needs; secondly, sharing common interests with members of conflicting interest tends to be the major problem; and lastly, the cost of running the collective action is often expensive (Masango, 2015). In many countries, agricultural cooperatives have been shown to face major challenges, such as poor management, low levels of supervision and political interference. While agricultural cooperatives are often huge in terms of membership and loan portfolios, they are subject to very limited prudential supervision (Fatemeh, 2011). A cooperative is defined as a situation where people voluntarily work together for their common cultural, economic and social needs. Any cooperative must be based on the foundation of serving the common needs of the members. In this way, cooperatives can avoid members addressing personal needs through the cooperative. Cooperatives have principles and they must all be met. The third principle states that, there must be member economic participation. This prevents the cooperative from running into financial problems as all members will have to contribute. Cooperative members also have to select qualified members that can lead the cooperative instead of just having leaders that will not satisfy their positions as leaders.

In some cases, cooperatives have been used as short-term political tools − governments have sought to close them without providing compensation for savings lost and then later governments seek to promote them for electoral expediency. Many agricultural cooperatives are emerging from government control (DFID, 2010). It has also been noted that agricultural cooperatives' record for reducing poverty in

developing countries is less than stellar, not due to shortcomings in the cooperative model, but rather due to external and internal constraints (Birchall, 2003). Involving politics in cooperatives has been shown to have a bad influence as people will seek to satisfy their personal needs more rather than to help members of the cooperatives. Often, politics go together with corruption and this is one of the constraints when it comes to development. Thus, it is better for cooperative members not to involve the cooperative in political activities, as this might help with the sustainability of the cooperative.

There are also other barriers, such as lack of autonomy, due to government interference; inadequate access to markets; men typically hold membership and decision-making positions, though women do most of the farming; and finally, mismanagement. It has been stated that lack of access to credit facilities precludes farmer cooperatives from buying inputs like fertilizers which are critical in agricultural production. This is associated with management problems in cooperatives, which make banks avoid cooperatives (Nyensiga, 2012). Poor cooperative education, mismanagement of existing cooperative societies, illiteracy, political instability, overdue loans, lack of patronage of existing cooperative societies, bad projects, diversion of farm inputs meant for all by a few and unfulfilled promises by government are other major problems faced by cooperatives (Agbo, 2009).

According to DTI (2012), many co-operatives are initiated by unemployed people, often with low skills level, with no prior business experience in economically marginal areas. Other factors affecting the formation of cooperatives are Limited trust and social cohesion among farmers. Due to the unique nature of collective interest and participation, co-operatives rely on high levels of trust between members. The absence of a shared vision, approach, financial trust and strong social ties has

contributed to the demise of a number of co-operatives. Other challenges include lack of assets, information and access to services (DAFF, 2012). Smallholder farmers in rural areas are often not formally educated, and this becomes a major constraint when it comes to initiating business, cooperatives and other formal enterprises. Education and training can be useful in terms of helping farmers understand how to run their cooperatives and use it in order to achieve their goals. There has to be trust within the cooperative. Finally, it has been shown as one of the constraints that limit formation of cooperatives, it can be suggested that members of cooperatives must be familiar with each other for the purpose of trust in cooperative.

According to Hacer and Mustafa (2010); farmers are willing to take membership in a newly-established cooperative. The willingness of the farmers to become a member shows that producers want to act in unison, to make decisions together, to be organised and they need this association. However, the main reason for not becoming a member of the cooperative is that there are no enough cooperatives in the region and producers are not knowledgeable about the cooperative system. In order to resolve this problem, producers must be informed about the cooperative system (Hacer and Mustafa, 2010). This can be achieved through establishing a modern and successful cooperative.

2.6. Conclusion

This chapter gave a thorough definition of what a cooperative is and also its formation. The seven principles of a cooperative were also explained in detail. The literature also looked at the irrigation schemes where the study concludes that they are one of the strategies to improve agricultural production, household food security and poverty reduction in developing countries. There are studies that looked at the socioeconomic characteristics of the smallholder farmers with regard to the participation in

cooperatives and it did show that females are still being dominated by males when it comes to participating in cooperatives. The study also concludes that educational level also play a part in the participation in cooperatives as studies show that farmers with higher education are more willing to participate in cooperatives. It was also observed that attitudes to play a huge role in participation in cooperatives. If farmers see the benefits of cooperatives they will participate in cooperatives and also the opposite will also be the case. The study also shows that the constraints that farmers face towards their agricultural production can play a role in their participation of cooperatives. The study aims at determining the socioeconomic characteristics, attitudes and constraints they face that will affect their willingness to form cooperatives.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter gives a description of the study area and the outline of how the research was conducted, as well as the approaches used in conducting the research. It also outlines the ethical issues considered, as well as the limitations of the study. The chapter also outlines the data collection methods used in the research, and includes sampling and the method used to select the sample. It further outlines the design plan, administration of data gathering tools, and the analysis plan for the information gathered. Detailed discussions on the preferred data analysis method have also been included in this chapter.

3.1. Description of the study area

The study areas selected for the study are Mamuhohi irrigation scheme, Mphephu irrigation scheme and Rabali irrigation scheme. These irrigation schemes are located in Makhado Local Municipality, Vhembe District Municipality in the northern parts of Limpopo Province. Makhado Local Municipality is located in the northern part of Limpopo Province. Its territory covers an area of 8567.38 km^2. It shares borders with the following local municipalities, namely, Blouberg, Musina, Molemole, Greater Letaba, Greater-Giyani, Mutale and Thulamela. At least 2.6% of the municipality is urban, whereas 97.4% is rural (MLEDS, 2013). The major towns include Makhado town, Dzanani, Waterval, Vleifontein and Vuwani. It consists of 38 wards and it is further divided into four sub-areas or administrative clusters, namely: Vuwani, Dzanani, Waterval and Makhado.

Figure: 3.1. The map of South Africa showing provinces.

Source: https://www.google.co.za/search?q=south+africa+map&prmd=imnv&source=lnms&tbm

Retrieved: 2017-06-06

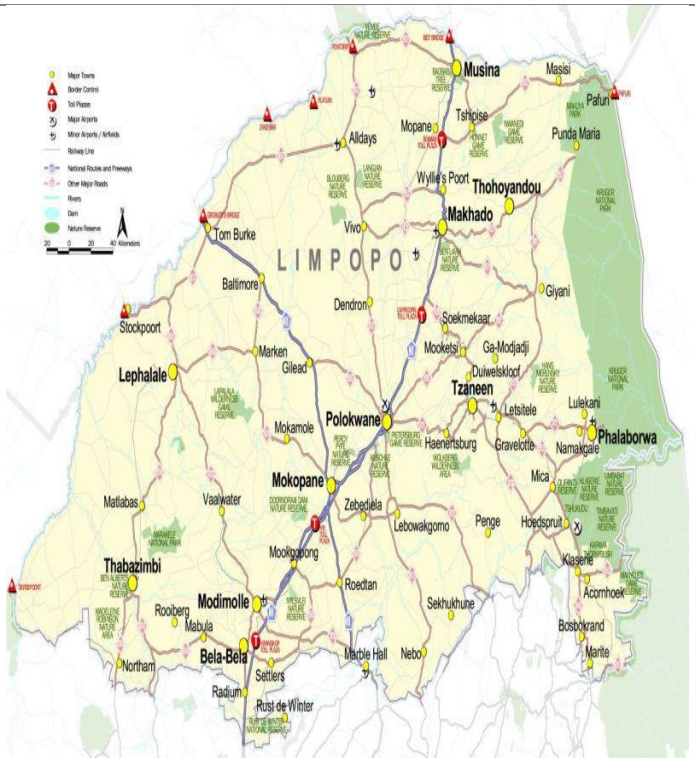

Figure 3.2. Map of Limpopo province showing the study area (Makhado Local Municipality)

Source: https://www.google.co.za/search?biw=13map+of+vhembe+district+municipality+&oq=map+of+vhembe+district+municipality+&gs

Retrieved: 2017-11-21

Agriculture within the area is diverse in the sense that it is made up of commercial, emerging or smallholder and subsistence farming (MLEDS, 2013). Farming activities include crop-production, livestock production, agro-processing, forestry, and aquaculture.

The commercial agriculture sector is well-structured, and it is more predominant in areas such as the Levubu valley, the Soutpansberg (Witvlag road), Waterpoort, and Makhado town. This corresponds with the areas that are recognised as areas where soils are highly suitable to arable agriculture. The potential of commercial agriculture

is undermined by lack of infrastructure as well as training and financial support for local aspirant farmers (MLEDS, 2013).

The areas to the south-east are mainly used for smallholder farming and subsistence farming and greatly correspond with traditional authority areas. Some smallholder farming activities are found in the various irrigation schemes such as Nesengani, Mphaila, Mandiwana, Mphephu, Mamuhohi (Madzhatsha), Rabali, Mauluma, Mavhunga, Cape Thorn and Raliphaswa. There are 16 schemes in total and they cover an area of 861 hectares. Some of these schemes are currently dormant and requires revitalisation (MLEDS, 2013).

This study focuses on three irrigation schemes, namely, Mamuhohi, Rabali and Mphephu and are briefly discussed below. These are government-owned irrigation schemes as the government assisted in establishing them and they are managed by the Department of Agriculture and Rural Development. Extension service personnel service the farmers on behalf of the government.

3.1.1. Mamuhohi irrigation scheme

This is a government owned irrigation scheme as government assisted in establishing it and it is managed by the Department of Agriculture and Rural Development. The irrigation scheme was established in 1963. The scheme is located within the R523 next to the Rabali Bridge, which is next to the Nzhelele River. It is only separated by the R523 road to the Mandiwana irrigation scheme.

The Mamuhohi irrigation scheme is comprised of 61 farmers, made up of 53 male farmers and 8 female farmers. It occupies a total area of 77 hectares. It is divided into 1.286 hectares for each farmer. Using a canal for water supply the products produced are maize, cabbage, sweet potatoes, groundnuts, cabbage and tomatoes.

3.1.2. Mphephu irrigation scheme

This is a government owned irrigation scheme as government assisted in establishing it and it is managed by the Department of Agriculture and Rural Development. This irrigation scheme was established in 1968 and is located along the R523 road just across the road from Mphephu Secondary School.

The number of farmers in this irrigation scheme is 89 of which 60 of the farmers are males and 29 are females. The total land covered by this irrigation scheme is 114 hectares and each farmer has land of 1.286 hectares of land. It also uses a canal for water supply. The products that are produced at this scheme are maize, beans, garlic, spinach, groundnuts, sweet potatoes, tomatoes and cabbage.

3.1.3. Rabali irrigation scheme

This is a government owned irrigation scheme as government assisted in establishing it in 1952 and it is managed by the Department of Agriculture and Rural Development. It is located deep inside the village of Rabali near the Ludane primary school not far away from Rabali Primary School.

The number of farmers in this irrigation scheme is 65 of which 40 are male and 25 are female. The total land space covered by this irrigation scheme is 84 hectares and each farmer has been allocated a space of 1.286 hectares. The products that are produced at the irrigation scheme are maize, cabbage, beetroot, onions, tomatoes, beans, peri-peri and garlic.

These three particular schemes have been selected because farmers are not participating in cooperatives. There are other schemes under the same area that are involved in cooperatives and have been flourishing. The aim is to determine their attitudes towards participating in cooperatives.

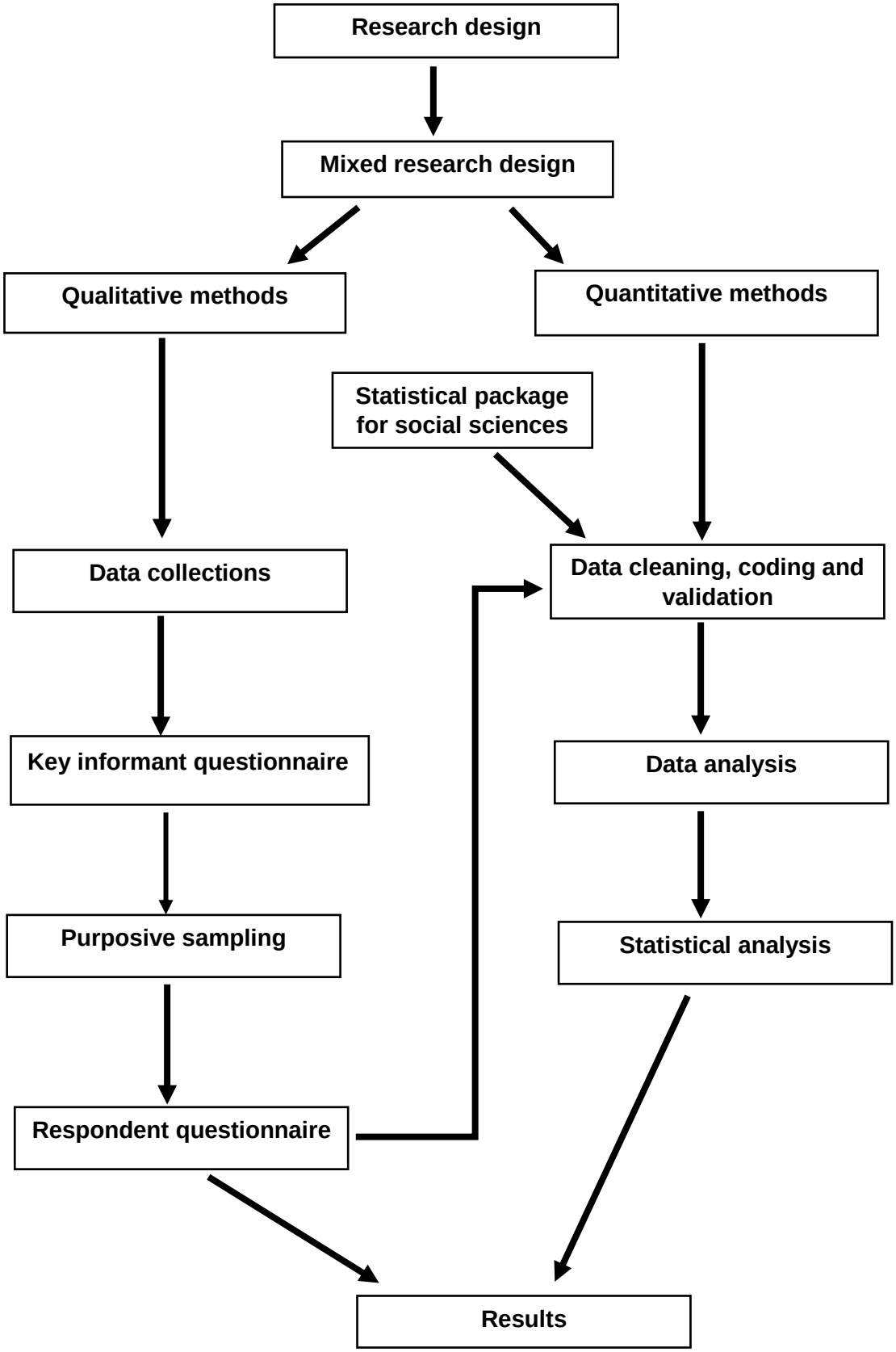

Figure: 3.3. Conceptual framework of data collection and data analysis

3.2. Research design

Mixed research design method was used for this study. This method focuses on collecting, analysing and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone.

3.3. Methods of data collection

3.3.1. Sampling methods

Purposive sampling was used for this study. This is a non-probability sampling that is used to select the sample based on the characteristics of the population and the aim of the study. This sampling technique is judgemental, selective and subjective. The irrigation schemes chosen for this study contained categories of farmers ranging from farmers who are very active in farming, in-active farmers, renting farmers and also migrating renting farmers. The purposive sampling was used to select those farmers who were active and eliminate those inactive farmers and also those migrating renting farmers. A sample of 152 smallholder irrigation farmers from the already known total population of 215 farmers was obtained. The 215 farmers includes all the irrigation schemes chosen for the study and the 152 was collected from all irrigation schemes. The aim was to obtain the whole 215 population but due to unwilling participants and the challenges mentioned above only 152 farmers were obtained. The 152 sample was not randomly selected but there were certain characteristics that the researcher was looking for, such as that smallholder famers have to be active and also not be migrating.

Table 3.1: Names of irrigations schemes, their population and sample obtained

Name of irrigation scheme	Total population	Sample obtained
Mamuhohi	61	52
Rabali	65	47
Mphephu	89	53
Total	215	152

3.3.2. Data collection

Primary and secondary data was collected for the study. The researcher being assisted by enumerators collected primary data using a structured questionnaire. Primary data for this study was obtained through questionnaires with key informants (Extension Officers) and also the smallholder irrigation farmers (Respondents). Secondary data was obtained through journals and books.

Face-to-face methods of data collection was deemed to be appropriate for the study. Face-to-face method is a person to person interview and typically involves going to the interviewee's farm and obtaining responses for the survey by conducting a personal interview. In collecting data, smallholder farmers in the three selected irrigation schemes involved in the production and marketing of specific agricultural commodities (various crops) were visited, to determine their attitudes towards the formation of cooperatives. The collection of data was done through structured questionnaire and administered through personal interviews. Face-to-face interviews were also conducted with the key informants, that is, the Chairperson's of the irrigation's schemes and the extension officers.

In this study, the face-to-face method was utilised. This is because the method always gives the researcher an opportunity to clear up ambiguities in the question asked or to probe for further clarification if the interviewee provides an inadequate answer, which will generally give a higher completion rate and more complete information. The individual smallholder farmers were interviewed while in their farms, which was convenient and also allowing the researcher to have a clear understanding of the challenges they face on a day to day basis in their economic lives. The prepared interview questions were used as a guideline, to direct the discussion and it was structured in closed and open-ended manner. The researcher also made use of the likert scale to measure the attitudes of respondents towards cooperatives. The research is exploratory in nature and therefore it was important for the researcher not to stick too rigidly to the questions but to allow the smallholder farmers freedom to express their views.

3.3.3. Key informant interviews

These are interviews conducted with the Extension Officers in the Department of Agriculture and Rural Development. They provided researcher with detailed qualitative information on the respective irrigation schemes. Unlike structured survey methods which require strict adherence to a set procedure to ensure the scientific accuracy of the results, key informants interviews are less rigid and concentrate more on revealing issues and underlying reasoning rather than on quantifying public attitude and behaviour.

3.4. Data analysis

Data was collected, coded, cleaned, validated and then analysed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics was used to analyse the socioeconomic factors and the constraints faced by smallholder farmers. The study

also made use of the cross tabulations when it comes to the socioeconomic characteristics of smallholder irrigation farmers, their attitudes towards cooperatives and the constraints they face.

Following studies such as Aidoo and Fromm (2015), who looked at farmers' willingness to adopt certification and sustainable production and studies such as Karli *et al* (2006), Dejen and Matthews (2016) and Muhongayire *et al* (2013) who looked at factors affecting farmers to join cooperatives, this study adopted a binary logistic model to analyse the socio-economic characteristics and constraints with regard to willingness to form cooperatives. A logistic function is useful because it can take any real input, whereas the output always takes values between zero and one (Hasmer and Lemeshow, 2000). In logistic regression, the dependent variable is binary or dichotomous. Hence it is interpretable as a probability function. When looking at factors influencing the attitudes of farmers, there are two outcomes that are expected. There are those that their attitudes will influence their willingness to form cooperatives and those farmers that are not be willing to form cooperatives.

In order to obtain the parameter estimates, a Logistic Regression model has been applied. Logistic regression (Logit analysis) is a multivariate technique used to study the relationship between a dichotomous dependent variable and one or more independent variables (Molla-Bauza *et al*, 2005). The dichotomous dependent variable can be written as:

$$y_i = \begin{cases} 1 \; if \; y_1 * > 0 \\ 0 \; otherise \end{cases}$$

Where y* is the latent variable expressing the willingness to form cooperatives by farmer i. This is a function of socio-economic characteristics and the constraints (Xi), as expressed in the following equation:

$$y_i * = \beta_0 + \sum_{j=0}^{k} \beta_1 X_1 + u_i$$

A logit model depends on the assumption of the logistic distribution of the error term in equation (1). Shown by Hosmer and Lemeshow (2000), that the logit distribution has an advantage over the other models because of its extreme flexibility and ease of use from mathematical point of view and results in a meaningful interpretation. The cumulative logistic probability function is specified as:

$$P_i = F(Z_i) = F\ (\alpha + \sum_{i=1}^{n} \beta_1 X_i) = \frac{1}{1+ e^{-z_i}}$$

Where, Pi is the probability that a farmer is willing to form cooperatives given the socio-economic characteristics and constraints Xi, and α and β are the parameters to be estimated. In order to understand the interpretation of the coefficients, the logit model could be written in terms of the odds and log of odds. The odds ratio implies the ratio of the probability (Pi) that an individual would choose an alternative to the probability (1- Pi) that the person would not choose it.

A simple mathematical manipulation of equation (2) it can be shown that:

$$(1 - P_i) = \frac{1}{1 + e^{z_i}}$$

Taking the natural logarithms of the odds ratio into the Logit model as indicated below:

$$Z_i = In\left(\frac{P_i}{1-P_i}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n$$

Taking into account the error made by the researcher in the estimation of probabilities, equation (3) becomes:

$$Z_i = In\left(\frac{P_i}{1-P_1}\right) = \alpha + \sum_{I=1}^{n} \beta_i X_i + u_i$$

The coefficient of the logit model, therefore presents the change in the log of the odds associated with a change in the explanatory variables.

3.5. Ethical considerations

3.5.1. Ethical clearance and permission

The ethical research certificate was obtained from the University of Venda Research Ethics Committee. Thereafter, written permission to conduct the study was obtained from the local Department of Agriculture leadership. Both the ethical research certificate and the permission were presented to the community leaders and the smallholder farmers. This was achieved through holding meetings with community leaders, Traditional leaders and the community's committees.

When permission to conduct study has been secured, with the help of the irrigation scheme extension officer, meetings were held with the smallholder farmers with the aim of clarifying the nature of the study and how the results will be used. This was done to clear the way towards securing participation of the smallholder farmers in the study. A written consent form that explains to the smallholder farmers what the study focuses on, as well as their obligations and rights, was given to the participants. In order to ensure that participation is voluntary, all the data collection tools were accompanied by a written consent form which summarizes the study and its objectives. The form contained a clause that informs the participants that they could

choose to discontinue their participation at any time. A confidentiality and anonymity declaration was also included in the form. In addition, as part of the requirements of an informed consent, the participants were made aware of what the data would be used for.

3.5.2. Informed consent

The purpose of the research was explained to the respondents, in order for them to give informed written consent (Vogt *et al*, 2012). Only those who signed the consent forms were allowed to participate. Respondents were informed that participation was voluntary and they could withdraw from the study at any time.

3.5.3. Questionnaires

All respondents who understood the content in the information sheet and signed the consent form were given research questionnaires by the researcher. The researcher had to interpret to the respondents' home languages to make sure that they were fully answering what they understood. The participants were informed that the information given during data collection would be treated with the highest confidentiality. Respondent's privacy is the first priority, to make sure that they remain unknown. They were also told that their names or any other identification to specifically identify them would not be required. Respondents were informed that there was no risk or harm involved in participation in the interview. The researcher also explained that there would be no reward for participating, except that the recommendations would be communicated to help solve their problems.

3.6. Conclusion

This chapter gave a good description of the study are and also showed the specific areas where the research will be conducted. The three irrigation schemes were explained concerning their history, location and the produce. This chapter has shown how the research will be conducted from the research design that was chosen and the methods of data collection. The model chosen for the study and also the steps to be taken through the analysis of the data collection were explained. Lastly the ethical steps to be considered were explained in detail.

CHAPTER 4

RESULTS AND DISCUSSIONS

This chapter presents and interprets the results of the study pertaining to the farmers' attitudes towards the formation of cooperatives in rural areas in Makhado Local Municipality. It gives a presentation of findings that were found by the study in respect to the objectives set and also shows the appropriate tests carried-out.

4.1. Cross tabulation analysis (socioeconomic characteristics vs dependent variable)

The socioeconomic characteristics of the study are presented in variables and the characteristics include; gender, age group, source of income and household size. The socioeconomic characteristics were cross tabulated with the dependent variable which is the willingness to form cooperatives.

4.1.1. Gender of respondents

Table 4.1: Willingness to form cooperatives vs gender of respondents (N=152)

			Gender		
			Male	Female	Total
Willing to form cooperatives	Yes	Count	50	59	109
		% of Total	32.9%	38.8%	71.7%
	No	Count	13	30	43
		% of Total	8.6%	19.7%	28.3%
	Total	Count	63	89	152
		% of Total	41.4%	58.6%	100.0%

Source: survey data (2018)

According to Table 4.1 above, females contribute more than half (58.6%) of the population compared males (41.4%). Table 4.1 also shows that the majority of respondents (71.1%) were willing to form cooperatives and females contributed 38.8%

compared to 32.9% of males. Table 4.1 further shows that 28.3% of respondents were not willing to form cooperatives with 19.7% being females and 8.6% being males.

Table 4.1 shows that 19.7% of 28.3% of farmers not willing to form cooperatives are females. This shows that more male farmers will be part of the cooperative than females and this result was also found by Njiru *et al* (2015), who being male increased the probability of a farmer being a member of a cooperative. It was also supported by Majurin (2008), who indicated that women remained under-represented at the membership level in cooperatives.

4.1.2. Age group of respondents

Table 4.2: Willingness to form cooperatives vs age group of respondents (N=152)

			Age group							
			≤35	36-40	41-45	46-50	51-55	56-60	61≤	Total
Willing to form cooperative	Yes	Count	5	6	5	8	13	12	60	109
		% of Total	3.3%	3.9%	3.3%	5.3%	8.6%	7.9%	39.5%	71.7%
	No	Count	0	0	1	1	1	7	33	43
		% of Total	0.0%	0.0%	0.7%	0.7%	0.7%	4.6%	21.7%	28.3%
	Total	Count	5	6	6	9	14	19	93	152
		% of Total	3.3%	3.9%	3.9%	5.9%	9.2%	12.5%	61.2%	100.0%

Source: survey data (2018)

According to Karli *et al* (2006), showed that the probability of farmers becoming members of a cooperative decline with age. Table 4.2 above shows that the majority of respondents (61.2%) were above the age of 61. Respondents in the age group of 56-60 contribute 12.5% and are followed by 9.2% of respondents in the age group of 51-55. Respondents in the age group of 46-50 contribute 5.9% while those in the age groups of 41-45 and 36-40 each contribute 3.9% respectively. Those respondents

below the age of 35 contributed 3.3% of the population. This shows that there are fewer young farmers involved in farming compared to older farmers.

Table 4.2 above shows a major concern as it shows that the fewer young respondents are involved in farming practices compared to older respondents. Youth participation in agricultural practices is one of the ways to ensure that there can be food security in the future.

It is shown by Table 4.2 that 39.5% of respondents willing to form cooperatives are above the age 61. Farmers below the age of 35 contribute 3.3% of those respondents willing to form cooperatives.

28.3% of respondents are unwilling to form cooperatives. 21.7% of these respondents were above the age of 61. Table 4.2 also shows that there are no unwilling respondents that are below the age of 40. This shows that even though young farmers are fewer than the older farmers they are more willing to form cooperatives.

4.1.3. Income source of respondents

Table 4.3: Willingness to form cooperatives vs source of income (N=152)

			Income source of respondents				
			Business	Old age pension	Work salary	Remittance	Total
Willing to form cooperative	Yes	Count	8	44	2	55	109
		% of Total	5.3%	28.9%	1.3%	36.2%	71.7%
	No	Count	5	23	2	13	43
		% of Total	3.3%	15.1%	1.3%	8.6%	28.3%
	Total	Count	13	67	4	68	152
		% of Total	8.6%	44.1%	2.6%	44.7%	100.0%

Source: survey data (2018)

Karli *et al* (2006), showed that when the gross income of the farmer is high, farmers are less willing to join cooperative, meaning that the more the gross income of the farmer, the less probability of the farmer joining a cooperative. Table 4.3 above shows that respondents that have other businesses except farming contribute 8.6%. Respondents that depended on grants contribute 44.1% of the population. There are those respondents that do work and contribute 2.6%. About 44.7% mentioned remittances (Money sent by the children who are working) as source of income.

Table 4.3 shows that from 71.7% of respondents willing to form cooperatives 36.2% of the respondents depend remittances as a source of income. It is also shown that respondents that depend on old age pension as a source of income contribute 28.9% of farmers willing to form cooperatives. Table 4.3 also shows that only 5.3% of the respondents have businesses as their other source of income and are willing to form cooperatives.

Table 4.3 also shows that respondents that from 28.3% of respondents unwilling to form cooperatives 15.1% depend on old age pension as a source income. Table 4.3 further shows that 3.3% of the farmers that depend on business were not willing to form cooperatives.

It can be concluded that those farmers that depend on old age grants and also remittance are more willing to form cooperatives. This may be due to the amount that is received compared to those that depend on work salary and businesses. It can also be concluded that it can be due to the time of work and managing their business farmers will be less willing to form cooperatives.

4.1.4. Number of household members

Table 4.4: Willingness to form cooperatives vs number of household members (N=152)

			Number of household members					
			1-3	4-6	7-10	11-13	14-16	Total
Willing to form cooperative	Yes	Count	18	49	40	1	1	109
		% of Total	11.8%	32.2%	26.3%	0.7%	0.7%	71.7%
	No	Count	6	31	5	1	0	43
		% of Total	3.9%	20.4%	3.3%	0.7%	0.0%	28.3%
	Total	Count	24	80	45	2	1	152
		% of Total	15.8%	52.6%	29.6%	1.3%	0.7%	100.0%

Source: survey data (2018)

Table 4.4 above shows that more than half of the respondents (52.6%) have number of household members of 4-6. It is also shown that respondents with 7-10 household members contribute 29.6% and those having 1-3 household members contribute 15.8%. Those respondents with 11-13 household members and 14-16 members contributed 1.3% and 0.7% respectively.

Table 4.4 shows that respondents with 4-6 household members contributed 32.2% of respondents willing to form cooperatives. Table 4.4 also shows the farmers with 7-10 household members contributed 26.3% of respondents willing to form cooperatives.

It is also shown by table 4.4 above that respondents with 4-6 household members contributed 20.4% of farmers not willing to form cooperatives. Table 4.4 furthers shows that respondents with 1-3 household members contributed 3.9% of the population of farmers unwilling to cooperatives.

Abate *et al* (2013), found that the propensity to become a member of agricultural cooperatives is high for households with large family size. This can be caused by the

dependence on family labour which can be also reduce cost compared to hiring seasonal or even permanent labour. If farmers see that they can get a lot done with less cost from using family labour they cannot let that opportunity pass them by.

4.2. Cross tabulation analysis (constraints vs dependent variable)

The constraints that are faced by the smallholder farmers are presented in variables and the constraints include; crop farming training, service providers available, cost of inputs, access to agricultural information, adequate land for production and access to market. The constraints faced were cross tabulated with the dependent variable which is the willingness to form cooperatives.

4.2.1. Crop farming training.

Table 4.5: Willingness to form cooperative vs crop farming training (N=152)

			Crop farming training		
			No	Yes	Total
Willing to form cooperative	Yes	Count	24	85	109
		% of Total	15.8%	55.9%	71.7%
	No	Count	21	22	43
		% of Total	13.8%	14.5%	28.3%
	Total	Count	45	107	152
		% of Total	29.6%	70.4%	100.0%

Source: survey data (2018)

Table 4.5 above shows that the majority of the respondents (70.4%) attend trainings that are offered and also shows that 29.6% do not attend the trainings. This means that only few (29.6%) of respondents do not have access to crop farm trainings.

Majority of respondents (71.1%) are willing to form cooperatives. Table 4.5 also shows that 55.9% of respondents are willing to form cooperatives and attend trainings that are offered while 15.8% do not attend trainings.

There are 28.3% of respondents unwilling to form cooperatives and 14.5% of the respondents attend the trainings offered. It is further shown by table 4.5 that 13.8% of respondents unwilling to form cooperatives do not attend trainings.

4.2.2. Hired service providers available

Table 4.6: Willingness to form cooperative vs hired service providers available (N=152)

			Service providers available		
			No	Yes	Total
Willing to form cooperative	Yes	Count	13	96	109
		% of Total	8.6%	63.2%	71.7%
	No	Count	1	42	43
		% of Total	0.7%	27.6%	28.3%
	Total	Count	14	138	152
		% of Total	9.2%	90.8%	100.0%

Source: survey data (2018)

Hired service providers referred to in this study are those that are hired to prepare land for the farmers making use of machinery like tractors. Table 4.6 above shows that majority (90.8%) of the respondents do use the services of the hired service providers and 9.2% of the respondents do not use them. This means that only few (9.2%) of the respondents do not have access to service providers.

It can be seen from table 4.6 above that 63.2% of respondents were willing to form cooperatives and they equally make use of the hired service providers available. It can also be seen that 8.6% of the respondents that are willing to form cooperatives do not use the service providers that are available.

Table 4.6 above also shows that there are 28.3% of respondents that are unwilling to form cooperatives. It further shows that 27.6% of respondents not willing to form

cooperatives use the hired service providers available. This is almost the whole population of respondents that are not willing to form cooperatives. Table 4.6 also shows that only 0.7% of respondents were not willing to form cooperatives and do not use the service providers available.

4.2.3. Costs of inputs

Table 4.7: Willingness to form cooperative vs costs of inputs (N=152)

			Costs of inputs					
			Very affordable	Fairly affordable	Affordable	Not so affordable	Not affordable	Total
Willingness to form cooperative	Yes	Count	12	1	12	14	70	109
		% of Total	7.9%	0.7%	7.9%	9.2%	46.1%	71.7%
	No	Count	9	3	7	14	10	43
		% of Total	5.9%	2.0%	4.6%	9.2%	6.6%	28.3%
	Total	Count	21	4	19	28	80	152
		% of Total	13.8%	2.6%	12.5%	18.4%	52.6%	100.0%

Source: survey data (2018)

Table 4.7 above shows that more than half of the respondents (52.6%) show that they face the constraint of higher input price rating them as not affordable. Those that rated the price as not so affordable and affordable were 18.4% and 12.5% respectively. Those respondents that rated the prices as very affordable and fairly affordable were at 13.8% and 2.6% respectively.

It can be seen from table 4.7 above that majority (71.7%) of respondents are willing to form cooperatives with 46.1% of the respondents rated the cost of inputs as not affordable. It is also revealed that those respondents that rated costs as not so affordable contributed (9.2%) of the respondents that were willing to form cooperatives.

Looking at the respondents that are not willing to form cooperatives it can be seen that those that rated the cost as not affordable constituted 6.6% of the respondents not willing to form cooperatives. The respondents that rated the costs as not so affordable constituted 9.2% of respondents not willing to form cooperatives. Table 4.7 also shows the respondents that rated the cost as very affordable and fairly affordable constituted 5.9% and 2.0% to those respondents that were not willing to form cooperatives.

Looking at table 4.7 the study concludes that farmers who have lack of access to credit or face high costs of inputs are more willing to form cooperatives. There can also be an incentive of getting more profits from forming cooperatives which can have effect of willingness to form cooperatives.

4.2.4. Access to agricultural information

Table 4.8: Willingness to form cooperative vs access to agricultural information (N=152)

			Access to Agricultural information		
			No	Yes	Total
Willing to form cooperative	Yes	Count	34	75	109
		% of Total	22.4%	49.3%	71.7%
	No	Count	26	17	43
		% of Total	17.1%	11.2%	28.3%
	Total	Count	60	92	152
		% of Total	39.5%	60.5%	100.0%

Source: survey data (2018)

Table 4.8 above table shows that majority of respondents (60.5%) have access to agricultural information while 39.5% do not have access to agricultural information. It is revealed that only 39.5% of the respondents are constrained by not having access to agricultural information.

Majority of respondents (71.7%) were willing to form cooperatives and It is revealed that 49.3% of respondents have access to agricultural information while only 22.4% of respondents were willing to form cooperatives did not have access to agricultural information.

Table 4.8 also shows that 28.3% of respondents were unwilling to form cooperatives and 17.1% of the respondents do not have access to agricultural information. Table 4.8 further shows that 11.2% of respondents who were not willing to form cooperatives had access to agricultural information.

4.2.5. Adequate Land for Production

Table 4.9: Willingness to form cooperative vs adequate land for production (N=152)

			Adequate Land for Production		
			No	Yes	Total
Willing to form cooperative	Yes	Count	41	68	109
		% of Total	27.0%	44.7%	71.7%
	No	Count	4	39	43
		% of Total	2.6%	25.7%	28.3%
	Total	Count	45	107	152
		% of Total	29.6%	70.4%	100.0%

Source: survey data (2018)

Farmers in irrigation are given equal plots of land. There are those respondents who say that the plot that they have is not enough for the production and also those farmers that say that the plots they do have are enough. Table 4.9 above shows that respondents that expressed that their farm plots were not adequate constituted 70.4% of the population while 29.6% did express that they had adequate land for production.

Table 4.9 reveals that from the 71.7% of respondents were willing to form cooperatives 44.7% of respondents had adequate land for production while those who portrayed their land as not adequate constituted 27.0%. Table 4.9 also shows that, 25.7% of respondents who were not willing to form cooperatives had adequate land for production and those who did not have adequate land constituted 2.6%.

Njiru *et al* (2015), found that farm size (hectares) had an impact on the probability level. This non-linearity relationship showed that as farm size-measured as hectares-increases, gross income, producers show less willingness to be members of agricultural cooperatives. The end result showed that the probability of the membership decreases with increases in the farm size. Table 4.9 shows that majority of famers that are unwilling to form cooperatives have adequate land for production.

4.2.6. Access to Market

Table 4.10: Willingness to form cooperative vs access to market (N=152)

			Access to Market		
			No	Yes	Total
Willing to form cooperative	Yes	Count	72	37	109
		% of Total	47.4%	24.3%	71.7%
	No	Count	37	6	43
		% of Total	24.3%	3.9%	28.3%
	Total	Count	109	43	152
		% of Total	71.7%	28.3%	100.0%

Source: survey data (2018)

Table 4.10 above shows that majority of the respondents (71.7%) do not have access to markets and only 28.3% have access to markets. Table 4.10 shows that the majority of respondents (71.7%) are constrained by not having access to markets.

Majority of respondents (71.7%) were willing to form cooperatives and 47.4% of respondents do not have access to markets while 24.3% of respondents willing to form cooperatives have access to markets.

Table 4.10 also shows that only 28.3% of respondents were not willing to form cooperatives with 3.9% of respondents having access to markets. Table 4.10 further shows that 24.3% of respondents were not willing to form cooperatives and did not have access to markets.

4.3. Cross tabulation analysis (farmers' attitudes towards cooperatives vs dependent variable)

The research study looked at determining farmers attitudes towards cooperatives. A likert scale was used in order to determine their attitudes and they are presented in variables and were cross tabulated with the dependent variable which is the willingness to form cooperatives.

4.3.1. Willingness to form cooperative vs cooperative awareness

Table 4.11: Willingness to form cooperative vs cooperative awareness (N=152)

			Cooperative awareness		
			No	Yes	Total
Willingness to form cooperative	Yes	Count	35	74	109
		% of Total	23.0%	48.7%	71.7%
	No	Count	25	18	43
		% of Total	16.4%	11.8%	28.3%
	Total	Count	60	92	152
		% of Total	39.5%	60.5%	100.0%

Source: survey data (2018)

Table 4.11 above shows that majority (60.5%) of respondents were aware of cooperatives and 39.5% were not aware of cooperatives. The table reveals that only 39.5% of the respondents were not aware of cooperatives.

Majority of respondents (71.7%) were willing not form cooperatives and It can be seen that that 48.7% of the respondents were aware of cooperatives. Table 4.11 shows that 23.0% of respondents willing to form cooperatives were not aware of cooperatives.

Table 4.11 above also shows that from 28.3% of respondents not willing to form cooperatives 16.4% were not aware of cooperatives. Table 4.11 further shows that 11.8% of respondents not willing to form cooperatives were aware of cooperatives.

4.3.2. Willingness to form cooperatives vs cooperatives have ability to provide profit

Table 4.12: Willingness vs cooperatives have ability to provide profit (N=152)

			Cooperatives have ability to provide profit					
			1	2	3	4	5	Total
Willingness to form cooperatives	Yes	Count	1	2	4	23	79	109
		% of Total	0.7%	1.3%	2.6%	15.1%	52.0%	71.7%
	No	Count	0	28	12	1	2	43
		% of Total	0.0%	18.4%	7.9%	0.7%	1.3%	28.3%
	Total	Count	1	30	16	24	81	152
		% of Total	0.7%	19.7%	10.5%	15.8%	53.3%	100.0%

(1= strongly disagree; 2= disagree; 3= unsure; 4= agree; 5= strongly agree) Source: survey data (2018)

The study by Zakić *et al* (2013); showed that if members see an opportunity of more income in cooperatives, they are more likely to become members. Table 4.12 shows that from the majority of respondents (71.7%) willing to form cooperatives 52.0% of the respondents strongly agreed with the statement while 15.1% of the respondents

agreed with the statement. Only 1.3% of respondents disagreed with the statement and 0.7% strongly disagreed with the statement.

Table 4.12 also shows that from the 28.3% of respondents unwilling to form cooperatives 18.4% of the respondents disagreed with the statement. Table 4.12 further shows none of the respondents strongly disagreed with the statement and 7.9% of the respondents were unsure with the statement.

This does show that farmers' attitudes can have an effect on their willingness to form cooperatives as can be seen that those that think cooperatives can provide profit most are willing to form cooperatives. Respondents that were unwilling to form cooperatives mostly disagreed with the statement. It can be concluded from table 4.12, that those farmers willing to form cooperatives do have positive attitudes towards cooperatives when it concerns profit and those that were unwilling do not have positive attitudes towards cooperatives as they do not think it can bring profit.

4.3.3. Willingness to form cooperative vs improving farming methods

Table 4.13: Willingness to form cooperative vs improving farming methods (N=152)

			Cooperatives can improve farming methods					
			1	2	3	4	5	Total
Willingness to form cooperative	Yes	Count	1	0	6	21	81	109
		% of Total	0.7%	0.0%	3.9%	13.8%	53.3%	71.7%
	No	Count	0	23	13	4	3	43
		% of Total	0.0%	15.1%	8.6%	2.6%	2.0%	28.3%
	Total	Count	1	23	19	25	84	152
		% of Total	0.7%	15.1%	12.5%	16.4%	55.3%	100.0%

(1= strongly disagree; 2= disagree; 3= unsure; 4= agree; 5= strongly agree) Source: survey data (2018)

Table 4.13 above shows that from majority of respondents (71.7%) willing to form cooperatives 53.3% strongly agreed with the statement while 13.8% of the respondents willing to form cooperatives agreed with the statement. Only 3.9% of respondents were unsure of the statement.

It can be seen from table 4.13 above that from 28.3% of respondents unwilling to form cooperatives 15.1% of the respondents disagreed with the statement. The respondents that were unsure of the statement constituted 8.6% of those respondents unwilling to form cooperatives.

It was shown by Robbins *et al* (2008), that because smallholder farmers are unable to produce large quantities of products for them to be able to enter markets, attract buyers and receive true market price for their output. The only way smallholder farmers can compete with these large farms is to co-operate with each other to form an association or farmers' group. Forming cooperatives can improve their farming methods through the quantity and quality they can be able to produce and then can be able to compete with large-scale farmers.

4.3.4. Willingness to form cooperatives vs cooperatives as political tools

Table 4.14: Willingness to form cooperatives vs cooperatives as political tools (N=152)

			Cooperatives as political tools					
			1	2	3	4	5	Total
Willingness to form cooperatives	Yes	Count	2	40	51	8	8	109
		% of Total	1.3%	26.3%	33.6%	5.3%	5.3%	71.7%
	No	Count	0	1	12	25	5	43
		% of Total	0.0%	0.7%	7.9%	16.4%	3.3%	28.3%
	Total	Count	2	41	63	33	13	152
		% of Total	1.3%	27.0%	41.4%	21.7%	8.6%	100.0%

(1= strongly disagree; 2= disagree; 3= unsure; 4= agree; 5= strongly agree) **Source: survey data (2018)**

In many countries, agricultural cooperatives have been shown to face major challenges, such as poor management, low levels of supervision and political interference (Fatemeh, 2011). Table 4.14 shows a statement that simply implies that farmers within cooperatives can have subgroups that are politically motivated in order to gain whatever they desire or try to control the cooperatives themselves. It is shown from table 4.14 above that from 71.7% of respondents willing to form cooperatives 26.3% of the respondents disagreed with the statement. Table 4.14 also shows that 1.3% strongly disagreed with the statement. Respondents that were unsure of the statement constituted 33.6% of respondents willing to form cooperatives.

Table 4.14 further shows from 28.3% of respondents unwilling to from cooperatives 16.4% of the respondents agreed with the statement while 3.3% strongly agreed with the statement. It is shown from table 4.14 that 7.9% of the respondents not willing to form cooperatives were unsure of the statement.

4.3.5. Willingness to form cooperatives vs cooperatives as threats

Table 4.15: Willingness to form cooperatives vs cooperatives as threats (N=152)

			Cooperatives are threats to farmers					
			1	2	3	4	5	Total
Willingness to form cooperatives	Yes	Count	4	56	33	3	13	109
		% of Total	2.6%	36.8%	21.7%	2.0%	8.6%	71.7%
	No	Count	0	1	21	15	6	43
		% of Total	0.0%	0.7%	13.8%	9.9%	3.9%	28.3%
	Total	Count	4	57	54	18	19	152
		% of Total	2.6%	37.5%	35.5%	11.8%	12.5%	100.0%

(1= strongly disagree; 2= disagree; 3= unsure; 4= agree; 5= strongly agree) Source: survey data (2018)

A study conducted by Dejen and Matthews (2016), shows that cooperatives were taken as a threat, a source of insecurity and burden. This can have an impact or affect the farmer's decision to form or not to form cooperatives.

It can be seen from table 4.15 that from 71.7% of respondents willing to form cooperatives 36.8% of the respondents disagreed with the statement. Table 4.15 shows that 2.6% of respondents willing to form cooperatives strongly disagreed with statement. Respondents that were unsure of the statement constituted 21.7%.

Table 4.15 above also shows that from 28.3% or respondents unwilling to form cooperatives 9.9% of respondents agreed with the statement. Those respondents that strongly agreed with the statement constituted 3.9% of those not willing to form cooperatives.

Looking at farmers that strongly agreed and agreed with the statement, this concurs with the research carried out by Dejen and Matthews in 2016 that there are farmers who see cooperatives as threats.

4.3.6. Willingness to form cooperative vs cooperatives as a burden

Table 4.16: Willingness to form cooperative vs cooperatives as a burden (N=152)

			Cooperatives can be a burden					
			1	2	3	4	5	Total
Willingness to form cooperative	Yes	Count	25	44	14	7	19	109
		% of Total	16.4%	28.9%	9.2%	4.6%	12.5%	71.7%
	No	Count	0	0	2	12	29	43
		% of Total	0.0%	0.0%	1.3%	7.9%	19.1%	28.3%
	Total	Count	25	44	16	19	48	152
		% of Total	16.4%	28.9%	10.5%	12.5%	31.6%	100.0%

(1= strongly disagree; 2= disagree; 3= unsure; 4= agree; 5= strongly agree) **Source: survey data (2018)**

A study conducted by Dejen and Matthews (2016), showed that cooperatives were taken as a threat, a source of insecurity and burden by the farmers.

Table 4.16 above shows that from 71.7% of respondents willing to form cooperatives 28.9% of the respondents disagreed with the statement. There were 16.4% of respondents willing to form cooperatives that strongly disagreed with the statement. Table 4.16 also shows that 12.5% of the respondents willing to form cooperatives strongly agreed with the statement.

It can be seen that 28.3% of respondents were unwilling to form cooperatives and 19.1% of respondents strongly agreed with the statement. It can be also seen that 7.9% of respondents that were not willing to form cooperatives agreed with the statement. Table 4.16 also shows that there are no respondents that disagreed or strongly disagreed with the statement.

4.3.7. Willingness to form cooperatives vs cooperatives a solution to farmers

Table 4.17: Willingness to form cooperative vs cooperatives as a solution (N=152)

			Cooperatives as a solution for farmers				
			2	3	4	5	Total
Willingness to form cooperative	Yes	Count	0	2	23	84	109
		% of Total	0.0%	1.3%	15.1%	55.3%	71.7%
	No	Count	26	13	4	0	43
		% of Total	17.1%	8.6%	2.6%	0.0%	28.3%
	Total	Count	26	15	27	84	152
		% of Total	17.1%	9.9%	17.8%	55.3%	100.0%

(1= strongly disagree; 2= disagree; 3= unsure; 4= agree; 5= strongly agree) Source: survey data(2018)

According to a study conducted by Agbo (2009), it shows that farmers were reluctant to join cooperatives because they had no knowledge about them and also did not believe that cooperatives would solve any of their problems. Farmers also did not trust government programmes.

Table 4.17 above shows that majority of respondents (71.7%) were willing to form cooperatives and it can be seen 55.3% of respondents strongly agreed with the statement. It can also be seen that 15.1% of the respondents agreed with the statement. No respondents disagreed nor strongly disagreed with the statement

Table 4.17 also shows that from 28.3% of respondents not willing to form cooperatives 17.1% of respondents disagreed with the statement. It also shows that 8.6% of the respondents were unsure of the statement.

Table 4.17 further also shows that the majority of farmers did agree that they were willing to form cooperatives and agreed that cooperatives can be a solution to the constraints that they face.

4.4. Regression analysis results

Table 4.18: Description of variables

Variables	Mean	Std. Dev	Variance
Dependent variable Willingness to form cooperatives (Y)	0.72	0.452	0.204
Independent variable			
Gender (X_1) (0=male 1=female)	0.59	0.494	0.244
Age group (X_2) (Ordered age groups)	5.96	1.663	2.767
Sources of income (X_3) (1=business, 2=Grants, 3=work, 4= Other)	2.84	1.101	1.211
Number of household members (X_4) (1=0-3 2=4-6 3=7-10 4=10-13 5=14-16)	2.18	0.732	0.535
Crop farming training (X_5) 0=otherwise 1=yes	0.70	0.458	0.210
Service providers available (X_6) 0=otherwise 1=yes	0.91	0.290	0.084
Costs of inputs (X_7) Likert scale	3.93	1.417	2.009
Access to Agricultural information (X_8) 0=otherwise 1=yes	0.61	0.490	0.241
Adequate Land for Production (X_9) 0=otherwise 1=yes	0.70	0.458	0.210
Access to Market (X_{10}) 0=otherwise 1=yes	0.28	0.452	0.204

N= 152 **Source: survey data (2018)**

Table 4.18 above shows the variables which are the socioeconomic characteristics of smallholder farmers and the constraints that they face. These variables were used in the analysis using the Binary Logistic Regression and test of equality of group means. Their mean, standard deviation and variance are also shown.

4.4.1. Test of equality of group means

The results were computed to test the equality between groups of means of smallholder farmers and to identify the variables that affect their willingness to form cooperatives. The tests of equality of group means measure each independent variable's potential before the model is created. Each test displays the results of a one-way ANOVA for the independent variable using the grouping variable as the factor.

Table 4.19: Test of equality of group means

Variables	No	Yes	Pooled	Wilks' λ	F	df1	df2	Sig.
GEN(X_1)	0.70	0.54	0.59	0.980	3.131	1	150	0.079
AGE(X_2)	6.63	5.70	5.96	0.936	10.244	1	150	0.002
SINC(X_3)	0.72	0.53	0.59	0.970	4.608	1	150	0.033
HHS(X_4)	2.53	2.95	2.84	0.970	4.581	1	150	0.034
CFT(X_5)	0.51	0.78	0.70	0.930	11.293	1	150	0.001
SPA(X_6)	0.98	0.88	0.91	0.978	3.431	1	150	0.066
CIP(X_7)	3.30	4.18	3.93	0.921	12.854	1	150	0.000
AAI(X_8)	0.40	0.69	0.61	0.927	11.770	1	150	0.001
ALP(X_9)	0.91	0.62	0.70	0.922	12.695	1	150	0.000
AMK(X_{10})	0.14	0.34	0.28	0.960	6.244	1	150	0.014

N= 152 **Source: survey data (2018)**

Table 4.18 presented above measures the equality of group means of the independent variables between the groups of smallholder farmers that were willing to form cooperatives and those that were not willing to form cooperatives.

It can be seen from table 4.19 that there is a significant difference at p<0.001 between the independent variables such as the age of the respondents (AGE), crop farming training (CFT), the costs of inputs (CIP), access to agricultural information (AAI) and the access to adequate land for production (ALP).

Table 4.19 also showed that there is a significant difference at p<0.05 for independent variables such as the Source of income (SINC), the number of household members (HHS) and the access to market (AMK). There is also a significant difference at p<0.1 for the independent variables such as the gender of the respondents (GEN) and the service providers available (SPA).

4.4.1.1. Discussion of results

This section discusses the results by comparing factors separating farmers willing to form cooperatives and those that were not willing to form cooperatives using multivariate analysis in table 4.19.

It can be seen from table 4.19 above that when it concerns the attendance of crop farm training (CFT), farmers who were willing to form cooperatives have a higher mean (0.78) than those farmers that were unwilling to form cooperatives with a mean of (0.51). It is evident that when farmers often attend trainings, they become courageous and gain knowledge and information which may help them increase their output.

When it comes to the hired service provider (SPA) that are available it shows that those farmers that were not willing to form cooperatives have a higher mean (0.98) and those farmers that were willing to form cooperatives with a lower mean (0.88). This implies that the more the farmers use the service providers available the less likely they are to form cooperatives.

It is shown by table 4.19 that when it comes to the cost of inputs (CIP) those farmers that were willing to form cooperatives have a higher mean (4.18) compared to those who were not willing to form cooperatives with a lower mean (3.30). This shows that those farmers who faced high costs of inputs were more willing to form cooperatives than those farmers who said they could afford the inputs.

Table 4.19 shows that when it comes to access to agricultural information (AAI) those farmers willing to form cooperatives have a higher mean (0.69) than those farmers unwilling to form cooperatives with a lower mean (0.40). This implies that farmers who have access to agricultural information gain more knowledge than those who have no access to agricultural information and with that information they are more likely to form cooperatives.

Table 4.19 above shows that when it comes to adequate land for production (ALP) those farmers not willing to form cooperatives have a higher mean (0.91) compared to the lower mean (0.62) farmers willing to form cooperatives. This implies that farmers who said they had adequate land for production are less willing to form cooperatives than those who said they had no adequate land.

Looking at access to market (AMK) those farmers willing to form cooperatives have a higher mean (0.34) compared to the lower mean (0.14) of those not willing to form cooperatives. This shows that farmers who have access to markets are more willing to form cooperatives than those who have no access to markets.

4.4.2. Logistic regression analysis results

The output of binary logistic regression model is presented in Table 4.8 below; including the Hosmer & Lemeshow test, Cox & Snell R^2 and Nagelkerke R^2. As discussed in chapter 3 Binary logistic regression model was run to determine the socioeconomic characteristics of smallholder irrigation farmers and the constraints they face that affect their attitudes towards cooperatives.

Table 4.20: Logistic regression analysis results

Variables in the equation						
Variables	B	S.E.	Wald	df	Sig.	Exp(B)
GEN(X_1)	-0.377	0.554	0.463	1	0.496	0.686
AGE(X_2)	-0.474	0.272	3.037	1	0.081	0.623
SINC(X_3)	0.187	0.252	0.548	1	0.459	1.205
HHS(X_4)	0.466	0.345	1.824	1	0.177	1.594
CFT(X_5)	1.709	0.585	8.533	1	0.003	5.524
SPA(X_6)	-2.866	1.288	4.951	1	0.026	0.057
CIP(X_7)	0.484	0.168	8.276	1	0.004	1.622
AAI(X_8)	1.191	0.554	4.620	1	0.032	3.290
ALP(X_9)	-1.919	0.686	7.824	1	0.005	0.147
AMK(X_{10})	1.190	0.665	3.201	1	0.074	3.287
Constant	2.990	2.731	1.199	1	0.274	19.888

N= 152 **Source: survey data (2018)**

Hosmer and Lemeshow test: X^2=6.488; df=8; p=0.593; Nagelkerke R^2=0.513; Cox and Snell R^2=0.357; n=152; Dependent variable=Willingness to form cooperatives

The results presented in the above table shows that the gender, number of household members and source of income were statistically insignificant at p< 0.01 (1%), p<0.05 (5%) and p<0.1 (10%) levels. Table 4.20 shows that variables such as the crop farm training (CFT), costs of input (CIP) and adequate land for production (ALP) were significant at P<0.01 (1%). Variables that are significant at p<0.05 (5%) include the service providers available (SPA) and access to agricultural information (AAI). There are variables that are significant at p<0.1 (10%) which are the age group of the farmers (AGE) and the access to markets (AMK).

The binary logistic regression results are presented above in table 4.20. The variables in the equation output shows that the regression equation can be written as:

$$In\,(odds) = \beta_0 - x_1 - x_2 + x_3 + x_4 + x_5 - x_6 + x_7 + x_8 - x_9 + x_{10}$$

$$In\,(odds) = 2.990 - 0.377_1 - 0.474_2 + 0.187_3 + 0.466_4 + 1.709_5 - 2.866_6 + 0.484_7 + 1.191_8 - 1.919_9 + 1.190_{10}$$

The results indicate that the gender variable has a negative coefficient (-*0.337*), showing that if the respondent (farmer) is a male (X_1) the more likely it would be to form cooperatives. Table 4.20 also showed the age group (X_2) has a negative coefficient (-*0.474*), it shows that the higher the age of the respondents the less likely their willingness to form cooperatives. Table 4.20 showed number of household members (X_4) has a positive coefficient (*0.466*), meaning the more the household members the more likely their willingness to form cooperatives.

It was also shown that attending crop farming trainings (X_5) has a positive coefficient (*1.709*), showing that the more farmers attend the crop farming trainings the more likely their willingness to form cooperatives. The availability of hired service providers

(X_6) has a negative coefficient (*-2.866*) which shows that the more farmers use the service providers the less likely their willingness to form cooperatives. Table 4.20 also showed that the cost of inputs (X_7) has a positive coefficient (*0.484*) and this shows that the higher the costs of inputs the more likely the willingness to form cooperatives. Table 4.20 also showed that the access to agricultural information (X_8) has a positive coefficient (*1.191*), this shows that the more the respondents (farmers) have access to agricultural information the more likely their willingness to form cooperatives. Table 4.20 also showed that the access to adequate land for production (X_9) has a negative coefficient (*-1.919*), showing that those farmers with adequate land are less likely to form cooperatives. Table 4.20 showed that the access to market (X_{10}) has a positive coefficient (*1.190*) showing that farmers with access to market are more likely to form cooperatives.

4.5.2.1. Discussion of the results

This study was aimed at determining the attitudes of smallholder farmers towards the formation of cooperatives, thus determining if smallholder farmers were willing to form cooperatives or not. The results showing that being male is more likely to influence the willingness to form cooperatives concurs with the research conducted by Njiru *et al* (2015), who found that being male increased the probability of a farmer being a member of a cooperative. These results indicated that women remained under-represented at the membership level in cooperatives. This might be due to the asset ownership patterns as per the findings of Majurin (2008). This was also supported by Agbo (2009), showing that the membership of cooperatives was dominated by male farmers.

The results also showed that the higher the age of the respondents the less likely their willingness to form cooperatives this concurred with the research conducted by Karli *et al* (2006), showing that the probability of farmers becoming members of a cooperative declined with age. This meant that the older the farmers become, the less probable to join a cooperative. This means that younger farmers are more likely to enter agricultural cooperatives than elderly farmers. The results also showed that the more farmers attend crop farm trainings that are offered the more likely they are to form cooperatives and it was also the same case when it came to the service providers that were available.

The costs of inputs had a positive coefficient and was also statistically significant at 1% level, this meant that the more the cost of inputs the more likely farmers would form cooperatives. This results can be supported by Bardhan *et al.* (2012), who found that the challenge of access to credit, had a positive significant effect on smallholder farmers' membership in cooperatives. This showed that the challenge of credit plays a role in farmers joining cooperatives.

Access to agricultural information had a positive coefficient and was statistically significant at 1% level, showing that the more farmers had access to agricultural information the more they are willing to form cooperatives. This statement can be supported by the research conducted by Agbo (2009), who found that farmers were reluctant to join cooperatives because they had no knowledge about them and also did not believe that cooperatives would solve any of their problems. This shows that better knowledge on cooperatives can help with the decision of farmers whether to form a corporative or not.

The results also showed that farmers who said they had adequate land for production were less willing to form cooperatives and those who said say they did not have enough land for production were more willing to form cooperatives. These results concur with research conducted by Njiru *et al* (2015), who also found that farm size (hectares) had an impact on the probability level of forming cooperatives. This non-linearity relationship showed that as farm size-measured as hectares-increases, gross income, producers show less willingness to be members of agricultural cooperatives.

The end result showed that the probability of the membership decreases with increases in the farm size. It was also showed that access to market had a positive coefficient and was statistically significant at 5% level. It shows that the more farmers had access to market the more their willingness to form cooperatives. This may be attributed to a number of factors: the constraints that the smallholder farmers might be facing with their market, the distance from their farm, the costs they face and also the demand from the market regarding the quality or quantity of the products. A study conducted by Njiru *et al* (2015), shows that the challenge of distance to the nearest market had a positive significant effect on smallholder farmers' membership to cooperative. This shows that even though farmers do have access to markets, they can be more willing to form cooperatives than those who do not have access to markets due to the constraints they face in their markets. This can be caused by that even though they have access to markets they can be facing constraints of meeting the required quantity of products. As individuals they have little bargaining power and they often accept almost any price that is offered. Forming cooperatives can be one of the solution for the constraints they face in the market.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the study, it also gives conclusions and recommendations. It summarises and briefly discusses the results with respect to objectives, research questions and hypotheses of the study. It furthermore gives suggestions on future research opportunities.

5.1. Summary

The main objective of this study was to determine the farmers' attitudes towards the formation of cooperatives in rural areas of the Makhado Local Municipality. There were three specific objectives that were set for the study which are to identify the socioeconomic characteristics of smallholder irrigation farmers that influence their attitudes towards forming cooperatives, to determine smallholder irrigation farmer's attitudes towards forming cooperatives and to establish the constraints that smallholder irrigation farmers face that influence their attitudes towards forming cooperatives.

The study's literature review focused on the definition, formation and principles of cooperatives. It also included the view on irrigation schemes and then included the socioeconomic characteristics of smallholder farmers, their attitudes towards cooperatives and finally the constraints that affect their attitudes towards forming cooperatives. The study employed the purposive sampling technique with the selected irrigation schemes under Makhado Local Municipality. The population of the selected irrigation schemes was 215 farmers and only 152 were obtained and were used for the study. The study employed the descriptive statistics for all specific objectives. It also employed the cross tabulation for all the specific objectives which was to

determine farmers' attitudes towards cooperatives. The study also made use of the discriminant analysis to test the group means and the binary logistic regression to analyse the first and third specific objective which were to determine farmers' socioeconomic characteristics and also to establish the constraints they face that affect their attitudes to form cooperatives.

First objective: to identify the socioeconomic characteristics of smallholder irrigation farmers that influence their attitudes towards forming cooperatives.

The study found that there are more female smallholder irrigation farmers involved in farming practices than males. It was revealed that even though female farmers (89) are more than males (63), more of the female farmers (30) are unwilling to form cooperatives compared to males (13).

The study also found that there are older farmers that are farming than younger farmers and also that most of the older farmers depend on old age pension as a source of income. Even though fewer younger small irrigation farmers are involved in farming it shows that they are willing to form cooperatives than the older farmers

This shows that there are socioeconomic characteristics of smallholder irrigation farmers that influence their willingness to form cooperatives and thus accept the hypothesis to be true.

Second objective: to determine the attitudes of farmers towards cooperatives.

The research findings that were found by the study concurred with other studies. The study showed that more farmers are aware of cooperatives. It was found that when the smallholder irrigation farmers have positive attitudes towards cooperatives, they are more willing to form cooperatives. Those farmers that have negative attitudes are unwilling to form cooperatives.

The results show that those farmers agreeing with statement such as bringing more profit, improving farming methods and cooperatives being a solution for smallholder irrigation farmers; those farmers that agreed with the statement were willing to form cooperatives than those that disagreed with the statement.

Farmers that agreed with statements such as cooperatives being a threat, being a burden and cooperatives being used for political reasons, were unwilling to form cooperatives than those that disagreed with the statement.

This shows that farmers' attitudes do influence their willingness to form cooperatives and thus accept the hypothesis to be true.

Third objective: to establish the constraints that smallholder irrigation farmers face that influence their attitudes towards forming cooperatives.

i. The study showed that more smallholder irrigation farmers do attend crop farm training than those who did not and more of the farmers that attended trainings were willing to form cooperatives.

ii. The study also showed that the more farmers use hired service providers that are available, the less willing they are to form cooperatives.

iii. The study also revealed that smallholder irrigation farmers facing the constraint of high costs of inputs are more willing to form cooperatives.

iv. The study did show that the majority of the smallholder irrigation farmers have access to agricultural information and were more willing to form cooperatives than those that were unwilling.

v. The majority of them have no access to markets. It was also supported by the reasons that were given by farmers willing to form cooperatives showing that the main

reasons were to be able to access markets and also to reduce the costs they face during their farming practices.

This shows that there are constraints that influence farmers' attitudes towards cooperatives and thus influence their willingness to form cooperatives therefore, the hypothesis is considered to be true.

5.2. Conclusion

It has been mentioned that the modern history of South Africa cannot ignore the role that cooperatives have played in the development of economic foundations. The importance of the cooperative model in social and economic development has been emphasized over the years. The importance of forming and developing farmers' organisations/cooperatives is to ensure that farmers have sustained livelihoods, create jobs, mobilise resources, generate investments for economic empowerment, enhance social reform and food security and promote Small, Medium and Micro-sized Enterprises (SMME).

The study revealed that more female smallholder irrigation farmers are involved in farming than males, although the study did reveal that more females were unwilling to form cooperatives than males. The study also showed that there are much older farmers compared to young farmers. Young farmers are very important if there is to be an insurance of food security in the future, even though they were fewer, they were willing to form cooperatives.

The study did show that majority of the respondents attend the farm training that are offered by the extension officers. This shows that the smallholder irrigation farmers are interested in trying to increase their productivity. The smallholder irrigation farmers

also do make use of the service providers that are available and they are mostly used for land preparation.

The critical challenge that the respondents were facing is the costs of inputs. Looking at that many farmers depend on old age pension and work salaries and few depending on businesses, it does shows that they have a major problem. The study showed that majority of smallholder irrigation farmers willing to form cooperatives have access to agricultural information while those that not willing do not have access to agricultural information. This shows that having access to agricultural information does have an influence to the farmers' attitudes towards cooperatives. It was revealed that majority of the smallholder irrigation farmers expressed that the land that they have is adequate for their agricultural production. The study also showed that majority of the smallholder farmers do not have access to agricultural markets.

The smallholder irrigation farmers did show their attitudes towards cooperatives and it did show that that their attitudes do have an impact on their willingness to form cooperatives. Knowledge and awareness on cooperatives can play a role towards their attitudes and thus their willingness. The study did show that more smallholder irrigation farmers that were willing to form cooperatives were aware of them and those not willing to form cooperatives more of them were not aware of cooperatives.

5.3. Recommendations

The study makes the following recommendations:

i. The study recommends that department of Agriculture and Rural Development through their agricultural extension advisors/officers can find ways on how they can involve young farmers in agriculture as it was revealed that fewer young farmers are

involved in agriculture. It is important for young people to be involved in agriculture especially in rural areas where it is a basic means for food.

ii. The Department through its extension service can make it easier for the smallholder irrigation farmers to access agricultural information as it plays a major role in the farmers' decision making including formation of cooperatives.

iii. The study shows that majority (71.7%) of smallholder irrigation farmers are willing to form cooperatives. Strategies can be recommended on how farmers can form cooperatives with help from their extension officers and also to ensure that the cooperative form has a solid foundation that can ensure its sustainability in the long run. This can also assist with farmers being able to access markets and also reduce the costs that they face during their farming practices.

iv. Since many smallholder irrigation farmers depend mostly on old age pension and some depend on remittances as a source of income, and facing high cost of inputs; the study recommends that smallholders' irrigation farmers can enhance access to finance by contracting with agricultural companies or organisations.

5.4. Future research opportunities

The researcher felt that more research can be done regarding the following:

i. This research brought to light that majority of smallholder irrigation farmers are willing to form cooperatives and are also facing constraints of high cost of inputs and access to markets. Even though farmers can form cooperatives they can still have a constraint of contributing to the financing of cooperatives and accessing markets. A research can be done in effective ways that farmers' cooperatives can partner with agricultural companies or other agricultural organisations that can assist with financial access and market access.

ii. The researcher felt there is a need to research on youth participation in agriculture and their involvement in cooperatives. While conducting the research the it came to light that there are fewer younger farmers practicing agriculture. It is important to have knowledge of the factors hindering youth participation in agriculture as it is one of the most important factors contributing to the employment and livelihood of people.

iii. A research can be done on how smallholder farmers can revitalise and maximise the use of the irrigation schemes. The researcher found that there were farmers in the irrigation schemes that were not using their plots and there were some who rented out their plots. This means that there can be ways on how farmers can use the irrigation schemes profitably and also encourage farmers to be more involved in their irrigation schemes.

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APPENDICES

Appendix A: Respondent information sheet

Title: Farmers' attitudes towards the formation of cooperatives in rural areas: A case study of irrigation schemes in Makhado Local Municipality

My name is Raselabe Thato Vincent Lesley from the University of Venda in the School of Agriculture, Department of Agricultural Economics and Agribusiness. I am conducting a research with the above title. As part of the requirements for my degree, I am required to conduct this study.

The objectives of the study are:

i. To identify the socioeconomic characteristics of smallholder irrigation farmers that influence their attitudes towards forming cooperatives

ii. To determine smallholder irrigation farmer's perceptions that influence their attitudes towards forming cooperatives.

iii. To establish the constraints that smallholder irrigation farmers face that influence their attitudes towards forming cooperatives

Take note that participation in this study is voluntary. It will not cause any harm and your participation will be treated with confidentiality. The data that I will collect is for study purpose only and I give assurance that the data will only be used for research.

For any inquiries you may contact the researcher on the following line

Cell: 072 501 3763

E-mail: raselabethato@gmail.com

Researcher signature……..... Date……..

Appendix B: Respondent Consent form

Title: Farmers' attitudes towards the formation of cooperatives in rural areas: A case study of irrigation schemes in Makhado Local Municipality

The consent form is designed to check that you understand the purposes of the study; that you are aware of your rights as a participant and to confirm that you are willing to take part

I (full names of respondent) …… have read and understood the content of the information sheet. My understanding is that my participation in this study is voluntary, I may withdraw from the study at any time and information provided will be treated as confidential. I willingly consent to participate in this research study.

I confirm that quotations from the interview can be used in the final research report and other publications. I understand that these will be used anonymously and that no individual respondent will be identified in such report.

Respondent's signature..... Date.....

……

Appendix C: Respondent research Questionnaire

Title: Farmers' attitudes towards the formation of cooperatives in rural areas: A case study of irrigation schemes in Makhado Local Municipality

Questionnaire no:

Instructions:

Mark one cross (X) in each question and specify where necessary. The main purpose of this questionnaire is to collect relevant data pertaining to the factors influencing farmers' willingness to form cooperatives.

Section A: Socioeconomic factors of smallholder farmers

1. Gender

Male	Female

2. Age group

Less than 35	
36-40	
41-45	
46-50	
51-55	
56-60	
More than 60	

3. Marital status

Single	
Married	
Divorced	
Widowed	
Separated	
Cohabiting	

4. Educational level

No education	
Primary level	
Secondary level	
Tertiary level	
ABET	

5. Farming experience

Less than 1 year	
1-5 years	
6-10 years	
11-15 years	
16-20 years	
More than 20 years	

6. Are there sources of income other than farming produce?

Yes	No

7. If yes, what is the source?

1. Remittance	
2. Business	
3. Grants	
4. Work salary	
5. Other	

8. Number of household members?

…….

9. Number of household members working on the farm?

……

10. Number of adults in the household?

……..

11. Household monthly income?

……..

Section B: Constraints faced by smallholder farmers

1. Access to credit? (Example banks)

Yes	No

2. Sources of credit

1. Banks	
2. Government	
3. NGO's	
4. Own capital	
5. Other	

4. Equipment used in farms

1. Hand used materials e.g. hand hoe	
2. Machinery e.g. tractors	
3. Both	
4. Other	

5. Source of farm labour

No labour	
Seasonal labour	
Full-time labour	
Family labour	
Other	

6. Are there any workshops for educating farmers?

Yes	No

7. If yes, how often are they done?

1. Weekly	2. Monthly	3. Quarterly	4. seasonally	5. Annually	6. Other

8. Is there training offered for any crop farming?

Yes	No

9. Who provides the training?

1. Government (Extension officers)	
2. NGO's	
3. Other	

10. How often?

1. Weekly	2. Monthly	3. Quarterly	4. seasonally	5. Annually	6. Other

11. Are there service providers available?

Yes	No

12. How would you rate their costs?

1. Very affordable	1	
2. Fairly affordable	2	
3. Affordable	3	
4. Not so affordable	4	
5. Not affordable	5	

13. Where do your access farm inputs?

1. Government	
2. NTK	
3. Obaro	
4. AFGRI	
5. Other	

14. How would you describe the costs of farm inputs?

1. Very affordable	1	
2. Fairly affordable	2	
3. Affordable	3	
4. Not so affordable	4	
5. Not affordable	5	

15. Do you have access to different agricultural information?

Yes	No

16. Is there enough land for production?

Yes	No

17. Do you have access to market?

Yes	No

18. How far is the market from the farm?

1. Very far	1	
2. Fairly far	2	
3. Far	3	
4. Close	4	
5. Very close	5	

19. Do you have own transport?

Yes	No

20. How is the road infrastructure?

1. Very poor	1	
2. Fairly poor	2	
3. Poor	3	
4. Good	4	
5. Very good	5	

Section C: Attitudes of smallholder famers towards cooperatives

1. Are you aware of cooperatives in your area?

Yes	No

2. How did you become aware of cooperatives?

Other farmers	
Books	
Magazines	
Extension officers	
News papers	
Academic articles	

4. How many cooperatives are you aware of?

1-3	4-6	7-10	11-13	Other

5. How far are they from the irrigation scheme?

1. Very far	1	
2. Fairly far	2	
3. Far	3	
4. Close	4	
5. Very close	5	

6. Are you in contact with members of any cooperatives?

Yes	No

Attitudes towards cooperatives	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
A cooperative is a business owned and controlled by the people who use its services					
It is a group of people who work together voluntarily to meet their common economic, social, and cultural needs					
Cooperatives create social relations that enable individuals to achieve goals that they would have been able achieve by themselves.					
There are seven internationally recognised cooperative principles					
Cooperatives are democratically controlled					
Cooperatives have concern for community					
Cooperatives can help smallholder farmers to improve in their farming activities					
Cooperatives are political tools used to control farmers					
Cooperatives are threats to smallholder farmers					
Cooperatives provide insecurity for smallholder farmers					
Cooperatives can be a burden to smallholder farmers					
Farmers can use cooperatives for selfish reasons					
Cooperatives have positively affected the lives farmers involved					
Do you trust cooperatives as a solution to farmers different constraints					

3. Are you willing to form cooperatives?

Yes	No

4. If yes, state the reasons for your response.

To gain access to inputs	
To gain access to product markets	
To reduce individual cost for individual producer	

5. State other reasons for response other than the one mentioned above.

……

……

……

……

……

……

……..

Your participation is much appreciated. Thank you very much

Compiled by Raselabe T.V.L from the University of Venda

Appendix D: Key informant questionnaire

Title: Farmers' attitudes towards the formation of cooperatives in rural areas: A case study of irrigation schemes in Makhado Local Municipality

Questionnaire no:

Name of irrigation scheme: ……..

1. When was the irrigation scheme established?

……

2. Where is the irrigation scheme located?

……

3. How many farmers are farming in the irrigation scheme?

……

4. Gender distribution of farmers in the irrigation scheme

Males	Females

5. Total area covered by the irrigation scheme

……

6. Source of water for the irrigation scheme

……

7. Which products are produced in the irrigation schemes?

……