

ASSESSMENT OF FACTORS HINDERING MARKETING AMONG SMALLHOLDER  
COOPERATIVE VEGETABLE FARMERS IN POLOKWANE MUNICIPALITY  
LIMPOPO PROVINCE SOUTH AFRICA.

MASTER OF SCIENCE IN AGRICULTURAL ECONOMICS

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VEGETABLE COOPERATIVE FARMERS IN POLOKWANE MUNICIPALITY,  
LIMPOPO PROVINCE, SOUTH AFRICA

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## **ABSTRACT**

The South African agricultural sector plays an important role in creating jobs, alleviating food insecurity and poverty, and also contributes to exports. Agricultural produce from smallholder farmers is often lost after production due numerous marketing challenges which make it difficult for smallholder farmers to explore full market potentials. This, among other challenges, reduces smallholder farmers' motivation to participate in formal (commercial) or high-value markets.

The study aimed at assessing factors hindering marketing among smallholder vegetable cooperative farmers in the Polokwane Municipality. The objectives of the study were to: identify and describe socio-economic characteristics of smallholder vegetable cooperative farmers; examine the influence of socioeconomic characteristics of smallholder vegetable cooperative farmers; identify factors hindering marketing among smallholder vegetable cooperative farmers and constraints faced by smallholder vegetable cooperative farmers in the study area. Primary data with a sample size of hundred and twenty smallholder vegetable cooperative farmers was used. Descriptive statistics, the Marketing Hindrance Index and Tobit Model were employed as analytical tools to achieve the objectives of the study.

Results of data analysis revealed that there are factors hindering marketing among smallholder vegetable cooperative farmers in the Polokwane Municipality. The major factors affecting smallholder farmers are source of water and types of vegetables grown, respectively. From the Tobit Model results, access to credit, access to reliable information about marketing, age, access to storage and farming experience in years were found to be significant.

In view of the research findings, the recommendations of this study include: encouraging youth participation in agriculture, improved access to agricultural information and formal market access, improved access to credit and enabling accessibility through the development of better infrastructure in the form of storage facilities.

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My sincere gratitude goes to my friends and colleagues for the support they gave me throughout the pursuit of my Master of Science degree.

I also extend my sincere appreciation to my mother and daughter who supported me from the day I enrolled for the MSc programme.

## **Declaration**

I, **Piletjo Sebetha**, declare that the mini-dissertation hereby submitted by me to the University of Limpopo for the partial fulfilment of the requirements for Master of Science in Agriculture (Agricultural Economics) has not previously been submitted by me for a degree at this or any other university. This is my own work in design and execution, and that all material contained therein has been duly acknowledged by means of complete references.

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**SEBETHA PILETJO**

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**DATE**

## **Dedication**

This paper is dedicated to my mother and daughter.

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 BACKGROUND

Agriculture is important in society because it contributes immensely to poverty alleviation, food security and economic growth. It is the backbone of many African economies (Balarane & Oladele, 2011). In South Africa, the agricultural sector comprises of the well-developed commercial farming (Antwi & Seahlodi, 2011), which has a small number of commercial operators predominantly operated by White farmers (Senyolo *et al.*, 2009), and more subsistence-based production in the deep rural areas (Antwi & Seahlodi, 2011) operated by Black farmers (Senyolo *et al.*, 2009). Since the mid-eighties, the government identified vegetable crops as means of diversification for making agriculture more profitable through efficient land use, optimum utilisation of natural resources and creating skilled employment for rural masses (Samantaray *et al.*, 2009).

According to (Ajates, 2020), several Agricultural Cooperatives (AC) faced locked-in situations. Some reported being unable to convert to organic processing because their ACs could not accommodate processing and marketing their small percentage of organic produce. Others reported feeling trapped and unhappy with the way their ACs were running but acknowledged their farming livelihoods could not survive without them. These issues created barriers between farmers and consumers. Cooperatives have received insufficient attention from critical management and organisation studies' scholars, who by default take large for-profit organisations as the unit of their analysis (Kokkinidis, 2015; Safri, 2015).

According to Yohannes (2015), it is well-known that different attributes put farmers under different production and marketing potentials. The market performance and the challenges of the market that farmers face might influence the farmers' participation decision and the extent of participation, the type of vegetable crops they would like to grow and the size of farmland they would like to allocate to a specific crop. This is understandable, particularly when one considers that farmers' production and marketing decisions are two sides of the same coin. The two decisions go hand-in-hand as farmers produce what they could sell at an available market. Knowing the interaction patterns between the two decisions helps to understand what crop is sold

at which market and whether the intention of selling at a particular outlet increases or decreases the size of farmland allocated to the specific crop.

Marketing vegetable crops at farm-gate is an interesting process that has not been investigated much. Both buyers and sellers usually do not have equal market information on the vegetable prices at the central market. Under such circumstances, farmers selling vegetable crops at farm-gate deal with the trade-off between selling their crop harvests at higher prices and avoiding the risk of losing product quality if the transaction fails to sustain the higher prices. An interesting issue in this regard is what factors determine the farmers' willingness to participate in the vegetables market (Yohanes, 2015).

Agricultural producers, suppliers and traders form cooperatives to get access to more supplies and markets at a reasonable cost. Their goal is to reduce cost by increasing the scale of their economies. In other words, the more agro-producers combine their efforts in a cooperative, the cheaper the total cost of production becomes. Similarly, the traders united under a cooperative can compete in an open market with large industrial corporations in a fair way. A single modest agricultural producer may struggle with access to supplies and to the competitive markets, especially where major food production corporations are already involved. The risks connected to growing crops are unbearable, while the loss of profit can put an end to the business altogether (EOS, 2020).

Analysis of cooperative formation points out two major reasons for the formation of agricultural cooperatives, *viz.* to solve market failures and to address distortions in the supply chain. Market failures have mainly been in the form of exploitation of individual farmers or producers largely by market intermediaries, resulting in remunerative prices not reaching the individual producers. Agricultural cooperatives were established, but they found themselves caught up. Cooperatives, particularly those in the agricultural sector, have long been recognised to play an important role in society that translates into the improvement of living conditions of their members. As voluntary, democratic and self-controlled business associations, cooperatives offer the institutional framework through which local communities gain control over productive activities from which they derive their livelihoods. In the sector, cooperatives contribute to food production and distribution, and in supporting long-term food security. They also help

in tackling rural poverty by increasing the productivity and income of smallholder farmers by helping them collectively negotiate better prices for seeds, fertiliser, transport, storage and help farmers expand market access (Daff, 2012).

## **1.2 History of agricultural cooperative**

The first cooperative to be established was the Franche-Comté community in France. Apart from this cooperative, there appears to be no consistency with regards to the exact origin of cooperative societies although there are some arguments that it started in Europe. As time progressed, cooperatives were established in other countries. With the development of more cooperatives, cooperative principles emerged. The Equitable Pioneers of Rochdale Society (EPRS) was established in 1844. This cooperative constituted a group of twenty-eight members of the community who were unemployed and thought of combining their limited resources for the good of the group (Sebonkile et al., 2015)

The EPRS was the first cooperative formed under the cooperative principles and as such, it was considered the first modern cooperative. Between 1850 and 1855, the successful EPRS cooperative business established small businesses such as a flourmill, a textile plant and a shoe factory. These businesses expanded rapidly throughout the country and were very successful. Over 400 British cooperative societies were formulated in 1863 and were modelled after the Rochdale Society (Sebonkile et al., 2015). The cooperatives became popular worldwide as they grew steadily into a model for similar cooperatives worldwide. In 1895, the ICA was established as a non-governmental organisation to act as an umbrella organisation that would facilitate all friendly and economic transactions and interactions among cooperative societies, nationally and internationally. Its main objective was to promote and fortify autonomous cooperative societies.

## **1.3 History of agricultural cooperative in South Africa**

A cooperative is not a new intervention in South Africa. In essence, cooperatives have existed in South Africa since the 1800s. Most of these cooperatives were in the form of stockvels (informal cooperatives mainly formed by Blacks). For centuries, many South African people participated and still participate in stockvels. When a stockvel is formed, people come together and collect money from one another on a monthly or quarterly basis. The money is used for functions such as funerals, birthday parties,

weddings and family gatherings. Most stockvels were informal and could not be registered as a cooperative or any other type of organisation due to the past apartheid laws. During the apartheid government, the only people who could benefit from the cooperatives were those that who were classified by the South African government as falling under the first economy. The cooperative sectors started with the establishment of mostly White agricultural cooperatives, which were aimed at developing and building the White farming community (Ravinder, 2017).

South African history indicates that White cooperatives played a significant role in the South African economy. In 1993, there were about 250 of these cooperatives with total assets of R12,7 billion and a total turnover of R22,5 billion. These were achieved as a result of some government interventions at the time. However, Black farmers did not receive the same form of support, and this has since hindered their ability to participate meaningfully in the mainstream economy. Smallholder farmer cooperatives in South Africa (typically small to medium size enterprises) do not have a great deal of negotiation powers for a number of reasons (Daff, 2012).

According to Ravinder (2017), the South African cooperatives eventually developed into powerful business ventures, which controlled agricultural production, marketing and processing in rural areas. Blacks participated as general workers within cooperatives because of the injustices brought by the past laws of South Africa. The South African Democratic Government of 1994 did not consider the Cooperative Act of 1981 as a suitable vehicle for the development of cooperatives. However, the government later developed a Cooperative Act in 2005 which is based on international cooperative principles. Today, cooperatives are among the major interventions that seek to merge the first and the second economy of South Africa. This is done by encouraging those who were disadvantaged by the apartheid government to form cooperative enterprises. This has also served the purpose of eradicating poverty and reducing the level of unemployment in South Africa.

#### **1.4 Problem Statement**

Co-operative organisation is defined as an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs, and aspirations through a jointly owned and democratically controlled enterprise (ICA, 2007). Successful agricultural marketing is vital to smallholder farmers. Accessing output

markets, ranging from small village-level markets to sophisticated export processors, is the key for smallholder farmers to earn more from the sale of their produce (Senyolo et al., 2009). It is the existence of a market which offers the possibility of making a profit, and it is this profit incentive that encourages farmers to stay in production and grow their farming business. However, the limited ability by smallholder farmers in accessing viable local and international markets for their produce is a major challenge

Marketing has always been an issue for smallholder farmers. Farmers had to form groups to receive help from the government as way of eliminating many challenges including marketing. Smallholder vegetable cooperative farmers in particular still face challenges in marketing. Cooperatives operate very much like other businesses. They must serve a market efficiently and effectively, must be well managed and must survive financially. Although the government has put in place strategies to help smallholder farmers to be more productive and participate in the market, the challenge is persisting. Several studies have been conducted on the marketing of smallholder co-operative farmers in Limpopo, however, an assessment of factors hindering marketing among smallholder vegetable co-operative farmers in the Polokwane municipality is still needed. Hence, this study aimed to investigate the factors hindering marketing among smallholder vegetable co-operative farmers in the Polokwane Municipality.

### **1.5 Motivation of the study**

Vegetables are commonly produced and consumed by African rural people, and these crops form part of their daily diet. Women are the main role players in the production, harvesting and processing vegetables (Van Rensburg *et al.*, 2007). Cooperatives are viewed as important tools for improving the living and working conditions of both women and men. Cooperatives make decisions that balance the need for profitability with the welfare of their members and the communities that they serve. As cooperatives foster economies of scope and scale, they increase the bargaining power of their members providing them, among others benefits, higher income and social protection.

According to Siddique (2015), if farmers are becoming more efficient in producing their products at lower costs and able to sell them at a fair price through the Cooperative Marketing system, then it would be possible to achieve higher economic growth. It is

pertinent to mention here that it would not be possible to ensure better living standards of farmers without bringing farming into a Cooperative Society. On the other hand, Cooperatives in Agriculture Marketing can utilise synergy effect. Synergy refers to joint efforts' output, which is much greater than that of individual effort in economic activity.

Marketing is a business activity associated with the flow of goods and services from producers to consumers (Antwi & Seahlodi, 2011). Marketing of agricultural products begins on the farm with planning of production to meet a specific demand and market prospects (Bothloko & Oladele, 2013). Marketing information and market prices guide the farmer in making informed decisions (Uchezuba *et al.*, 2009), and also assists farmers in planning at the pre-planting stage and to sell the surpluses that have been produced. In the absence of marketing information, the retail end of the industry does not respond to supply and demand and the pricing is unchanged (Xaba & Masuku, 2012). Marketing plays a critical role in meeting the overall goals of economic development (Bothloko & Oladele, 2013), food security, poverty alleviation and sustainable agriculture, especially among smallholder farmers (Xaba & Masuku, 2012). Many cooperatives provide jobs and pay local taxes because they operate in specific geographical regions (Dogarawa, 2005). It is generally revealed that cooperatives play a very prominent and significant role towards ensuring food security. This is attributable to the fact that those belonging to cooperatives being more food secure than those not belonging to any form of cooperative (Oluwatayo, 2009). It is against this backdrop that this study aims at assessing factors hindering marketing among smallholder cooperative farmers in the Polokwane Municipality of the Limpopo Province in South Africa.

Based on the foregoing, this study intends to provide answers to the following research questions:

- (i) What are the socio-economic characteristics of smallholder vegetable cooperative farmers?
- (ii) What are the factors and constraints that hinder marketing among smallholder vegetable cooperative farmers in the study area?
- (iii) What is the influence of socio-economic characteristics on cooperative marketing?

## **1.6 Scope of the Study**

### **1.6.1 Objectives of the Study**

The specific objectives of the study are to:

- (I) Identify and describe socio-economic characteristics of smallholder vegetable cooperative farmers.
- (II) Examine the influence of socio-economic characteristics of smallholder cooperative farmers on cooperative marketing.
- (III) Identify factors that hinder marketing among smallholder cooperative farmers and the constraints that smallholder vegetable cooperative farmers face in the study area.

## **1.7 Organisational structure**

This subsection outlines the sequence of the chapters of this study. The mini-dissertation is organised into 5 chapters. Chapter 1 provides a general introduction to and background information of the study, problem statement, motivation, aim and objectives of the study, and lastly, the research questions that are addressed by the study. Chapter 2 presents a review of previous studies that have been conducted by other researchers in line with this study. Chapter 3 provides the methodology of the study, which includes the study area, data set and analytical techniques; it also includes the limitations of the study. Chapter 4 presents the results of the study and interpretation of the results. Chapter 5 provides the summary, conclusion and policy recommendations.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter reviews available literature on the constraints faced by smallholder farmers in accessing profitable markets both in South Africa and other countries. Market access has been a problem to most smallholder farmers in developing countries and this has been due to the lack of many factors. This chapter highlights the current standards and practices that smallholder farmers should meet in order for them to remain competitive in both local and global markets.

#### 2.2 Marketing

Marketing is a business activity associated with the flow of goods and services from producers to consumers (Antwi & Seahlodi, 2011). Marketing of agricultural products begins on the farm when the farmer plans the kind of production needed to meet specific demands and market prospects (Bothloko & Oladele, 2013). Marketing information and market prices guide the farmer in making informed decisions (Uchezuba *et al.*, 2009), and also assists farmers with planning at pre-planting stage and to sell the surpluses that have been produced. In the absence of marketing information, the retail end of the industry does not respond to supply and demand and the pricing is artificially static or unchanged (Xaba & Masuku, 2012).

Marketing plays a critical role in meeting the overall goals of economic development (Bothloko & Oladele, 2013), food security, poverty alleviation and sustainable agriculture, especially among smallholder farmers in developing countries (Xaba & Masuku, 2012). Deficiencies in rural infrastructure services result in poor functioning domestic markets with little spatial and temporal integration, low price transmission and weak international competitiveness (Senyolo *et al.*, 2009). Efficient marketing system usually ensures higher levels of the producer's share, reducing the number of middlemen and restricting the marketing charges, malpractices when marketing farm products. It is, therefore, essential to explore the efficient marketing channels and to suggest to the producers the channels for obtaining optimum prices of their farm produce. So far, very few researches have been conducted on marketing agricultural products in South Africa (Abdullah *et al.*, 2013).

In South Africa, accessibility to and usage of output markets by emerging farmers are two important factors that determine the development of this group of farmers (Senyolo *et al.*, 2009). They further state that the limited ability of smallholder farmers in accessing viable local and international markets for their produce is a major challenge for sustainable agricultural development in South Africa. Improving market access and commercialisation of smallholders helps to induce greater investment, productivity, and income (Olwande & Mathenge, 2012).

Agricultural marketing involves moving from an agricultural product of the farm to the consumer. A large number of inter-connected activities such as planning, production, growing, harvesting, grading, packaging, transport, storage distribution and sale contribute to the marketing of farm produce (Sultana, 2012). Farmers in Bangladesh only perform a few of those marketing activities due to their illiteracy and improper infrastructure. Intermediaries in agricultural product marketing play a prominent role in making the agriculture business a risky business by absorbing major portions of the benefits from the real farmers and gaining high profit by setting a high price for the consumers of agricultural commodities. In the course of marketing agricultural products in Bangladesh, the supply of the products is artificially interrupted and adversely affected by some intermediaries who are not actually the major players in the agricultural sectors.

In developing countries like Tanzania, middlemen play a great role in linking farmers to markets and buyers in the agricultural value chain (Ismail, Srinivas & Tundui, 2015; Magesa, Michael & Ko, 2014). Middlemen are conversant with market operations and have direct access to markets and Agricultural Market Information (AMI), and have links with buyers and traders of agricultural produce. Middlemen benefit more while farmers sell their crops (Otekunrin, Momoh & Ayinde, 2019). Farmers have insufficient knowledge about market operations as they occasionally reach markets to sell their crops. Farmers do not get a good price when selling their crops. Their continual dependence on subsistence farming and agriculture does not improve their livelihoods either. Hence, poverty prevails in rural areas. Rural areas are underdeveloped and the agricultural sector in general, continues to be underdeveloped.

Limited market information and market access are two major obstacles that are faced by smallholder farmers in Tanzania. The formation of a farmers' organisation is one

way to overcome these challenges because it will improve access to markets while reducing transaction costs (Aku *et al.*, 2018). There is an increased demand and market opportunity for horticultural produce in urban centres of both developing and developed countries. Due to this, smallholder farmers have an enormous opportunity to invest more in sustaining horticultural production system, especially through vegetable production. Vegetable production has received considerable attention in recent times. Vegetables are of great importance in terms of nutrition improvement, income generation, food security, and improving resource use efficiency in agriculture (Ebert, 2014). Despite the importance of vegetables, their production is associated with high risks and uncertainty because they are a highly perishable produce. The perishable nature of vegetables necessitates effective marketing channels (Xaba & Masuku, 2012). According to Antwi and Seahlodi (2011), the success of vegetable growers (operation and decision) depends on market availability, accessibility, and affordability.

In most parts of Africa, farmers rely on the information from traders despite the likelihood of such information being inaccurate compared to those obtained from other sources such as government, NGOs, and processing companies (Ochieng, Niyuhire, Ruraduma, Birachi & Ouma, 2014). Smallholder farmers need better access to market information on prices, quality, quantities, where to sell, and production technologies which can be done through the establishment of MIS by the government and development partners in agricultural development. Access to markets by smallholder farmers in Tanzania remains the issue that attracts the attention of researchers, politicians and government. It is anticipated that improved access to markets can boost the economies of an individual farmer, of rural areas and the country at large. Target should be access to district, regional, national and even export markets. Governments in developing countries should continue to invest more in education to ensure that the citizens are literate and thus improve their agricultural activities. Farmers, educated and thus literate, can engage themselves in modern agriculture and thus improve their agricultural production. Literate farmers can embrace modern technologies to improve both their farm produce and their livelihood.

When farmers sell their crops, middlemen provide a linkage between them, markets and buyers. Middlemen have good knowledge of the working conditions of markets and have access to agricultural market information. Due to poor access to markets

and agricultural market information by smallholders, there is a feeling that middlemen benefit more than the farmers. Good access to markets and market information may help farmers bypass middlemen while selling crops and thus benefit more. To attain this, it is best to improve the informational capabilities (ICs) of farmers in agricultural marketing (Magesa *et al.*, 2020).

To smallholder farmers, access to information through ICT is vital for their agricultural dealings as it can help them learn the best farming techniques for more agricultural production. It can also enable them to learn the weather and climate information necessary for their agricultural farming. Furthermore, access to information can help to become well-informed about markets, buyers, and traders while marketing and selling their agricultural produce. All these require smallholders to develop their capabilities in ICT. Thus, improved ICs can enable smallholder farmers to become more active market participants, reach markets and buyers of their agricultural produce, for more profit, for their improved livelihoods and the improved agricultural sector.

Government and development partners are also tasked to ensure that infrastructures are established in rural areas to support agricultural marketing activities. For rural areas to be accessible, roads need to be constructed, rural areas need to be supplied with electricity and be connected with communication infrastructure. This may ensure convenient access to markets by farmers. Online services and marketing can also be encouraged in developing countries. This can link sellers and buyers while assuring the visibility and availability of markets for services and products. With this, farmers can access traders, distant markets and even export markets. This is a good strategy of empowering smallholders to access export markets. The ultimate result is the improved livelihood of farmers and rural communities, agricultural sector development, and the improved economies of the country at large (Magesa *et al.*, 2020).

### **2.3 Marketing challenges faced by smallholder farmers.**

There are some smallholders who are producing for the market and are determined to shift into commercial farming. However, it is difficult for them to make such a transition if they fail to access high-value markets such as retailers and wholesalers. For smallholder farmers to supply supermarkets or wholesalers, they need a certain volume of production, high-quality products, and consistency in supply and quality

(Baloyi, 2010). Due to technical constraints and transaction costs, smallholder farmers find it difficult to meet the quantity required and the quality standards set by the large retailers and wholesale buyers. In contrast, failing to participate in formal markets yields a negative effect on the growth and development of smallholder farmers. Once smallholder farmers are enabled to market their products successfully, the commercialisation of their sector in South Africa can be successful. The major constraints to smallholder commercialisation include poor access to productive resources, markets, market information, public services, technology and skills, high transaction costs, and other factors (Zhou *et al.*, 2013).

Smallholder farmers are hindered from participating in potentially lucrative markets because they lack assets, information and access to services (Department of Agriculture, Fisheries and Forestry, 2012). Despite the existence of policies that facilitate more liberalised, deregulated markets for agricultural products, there are market-related constraints that are faced by emerging farmers which limit their ability to enter the mainstream commercial agriculture (Senyolo *et al.*, 2009). Baloyi (2010) lists a range of impediments to market participation by small-scale farmers, including lack of access to finance, market information and training, and on-farm infrastructure. Marketing challenges also include the lack of management skills, small quantities produced, poor infrastructure (e.g. lack of storage facilities) resulting in poor product quality, and high transaction costs. Due to difficulties in accessing formal markets, the local market (community members) becomes the market channel that smallholder farmers depend upon and also a market which they can easily access.

Farmers normally sell their produce through informal channels such as neighbours and local shops. However, the local market is not sufficient to allow smallholder farmers to make substantial profits, that is, enough for them to grow and develop to larger-scale farming. People in remote rural areas are usually without jobs, lack purchasing power and cannot afford to pay higher prices. They bargain for cheap prices and farmers do not obtain better return for their produce. Linking smallholder farmers to high-value markets in the agricultural supply chain remains a major problem. There is therefore a need to identify those factors that are currently preventing smallholder farmers from participating and benefiting from high-value markets (Mdlalose, 2016).

According to Chikazunga and Paradza (2012), fresh produce markets in South Africa are increasingly dominated by the four retail chains, namely, Shoprite-Checkers, Pick n Pay, SPAR and Woolworths. These supermarkets have strict quality requirements which smallholder farmers usually fail to meet due to technical constraints (such as poor physical infrastructure and lack of storage facilities) and high transaction costs (such as high transport costs). As a result, the majority of smallholder farmers do not have access to these supermarkets. These technical constraints and transaction costs also make it difficult for smallholder farmers to retain a market that they have access to. The essence of the problem lies in identifying those factors which influence the marketing decisions among smallholder farmers.

The identification of ways to increase market participation by smallholder producers requires identification of variables that influence market access. Poor households in rural areas have limited access to basic municipal services such as roads, water, sanitation and electricity, as well as a lack of good quality social services; education, health, and transport services (Mntuyedwa, 2013). Technical factors play an important role in product marketing. The availability of and access to infrastructural services such as electricity, serviceable roads, and telecommunications have an influence on the marketing decision of fresh produce. Smallholder farmers in rural areas are confronted with numerous technical constraints, including poor infrastructural development and limited access to markets. According to Baloyi (2010), farmers are faced with new challenges that include inconsistent supply of high-quality produce, knowledge of acceptable agricultural practices, capacity to comply with market and regulatory requirements, and traceability. Without access to basic services, these challenges cannot be overcome.

Marketing constraints or challenges arise due to many factors such as limited knowledge and use of market information, lack of access to high-value reliable markets, high transactional costs, distance from the markets, poor quality of products, lack of storage facilities, low educational levels of small-scale farmers, poor agricultural extension services and lack of financial support (Antwi & Seahlodi, 2011). Other factors are: inadequate property rights, inadequate and inaccessible market infrastructure, lack of adequate access to finance, socio-economic factors of the farmer (e.g. training, farming experience, age, level of education and household size), lack of access to decent roads, price risk and uncertainty, electricity, poor

communication (Senyolo *et al.*, 2009). Information about prices, inadequate local markets, lack of bargaining power and excess of intermediaries also contribute to the marketing constraints by farmers (Xaba & Masuku, 2012).

Access to markets is an essential requirement for the poor in rural areas. It may also be easy to access markets but retaining one's position in the market is more difficult and the participation of small-scale farmers in high-value markets is unsatisfactory (Baloyi, 2010). Also, the perishable nature of vegetables necessitates effective marketing channels (Xaba & Masuku, 2012). Therefore, overcoming marketing constraints is critical for smallholder farmers to access lucrative markets. These marketing constraints constitute the greatest barrier for smallholder farmers when it comes to access high value markets (Baloyi, 2010).

Smallholder farmers require more improved access to agricultural markets in order for farmers to improve their productivity. A majority of smallholder farmers operate in poor environments where it is difficult for them to access the market due to high marketing costs, poor access to marketing information and supporting services. Smallholder farmers operate in rural areas with a few buyers competing for their surplus output which has resulted in farmers being reluctant to adopt new technologies and produce for the market (Chamberlin & Jayne, 2011).

High transaction cost is also one of the major factors constraining the growth of smallholder farmers and this is largely attributed to poor infrastructure. A poor road network, for example, and unreliable distribution will force farmers to grow their own food and produce less perishable commodities as a result of lower productivity. Increased cost of transport will also affect inputs used and the market strategies implemented by the farmers. In most cases, high transaction costs are caused by, among others, poor infrastructure and communication services in remote rural areas. They can also result from information inefficiencies and institutional problems such as the absence of formal markets. Lack of reliable markets has also been found to be one of the main constraints faced by smallholder farmers. Many of these farmers receive low prices for their products by selling them at their farm-gate or local markets. (Daff, 2012).

Communication is a significant aspect of agricultural development. Communication technologies are proposed as essential tools to disseminate the knowledge and

information needed by workers in agriculture to improve the production processes (Sala, 2010). Extensive communication networks allow for a rapid and free flow of information, which ensures that business decisions are made taking into account all available and relevant information (Adejuwon, 2015). The availability of good communication networks plays a vital role in overcoming the challenge of farmers who lack information.

Producers incur information costs as they try to establish who to sell to and the prices at which to sell (Mabuza *et al.*, 2013). The magnitude of the information cost depends on the time taken to conduct the search. Access to market information is vital for a farmer to make a sound marketing decision. In most cases, smallholder farmers do not have access to such vital information. This information refers to current price information, forecast of market trends, sales timing and other information (Tshuma, 2014). Farmers rarely trust the information they access because it is often unreliable information. Such information is either obtained from other people in the village who are involved in selling or from rural traders. Reliable information can assist farmers in planning their market products and assist them in avoiding market glut (Tshuma, 2014). Transaction costs are incurred when farmers have to spend time searching for market information.

Access to such market information puts the farmer in a better position to make informed decisions. Farmers are able to make timely and better-informed production and marketing decisions if they have full and easy access to reliable and up-to date market information (Mabuza *et al.*, 2013). The lack of access to information puts smallholder farmers at a marketing disadvantage in that they may not know what commodities to produce, the relative quantities to produce, and the most economical way to produce them with the resources available.

Access to information cannot be viewed in isolation from time because in agricultural production, time is of the essence due to the industry's dependence on seasons. For instance, receiving information which influences the decision of which crop to plant may not be useful when received after seeds have been planted. It therefore means that information must be received on time for it to be effective. Small-scale farmers have difficulty in accessing information on time. Unlike commercial farmers who usually have access to websites and publications, rural farmers would normally

depend on government extension services, informal networks (traders, friends and relatives) for market information and use of cell phones. These sources of information may not be reliable in terms of supplying information on time and efficiently. While the agricultural production knowledge is important, improvement in knowledge and information on the market side is equally important. In developing countries, however, such information is not always obtainable and may not always be reliable, so there is an increased risk of poor market performance and failures (Food and Agriculture Organisation, 2013).

## **2.4 Cooperatives**

According to Geoffrey *et al.* (2014), group marketing should also be put as priority in marketing to improve the bargaining position of smallholder farmers and as a means of lowering transaction costs. Dissemination of price information can be done through mass media, government administration, and extension officer, among others. Contract marketing should also be extended to farmers who market their produce at local and urban market. Cooperatives need to be properly guided and organised, especially at their formative stages, having seen it as a veritable channel of meeting the needs of the poor majority in rural areas. Human capital development, through education, should be made a priority because households with tertiary education are less prone to food insecurity (Oluwatayo, 2009). The formation of marketing cooperatives would enable the farmers to market their products and to address individual small marketing output constraints, small size of transport and high transportation costs in order to attract and penetrate high value-markets. There is also a need to provide effective and efficient quality extension services in order to equip farmers with important skills in the areas of vegetable production and supply of useful marketing information to the farmers.

Kormelinck *et al.* (2016) argue that cooperatives are key to economic development in smallholder agriculture since they help to overcome market failures, reduce transaction costs and address the problem of asymmetric information. There is a significant body of literature on social capital and collective action in smallholder agriculture and agricultural cooperatives (e.g. Bernard & Spielman 2009; Francesconi & Heerinck 2010). Becchetti *et al.* (2013) emphasise the importance of interpersonal trust in creating social capital. Many studies show that there may be a two-way relationship between the success of cooperatives and the existence of social capital.

Cooperatives help create and augment social capital, and social capital, in turn, yields the success of cooperatives.

Cooperatives are four times more likely to be described as 'fair' and 'honest' compared to public limited companies (Cooperatives Agro-alimentarias, 2013; Wilson & MacLean, 2012). However, Agricultural Cooperatives offer a not so clear picture (Berthelot, 2012; Kontogeorgos *et al.*, 2017). At first sight, Agricultural Cooperatives (ACs) present quite radical and anti-capitalist features, including allowing members to make savings by collectively purchasing inputs and paying for expensive infrastructure. ACs are vital because individual farmers rarely afford certain purchases on their own, and often find it difficult to access training, shared policy and agronomy advice in isolation (Bijman *et al.*, 2012). Due to the democratic nature of the cooperative form, it is also assumed that ACs empower their members and allow small farmers to be more vocal and have a stronger voice in the supply chain. ACs should have met substantial opposition from private agri-food interests, but current statistics indicate that ACs are far from being a fringe organisational model and are instead a dominant actor in European farming (Bijman *et al.*, 2012).

Most worker cooperatives are embedded in social movement discourses and in their local areas (Böhm *et al.*, 2014; Cheney *et al.*, 2013; Parker, 2017). What happens, however, when cooperative members do not share working time and spaces, and their focus on growth dramatically takes them away from their original localities? This question is important because this the standard situation in which large ACs' members currently find themselves in. Many farmers cannot not survive financially without being members of ACs and yet, they feel trapped in ACs that have a model of intensive agriculture for exports (McCarthy *et al.*, 2017). This is both a social and political issue, not a technical one. Many ACs seem to have become both active agents and victims of short-term pressure, pushing their members to produce faster and more intensively. Marcis *et al.* (2018) noted that, as with performance indicators, most sustainability evaluation models for cooperatives do not address sustainability in an integrated way, they instead focus predominantly on economic and social aspects and a neglect of environmental dimensions (Marcis *et al.*, 2018). The quest for more efficient, cost-effective and faster processes displaces efforts on bigger questions such as those related to biodiversity, depletion of natural resources and power imbalances. By fostering intensive farming and in some cases, supplying chemical inputs to members,

ACs are fuelling unsustainable production methods that become difficult to escape once they are intrinsic to the ACs' daily practices and operations. One of Anecoop's interviewees reflected on how the adoption of more ecological methods (not always certified) in the region of Almeria was pretty much the only solution to improve working conditions and reduce the serious effects of pesticide exposure under plastic that members and their labourers were suffering from. However, the organic farming they converted to was not the transformative one as envisioned by the early organic movement, but one highly embedded in inter-national supply chains, involving intensive production, several harvests a year and monocultures (Goodman *et al.*, 2011).

More radical changes in their way of growing and selling their produce would be much more complex to implement because the current greenhouses' and cooperatives' contracts keep them locked-in. This perpetuates their embeddedness in industrial and global food systems, which several AC members alluded to with sadness as a result of the locked-in situation that many farmers find themselves in. Some reported not being able to convert to organic produce because their ACs could not accommodate processing and marketing a very small percentage of organic produce. Others reported feeling trapped and unhappy with the way their ACs were running but also acknowledged that their farming livelihoods could not survive without them. This created barriers against alliances between farmers and consumers. Agricultural cooperatives account for a larger share of the cooperative economy (Wilson & MacLean, 2012)

Not sharing the means of production could be the cause of a different cooperative reality in supply and marketing ACs. In contrast to workers' cooperatives, AC members do not have to cooperate with each other daily; in fact, some authors argue that they hardly ever have to cooperate because farmers have delegated the act of cooperating to professional managers (Wilson & MacLean, 2012). The evidence presented suggests that the reasons for joining a workers' cooperative can also be different from the outset from those that farmers might have for joining an AC. The latter appear to be more focussed on financial savings and the economic benefits of economies of scale, in line with what other studies have also found (Wilson & MacLen, 2012). The data also indicate, especially in the case of MVF, that members have a passive rather than active relationship with their cooperatives, with many being distant from the

governance of their cooperatives. In the case of supply cooperatives, farmers' relationship with their AC gravitates more towards that of a consumer or buyer in a purchasing group. These findings are in line with those of economic studies of ACs, which have found that these cooperative organisations are developing similar managerial hierarchies to those private companies (Iliopoulos & Valentinov, 2018), and losing social capital as a result (Nilsson *et al.*, 2012).

## **2.5 Cooperative marketing**

According to Abdullah *et al.* (2013), a cooperative of farmers can be established at the local level of the country. The cooperative will perform as marketers for the farmers, ensuring fair price for farmers and consumers. This cooperative must be controlled and monitored by the farmers in the local area. Proper management, capital requirement, marketing orientation programmes and other activities must be considered as major issues in the cooperative. Successful cooperatives can ensure the fair price for farmers and consumers reducing the plethora of intermediaries from the market.

Cooperatives have to compete in capitalist markets that put pressure on their democratic values. These 'dual realities' of cooperatives (Parker *et al.*, 2014) reflect the imbalance between their internal principles and the external context in which they have to survive. In the case of ACs, the local and grounded character embedded in food-growing activities clashes with the increasingly internationalised and competitive farming and food retail markets. According to the Reserve Bank of India "a cooperative marketing society is an association of cultivators formed primarily for the purpose of helping the members to market their products more profitably than possible through the private trade". The aim of a cooperative is not to convey capital gains only to owners; it is to create benefits to a group of members. Also, it must be noted that the cooperative is established to adjust to a malfunctioning market mechanism, which is to say that the members, through their cooperative, could reduce risk-taking in their farm enterprises. Cooperative marketing or cooperative in agricultural business helps the farmers to take different risks associated with the production and distribution of crops. The government of India has taken different initiatives to strengthen the cooperative marketing in the agriculture sector (Mondol, 2010). Proper management of cooperative marketing can remove the interruption of intermediaries from marketing

an agricultural product. Cooperative marketing in agricultural business is evidenced by the different studies that were conducted in different countries (Banaszak, 2008)

To reduce the impact of intermediaries on the market, steps should be taken by the growers with the help of respective authorities from the government. Since a cooperative of farmers can be established at the local level of the country, it can also function as a marketer for the farmers, ensuring fair prices for the farmers and consumers. Proper management, capital requirement, marketing orientation programmes and other activities must be considered as major issues in the cooperative. Successful cooperatives can ensure a fair price for farmers and consumers, which will reduce the plethora of intermediaries from the market (Abdullah *et al.*, 2013).

## **2.6 Vegetable production and marketing challenges**

Smallholder vegetable production is vital in enhancing livelihoods in Zimbabwe's rural areas. Vegetable production generates household income and improves household food security. Despite this, smallholder vegetable farmers in Zimbabwe suffer huge post-harvest losses which reduce their profits and market competitiveness. Post-harvest losses of vegetables are a major dilemma faced by smallholder farmers. They not only represent waste of scarce resources such as farm inputs, but also entail wasted investment in terms of time, human effort and food. Furthermore, there are also a myriad of other challenges which constrain smallholder vegetable farmers in Zimbabwe from accessing lucrative markets (Mukarumbwa, 2017).

According to Gustavsson *et al.* (2011), vegetables straight from the farm can be spoiled in hot climates due to lack of infrastructure for transportation, storage, cooling and markets. Since fresh produce tends to have a limited shelf life, proper storage facilities are vital in ensuring quality maintenance for perishable agricultural produce. Quality suffers as a result of a lack of suitable storage facilities. Therefore, the absence of proper storage facilities puts farmers at the risk of losing the produce, quality of the produce and customers, hence the ability of earning a higher final consumer price. Zuwarimwe and Kirsten (2010) state that smallholder farmers still face problems in attracting external finance and other needed resources to establish and expand their businesses. The poor financial status and lack of assets which can serve as collateral, negatively affect the creditworthiness of smallholder farmers. Creditworthiness

involves the lenders' evaluation and subsequent determination that the borrower will have sufficient debt-servicing reserves to meet the terms of the loan.

Various studies have confirmed this high incidence of post-harvest losses, especially in developing countries from farm to retail stage and concluded that not much improvement in total percentage losses have been recorded since the 1970s to date (Kitinoja *et al.*, 2011). In the same vein, it has been indicated that smallholder farmers in developing countries, particularly in Sub-Saharan Africa, lose an estimated 30–40% of the value of their fruits and vegetables before they reach the final consumer (Kereth *et al.*, 2013). In addition, Gustavsson *et al.* (2011) further noted that of about 1,3 billion tons of food losses and waste reported in the world, approximately 44% consists of fruits and vegetable crops. These statistics project a very grim picture as far as the issue of post-harvest losses in fruits and vegetables is concerned.

Despite the fact that reducing post-harvest losses of vegetables and fruits produced bear more beneficial results, it has been noted that less than 5% of funding in many countries is allocated to post-harvest research areas. Kitinoja *et al.* (2011) averred that research in post-harvest horticulture technologies and extension is lagging far behind in most developing countries regardless of its immense benefits in leading to improved incomes, reducing waste and increasing the food supply without increasing production and wasting the expenditures on all the inputs required (land, water, seeds, fertilizers, pesticides, labour, etc.).

Zimbabwe's horticultural sector experiences massive post-harvest losses, especially in the smallholder sector, retarding farmers' returns. According to Musasa *et al.* (2015), one of the critical issues which needs to be addressed in Zimbabwe along with the smallholder horticultural value chain is the reduction of post-harvest losses which might increase their profitability. For example, in a study conducted by Musasa *et al.* (2015) in Rusitu Valley, which is situated in Manicaland Province in Zimbabwe, it was estimated that during the 2011–2012 farming season, more than 30% of oranges were discarded due to post-harvest losses. The same study discovered that these post-harvest losses were being caused by poor post-harvest management as well as pests and diseases.

In this context of high post-harvest losses, particularly of horticultural produce in many rural communities in Africa, a distinctive need emerges to accelerate evidence-based

policy dialogues for addressing this investment imbalance between production and post-harvest management. The starting point might be to assess farmers' awareness of simple and low-cost postharvest value-adding initiatives. Given this background, the need arises to verify with empirical evidence the current level of smallholder horticulture farmers' level of awareness in postharvest value-adding initiatives. This emanates from an understanding that the level of knowledge of post-harvest management is essential in determining attitudes towards the adoption of value-adding initiatives (Roy *et al.*, 2013).

According to Matsane *et al.* (2014), prominent constraints of marketing vegetables among smallholder farmers were: lack of access to credit, lack of access to storage facilities, lack of market information, lack of finance for farming, poorly developed village markets, poor producer prices, high perishability of produce, low patronage, inadequate access roads, small size of transport and high transportation costs. The significant determinants were gender, farm size in cultivation; number of employees; access to storage facilities; grading of products and access to extension services.

In developing countries, lack of appropriate technology constrains smallholder farmers' production of foods in rural areas (Aworh, 2015). Value addition to vegetables has the potential to reduce post-harvest losses, improve SHFs' income, enhance food security and contribute to sustainable rural development. The challenge of lack of appropriate technology is compounded by the shortage of vital inputs such as water and electricity to carry out operations in rural areas. Further, lack of access to financial institutions, inadequate working capital and high interest rates impede SHFs from engaging in value addition (Aworh, 2015). Smallholder farmers are resource constrained and operate on a small scale.

Smallholder farmers in Zimbabwe do not have a track record of borrowing from financial institutions and neither do financial institutions fully understand them (Rukuni, 2013). This is one reason why their entrepreneurial capacity and participation in input and output markets has not been fully maximised. The present prevailing economic situation in Zimbabwe exacerbated the liquidity crunch of SHFs to access loans and credit. Generally, the economy is depressed across all sectors. Hence, there are very limited lines of credit, particularly for SHFs (Kapuya *et al.*, 2010; Makoni *et al.*, 2014). Further, smallholder farmers are deemed to be high risk by lending institutions

because of their lack of collateral security in case of default. In the same way, banks cite high transaction costs in administering loans to resource-poor farmers as another deterrent for them to extend loans (Makoni *et al.*, 2014). According to Mwakiwa *et al.* (2016), the potential of horticulture crops in Zimbabwe is not being fully maximised. This emanates from credit and financial constraints inter alia that are experienced with smallholder farmers in Zimbabwe, particularly with regards to venturing into high-value crops such as green beans. Credit availability can improve their productivity and expand their market options, both in domestic and export markets.

## **2.7 Review of literature on past studies**

### **2.7.1 Marketing**

According to Kherallah and Minot (2001), there two types of markets (informal and formal). Informal markets embrace unofficial transactions between farmers and from farmers directly to consumers. On the other hand, formal markets have clearly defined grades, quality standards and safety regulations and prices are formally set. Smallholder farmers find it difficult to access these formal markets and such are the focus of this research. Mangisoni (2006) argues that smallholder farmers are constrained by high transaction costs, high risks, missing markets and lack of collective action in the marketing environment. Smallholder farmers are further constrained by licensing of their products, absence of grades and standards, lack of marketing information, poor access to markets, weak entrepreneurial skills and high marketing margins (Farina and Reardon, 2000). High risks, on the other hand, embrace lack of legal frameworks, weak policy environment, and high price volatility, while missing markets includes lack of value adding and agro-processing, weak infrastructure and lack of credit.

According to Limpopo Department of Agriculture (2008), smallholder agricultural production is mainly for food security, and surplus production is marketed to a lesser extent. However, Louw *et al.* (2008) state that for some rural households, agricultural production and marketing serve as a main source of income. According to Jari and Fraser (2009), markets are very important in reducing poverty and improving livelihoods of households. Amongst smallholder farmers, market participation is important because households derive benefits such as income (Machethe, 2004).

However, access to profitable output markets (high income-earning markets) is vital for smallholder farmers to earn reasonable income from the sale of their produce.

In South Africa, accessibility to and usage of output markets by emerging farmers are two important factors that determine the development of this group of farmers (Senyolo et al., 2009). They further state that the limited ability by smallholder farmers in accessing viable local and international markets for their produce is a major challenge for sustainable agricultural development in South Africa. According to Heinemann (2002), rural people in Africa claim that they cannot improve their living standards because of the difficulties they face in accessing markets. Therefore, having access to formal (commercial) markets allows smallholder farmers to escape the cycle of poverty.

Accessing output markets, ranging from small village-level markets to sophisticated export processors, is the key for smallholder farmers to earn more from the sale of their produce (Senyolo et al.,2009). It is the existence of a market which offers the possibility of making a profit, and it is this profit incentive that encourages farmers to stay in production and grow their farming business. However, the limited ability by smallholder farmers in accessing viable local and international markets for their produce is a major challenge for sustainable agricultural development in South Africa (Senyolo et al., 2009).

### **2.7.2 Cooperatives**

There is increasing evidence from both research and practice that one way for smallholder farmers to overcome market failures and maintain their market position is through organizing into farmer groups or producers organizations (Markelova and Meinzen-Dick, 2009). Bienabe et al. (2004) also confirmed that “collective farming” or “collective action<sup>3</sup>” better positions smallholder farmers to reduce transaction costs for their market exchanges, obtain necessary market information, secure access to new technologies, and tap into high-value markets, allowing them to compete more effectively with large farmers and agribusinesses. The positive impact of marketing cooperatives on smallholder farmers market access involve the implicit cost-saving and risk-sharing devices of collective marketing especially for farmers who belong to these cooperatives, as supported by numerous studies(e.g. Bonin et al., 1993; Helmberger and Hoos, 1995). On the other hand, potential reasons underlying the

insignificant impact of all cooperatives on farm output to market access involve the „defensive“ attitude, related to prevalent rent-seeking behaviour, typical of nonmarketing cooperatives.

### **2.7.3 Cooperative marketing**

Producer groups can simplify long marketing chains by connecting smallholders directly to markets, bypassing various marketing intermediaries. Thus, one of the main questions regarding market access is how to improve the farmer’s competitiveness. Bourdanove (1991), defines competitiveness as the capacity to improve market position, it covers cost reduction strategies which can be achieved through economies of scale, input provision, technical assistance or commercial logistics. The importance of farmer organizations is that they help farmers to negotiate or bargain as a group rather than as individuals. Stringfellow et al. (1997) and Stockbridge et al. (2003) argue that smallholder organizations are important for developing negotiation skills, power and political representation which are critical for smallholder farmers to participate in the improvement of their institutional environment. Social and local networks can give smallholder farmers flexibility and knowhow, which facilitates learning by doing and learning by using and hence, the emergence of innovations. Sharing the same historical experiences and local identity of a relevant territory and building on local social capital, these local agri-food chains can under score some conditions that generate economies of scale, minimize transactions costs and trigger collective action, resulting in more sustainable market access for smallholder farmers (Roche et al., 2004).

An example of such is vegetable smallholder producers in KwaZulu-Natal have since organized themselves and formed some producer organizations. Their sugarcane is collected by a sugar-milling company at designated places in rural areas in the province. These farmers are located in Umkhanyakude District Municipality and are assisted by Umfolozi Sugar Milling Company (USM) which collects the sugarcane to the mill. There are many success stories of farmer organizations leading to active and effective farmer participation in value chains, e.g. in the case of coffee producers in South America (Hellin and Higman, 2003). One of the better known is the milk industry in India where more than 70 percent of India’s milk is produced by households who own only one or two milk animals, and these producers form part of a nationwide

network of dairy cooperatives (FAO, 2004). While the main role of marketing cooperatives is to reduce transaction costs and improve bargaining power of smallholders vis-à-vis the market, the role of cooperatives is to reduce transactions costs and increase bargaining power of smallholders vis-à-vis the state and the various support services these cooperatives receive from various NGOs, private sectors and also from government incentives provided to farmers. Some of such services provided by farmer organizations according, to Stockbridge et al. (2003)

it was found that in KZN, one cooperative was operating one vegetable tunnel on a school premise, growing tomatoes in one season per year to generate funds. This made it impossible for farmers to maintain a continuous supply of vegetables all year round. This revealed the challenge of maintaining continuous supply faced by smallholder farmers. In order to improve their performance and maintain continuous supply, ceterus paribus, smallholder farmers need more land to practice continuous cropping.

#### **2.7.4 Marketing challenges faced by smallholder vegetable farmers**

Marketing Challenges faced by smallholder vegetable farmers There are several challenges in developing smallholder farmers. These include identification of output markets that may enable large numbers of smallholders to improve their incomes; and identification of constraints and interventions that are important for improving access to markets by the poor. Before the advent of democratic governance in South Africa, marketing challenges were addressed through the formation of cooperatives, which serviced commercial farmers while smallholder farmers did not have access to the services of these cooperatives (Ortmann and King, 2006).

Due to difficulties in accessing formal markets, the local market (community members) becomes the market channel that smallholder farmers depend upon and a market which they can easily access. In the study by Matungul et al. (2001), conducted at Impendle and Swayimani in KwaZulu-Natal, it was discovered that the farmers normally sell their produce through informal channels such as neighbours and local shops. However, the local market is not sufficient to allow smallholder farmers to make substantial profits for them to grow and develop to larger-scale farming. People in remote rural areas are usually without jobs, lack purchasing power and cannot afford to pay higher prices. They bargain for cheap prices and the farmers do not obtain

better return for their produce. Linking smallholder farmers to high-value markets in the agricultural supply chain remains a major problem. There is therefore a need to identify those factors that are currently preventing smallholder farmers from participating and benefiting from high-value markets.

For smallholder farmers to supply supermarkets or wholesalers they need a certain volume of production, high-quality products, and consistency in supply and quality (Baloyi, 2010). Due to technical constraints and transaction costs, smallholder farmers find it difficult to meet the quantity required and the quality standards set by the large retailers and wholesale buyers. In contrast, failing to participate in formal markets impose a negative effect on the growth and development of smallholder farmers. Therefore, improvements in market participation are necessary to link smallholder farmers to markets (Omiti et al., 2007). Once smallholder farmers are enabled to market their products successfully, commercialisation of their sector in South Africa can be successful (Van Renen, 1997).

Failure to meet market standards is one of the major factors contributing to the lack of access to formal markets by smallholder farmers. These farmers often fail to participate in formal markets due to the strict requirements relating to volumes, quality, and food safety systems demanded by formal markets (Kotler, 2010). Proper post-harvest handling (such as produce storage and transportation) is critical in ensuring quality maintenance. According to Du Toit (2011), an intimate knowledge of post-harvest treatment (i.e. cold chain management) is critical to lengthen the produce's short shelf life and reducing wastage. Fresh products therefore need to be handled with care after harvest. Perishables (fresh products) not only carry a higher risk, but also require more sophisticated and costly storage and transportation facilities, thus precluding individual smallholders from successfully marketing them due to the lack of funds, capital, and technical expertise (Markelova & Meinzen-Dick, 2009).

Smallholder farmers face a number of constraints, which increase risk and uncertainty and act as disincentives for increased production, consequently preventing them from accessing markets (Senyolo et al., 2009). Despite growing market opportunities, there is a danger that smallholder farmers will be squeezed out, even though they possess some competitive advantages over larger producers, especially in their low costs in accessing family labour and intensive local knowledge (Poulton et al., 2005). The

disadvantages they face are high unit transaction costs in almost all non-labour transactions (Poulton et al., 2005). Furthermore, over the last two decades structural adjustment programmes have led to a decline in state-funded agricultural support, with the result that many farmers find it difficult to access inputs, extension, and training.

A range of impediments to participation in high value markets are identified by Pingali et al. (2005). These constraints constitute the greatest barrier for smallholder farmers when it comes to accessing high value markets and overcoming these constraints is important if smallholder farmers are to access lucrative markets. According to Development Bank of South Africa (DBSA, 2009), can be classified into two categories which are endogenous and exogenous constraints. Endogenous constraints are those that affect the farmer's ability to operate efficiently, despite having the potential to allocate resources in an economically efficient way. With regard to these endogenous constraints, the farmer has some control over e.g. shortage of labour, lack of skills, knowledge and education and a range of cultural factors. Exogenous constraints result from a broader agricultural environment which is beyond the control of the farmer such as limited access to agricultural inputs, credit, mechanization, marketing services, poor institutional and infrastructural support, in-appropriate policies and legislation, social structures, and problems associated with land tenure and acquisition of resources.

In South Africa and some other developing countries, smallholder farmers are excluded from these high value markets as a result of the historical colonial legacy and also due to poor performance of their production, which is characterised by high production costs and transaction costs and poor quality, making smallholder farmers less competitive (Dorward and Kydd, 2005). This was also supported by Louw et al. (2007) that smallholder farmer are faced with a range of high transactions costs and difficulty to exploit lucrative markets.

### **2.7.5 Vegetable production**

South African smallholder farmers have limited access to factors of production, credit and information, and markets are often constrained by inadequate property rights and high transaction costs. Generally, smallholders have inadequate capital resources, including physical and financial resources, and also intellectual capital resources such as experience, education and extension that limit their ability to diversify farm activities (Lapar et al., 2002). In addition, smallholders are often disadvantaged due to poor

access to information and market-precipitating services such as visits by extension agents and credit assistance; these impediments often give rise to low rates of adoption of improved technologies that could potentially increase productivity

Production in smallholder farming is more labour intensive than capital intensive. It directly involves the farmer in the farming operations and makes use of family labour, which is sometimes supplemented by casual labour. This is mainly influenced by the fact that smallholder farmers cultivate small size of land. For instance, smallholder farmers of amadumbe in Mbonambi municipality were farming in 1 hectare or 2 hectares size of land (Tembe, 2008). smallholder farmers have limited access to resources, and markets are often constrained by high transaction costs (Machethe, 2004).

Farm inputs are basic and essential to any farm enterprise; without them, no output is possible. Consequently, major efforts aimed at developing efficient and effective technologies to improve farm productivity have focused on high quality inputs (Ortmann,2007). It has been widely recognized that lack of access to capital is a key constraint in smallholder farming systems in Southern Africa (Thirlwall, 2003). There is also a lack of storage facilities. A lack of storage facilities of all types places a severe constraint on marketing of agricultural produce in South Africa and this results in having heavy food produce losses, high food prices, and discouragement of farmers to increase production of these perishables (Machethe, 2004). Smallholder farmers are constrained by agricultural tools used in the field which include hoes, spades and picks. Furthermore, the limited numbers of hand tools available are unserviceable and need replacement. There is also a lack of basic technical information in smallholder farmers on appropriate means of restoring and maintaining soil fertility as well as limited extension services to alleviate this to enhance South African agricultural prospects. Access to input and marketing services by smallholders is often weak. Thus, many smallholder farmers are contracted by existing largescale farmers to produce for them, although the mechanism for encouraging this need further exploration.

### **2.7.6 Theoretical framework**

A number of neoclassical household theories on smallholder farming have been developed and as such have contributed to the academic world on how smallholder farmers maximise utility through their limited resources. Neoclassical theory requires that preferences are exogenous and fixed, and hence the individual's preference orderings are consistent. Under these assumptions, economic behaviour can be deduced as a set of responses to wages and prices and infer the preferences from observed behaviour of the farmers. This convenient procedure breaks down if the basic unit of analysis is a group of individual household members with inconsistent preferences. The need to come up with a justification for equating the household to an individual with a consistent preference ordering has remained a central theme in the neoclassical literature (Hart, 1992).

The labour market is assumed to be absent and allocation of time between leisure and work on the family farm is determined purely by preferences. Subsequent development of the farm household model focused on the impact for the logic of the model of relaxing the key assumptions: absence of the labour market and flexible land access, key assumptions in the Chayanov farm household model (Singh et al., 1986). The Barnum-Squire (1979) household model incorporates a perfectly competitive labour market in the Chayanov's peasant household model, providing a framework for generating predictions about the responses of the farm household to changes in domestic (family size and structure) and market (output prices, input prices, wage rates, and technology) variables (Ellis, 1993; Hart, 1992).

Household models in a farming sector are designed to capture interactions between three different spheres of the farm household: the farm firm, the worker household and the consumer household (Sadoulet and Janvry, 1995; Berg, 2001). The decisions made by the household can be modelled under two different model assumptions: separable and non-separable household models (Alderman et al., 1995). Under perfect market conditions, production and consumption decisions are assumed to be made separately (Janvry et al., 1992). On the production side, the household chooses the level of labour and other inputs that maximize farm profits given the current configuration of capital and land. Optimal input choice depends on input prices, output prices, and wage rates, as well as the physical characteristics of the farm technology.

Technology and sophisticated agricultural production methods characterize smallholder farmers which reduce their inability to access better markets and also increase their production. On the consumption side, the household maximizes utility over consumption goods and leisure time in the presence of a budget and time constraint. The budget includes profits from the farm. Farmer's optimal choice depend on the prices of the goods consumed by the household, wages received, total time available for production activities and the characteristics of the household members who are consumers and labourers, such as their age, gender, level of education and religion, ethnicity/cultural values and norms. In developing countries, perfect market conditions rarely exist because of the institutional setup. Not all products and factors of production can be traded on markets because of the high cost of transactions, shallow markets, and risks and uncertainty about markets and weather conditions.

Limited access to credit is a frequent cause of market failure, as the household cannot satisfy an annual cash income constraint, with expenditure greater than revenue at certain periods of the year (Sadoulet and Janvry, 1995). Family and hired labour may be imperfect substitutes in agricultural production while binding constraints in off-farm employment may prevent adjustment in the agricultural labour market (Singh et al., 1986). Farmers may have a preference towards working off-farm (Lopez, 1986). Under any of these circumstances, the production and consumption decisions cannot be treated as separable because farmer's decision making depends on the availability of resources or endowments. Not only production decisions affect consumption decisions, but also consumption decisions (preferences) affect production decisions (Janvry et al., 1991; Strauss, 1986). Production and consumption decisions are no longer taken in response to exogenous prices, which are taken to be the same for all households. In a nutshell, households in rural areas are prepared to allocate most of their labour on agricultural production depending on the household decisions that yield better incomes from their farms. Thus, households will only produce if the market offers them better prices which are over and above their labour supply.

## CHAPTER THREE

### METHODOLOGY AND ANALYTICAL TECHNIQUES

#### 3.1 Introduction

This chapter describes the background of the study area and further explains how data were collected in this study. The sampling procedures, data collection techniques and data analysis methods are also elucidated.

#### 3.2 Background of the study area

Limpopo is South Africa's northern-most province, lying within the great curve of the Limpopo River. The Limpopo Province has total area of 125 755m<sup>2</sup> km. The province borders Botswana to the west, Zimbabwe to the north and Mozambique to the east. The capital city of the Limpopo Province is Polokwane.

The population of the Limpopo Province consists of the Northern Sotho (Sepedi) speaking people, which makes up the largest population (57%), followed by the Xitsonga speaking people who comprise 23% of the population and the Vhavenda who make up 12% of the population. There are also Afrikaners who make up 26% of the population whilst the English-speaking people are less than half a percent.

The vegetation of the Limpopo Province consists of the savannah biome, and an area of mixed grassland and trees generally known as bushveld. The province receives summer rainfall. The northern and eastern areas of the province are subtropical with hot and humid summers in the mountains. The winters of the province are mild and mostly frost free (South Africa Info, 2010).

##### 3.2.1 Location

The area of study, Polokwane Municipality, is situated in the Limpopo Province of South Africa. The area of the study is located between two coordinates: 23 8962<sup>0</sup>S, 29 4486<sup>0</sup>E. Below is the map of the area:



**Figure 3.1: Map of Polokwane Local Municipality**

### 3.2.2 Study area

Polokwane Municipality is situated in the central part of the Limpopo Province. The municipality shares the name with the city in Limpopo called Polokwane. Locally, it shares borders with three other local municipalities, namely, the Capricorn, Mopani and Waterberg Districts. It is the largest metropolitan complex in the north and a major economic centre with 38 wards. The settlement types indicate that it is more urban than rural. The population size is 628 999, with 178 001 households. The number of households that practise agriculture is 41,867 (Municipality Capacity Assessment, 2018).

### 3.2.3 Data Collection

This study used both quantitative and qualitative data. Permission to collect data was first obtained from the Limpopo Provincial Department of Agriculture. Questionnaires were explained to the local councillors of the wards within the district municipalities before surveying. Data were collected over a period of four weeks using a team of six enumerators who speak the Sepedi and English. The enumerators attended a five-day training session, focusing on the interview and the contents of the questionnaire,

before embarking on the fieldwork. Before the data were collected, the questionnaire was pre-tested on selected farmers to evaluate the appropriateness of the design, clarity, and relevance of the questions. The appropriate modification was made on the pre-tested questionnaire to capture the relevant information related to the study's objectives. Primary data was collected for the study and it was done through interviews. A structured questionnaire was used to interview 120 smallholder cooperative farmers. The multistage random sampling method was used to sample the cooperative farmers of Polokwane Municipality. The sampling method was used because it helps narrow down sample by applying random sampling. The total number of agricultural cooperatives in Polokwane municipality is unknown because not all cooperatives interviewed are on the department of Agriculture database. The municipality consists of 38 wards and certain number of villages in each ward were randomly selected. And specific number of cooperatives from each village was sampled based on the probability proportionate to size. Based on the Pandemic (Covid 19) and financial constrain only 120 smallholder cooperative vegetable farmers were able to be reached.

### **3.3 Analytical Techniques**

#### **3.3.1 Descriptive Statistics**

The Descriptive statistics technique was employed to summarise the socio-economic characteristics of smallholder cooperative farmers. This was done in the form of tables, frequencies, and charts to summarise the results of the data that were collected. The results were obtained from SPSS and transformed into tables and graphs in Microsoft Excel.

#### **3.3.2 Marketing Hindrance Index**

To reach the third objective of the study, which was to identify the factors that hinder marketing among smallholder vegetable cooperative farmers and constraints that smallholder farmers face in the study area, the Marketing Hindrance Index was computed. This was done by calculating the total number of factors hindering the marketing of smallholder vegetable cooperative farmers relative to the total number of factors identified by the study. Crop rotation, crop insurance, crop sharing, source of water, agricultural inputs, quantity of vegetables, quality of vegetables, types of vegetables farm size and subsidies were used for the purpose of computing the Marketing Hindrance Index. The Marketing Hindrance Index score ranges from 0 to 1.

An index score of 0 categorises farmers as those who are not affected by factors hindering marketing. An index score of 1 indicates farmers who are highly affected by the factors that hinder marketing.

### 3.3.3 Tobit Model

The Tobit Model was employed to know the degree of marketing hindrance faced by smallholder vegetable cooperative farmers. According to Wooldridge (2013), the Tobit Model can be expressed as follows:

$$Y^* = Y_i, \text{ if } 0 < Y \leq 1 \dots \dots \dots 1$$

$$Y_i^* = \alpha + \beta X_i + e_i \dots \dots \dots 2$$

Where:  $Y_i^*$  is the observed dependent variable (factors hindering marketing),  $\beta$  is a vector of unknown parameters,  $X_i$  is the vector of the independent variables and where:  $i=1, 2 \dots n$ ;  $\alpha$  is the constant term.

Tobit regression is used because the dependent variable (factors hindering marketing) is censored with a lower limit of 0 and an upper limit of 1. Therefore, the Marketing Hindrance Index values, obtained using equation (1), were used as dependent variables (factors hindering marketing) and regressed with the independent variables. The empirical Tobit Model can be expressed as:

$$MMH_i = \alpha + \beta_1 X_1 \dots \dots \dots + \beta_{12} X_{12} + e_i \dots \dots \dots 3$$

Where:  $MMH_i$  is the dependent variable,  $\alpha$  is the constant term and  $\beta_1$  to  $\beta_{12}$  are the parameters to be estimated while  $X_1$  to  $X_{12}$  are the hypothesised variables to affect marketing among smallholder vegetable cooperative and  $e_i$  is the error term.

### 3.6 Description of Variables

**Table 3.1**

Dependent variable	Description	Unit of measurement
Marketing hindrance	$\frac{\text{No of marketing hindrances highlighted by cooperative farmers}}{\text{total no of cooperative hindrances in the study area}}$	INDEX
Gender	1 male 0 otherwise	Dummy
Educational level	Years of schooling	Years
Age	age of the farmers	Years
Marital status	1 if married 0 otherwise	Dummy
Household size	Size of the household	Numbers
Farming experience in years	Number of years in farming	Years
Training in agricultural marketing	1 if cooperative farmers have training in agricultural marketing 0 otherwise	Dummy
Access to credit	1 if cooperative farmers have access to credit 0 otherwise	Dummy
Access to reliable information about marketing	1 if the cooperative farmers have access to information 0 otherwise	Dummy
Transportation cost	Cost incurred for transportation	Rands
Extension service	1 if the cooperative farmers have extension service 0 otherwise	Dummy
Access to storage	1 if the cooperative farmers have storage 0 otherwise	Dummy

Insurance	1 if the cooperative farmers have insurance 0 otherwise	Dummy
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### **3.6 Summary of the research methodology**

The study of assessment of factors hindering marketing among smallholder vegetable cooperative farmers was conducted in the Polokwane Local Municipality which is located in the Limpopo Province. The study used primary data which was obtained from structured questionnaires administered via face-to-face interviews with a sample size of 120 participants. Furthermore, the study employed the Tobit Model to analyse the data.

## CHAPTER FOUR

### RESULTS AND DISCUSSIONS

#### 4.1 Introduction

This chapter analyses and discusses the results of the field survey that was conducted in the Polokwane local Municipality. Data were collected from 120 smallholder vegetable cooperative farmers. Within the chapter, descriptive statistics such as mean values, frequencies, pie charts, chi-square and percentages, are used. The chapter presents and discusses results of the study emanating from the analysis of the data collected. It includes the empirical results and the descriptive statistics. It shows how the set objectives were analysed for better understanding of the expected outcomes as weighed against the results. The Statistical Package for Social Sciences (SPSS) was used to abet the descriptive statistics. Data for the Tobit Model was analysed using STATA (Statistical Software Analysis).

#### 4.2 Sample description

The study used a sample size of 120 farmers in Polokwane local Municipality. The types of factors that hinder marketing of smallholder vegetable cooperative farmers in the study area are presented in table 4.1. Furthermore, table 4.1 indicates how many times farmers mentioned the factors that hinder them from marketing their produce. Most farmers indicated quality of the produce as the major factor that hinder them from marketing. However, farmers have different factors that hinder them differently.

#### 4.3 Table 4.1 factors affecting marketing

Factors	
Quantity produced	71
Quality of the produce	96
Weather	50
Water problem	42
Agricultural Inputs	38
Pest attacks	98

Market access fess	70
Packhouse of the produce	88
Distance to the market	45
Size of land	25
Prices	67
Labour	48
None	12

#### 4.4 Table 4.2 Marketing hindrance

Marketing hindrance degree	Polokwane municipality
None	11.5%
Low (0.01-0.33)	5%
Medium (0.34-0.66)	54.5%
High (0.67-1)	32%

Table 4.2 illustrates the degree of marketing hindrance for smallholder vegetable cooperative farmers in the Polokwane Local Municipality. A marketing hindrance of between 0.01 and 0.33 indicates farmers who are lowly affected by the factors. Marketing hindrance of 0.34 to 0.66 indicates farmers who are affected by the factors that hinder marketing at a medium level; marketing hindrance of 0.67 to 1 indicates farmers who are highly affected by factors hindering marketing (Miruts, 2016). From table 4.3, about 5% of the farmers are lowly affected by factors that hinder marketing in the Polokwane Municipality. About 54.5% of farmers are affected by factors that hinder marketing at a medium level. Only 5% of the farmers are highly affected by factors that hinder marketing in the Polokwane Municipality. Only 11.5% are not affected by factors.

#### 4.3 Socioeconomic Characteristics

In this section, demographic characteristics such as gender, age, household size, farm experience, and highest educational levels of the sampled smallholder farmers are

discussed. These variables are vital because the main household economic activities are coordinated by the household head and the household head's decisions are most likely to be influenced by such demographic variables (Oluwatayo *et al.*, 2008; Apata *et al.*, 2011b; Cchetri *et al.*, 2012; Bryan *et al.*, 2013). Demographic characteristics of the smallholder farmers are essential when analysing factors that influence the households' economic behaviour and decision-making abilities. These kinds of factors were hypothesised to influence marketing among smallholder vegetable cooperative farmers.

**4.4 Table 4.3: demographic characteristics of farmers**

Variable definition	mean	Std deviation	Min	Max
Age	57.12	15.371	22	91
Household size	5.57	2.230	1	17
Farming experience in years	11.33	8.028	0	55
Years of schooling	8.01	4.779	0	16

#### 4.4.1 Age of the respondents

The table above shows that the mean for age of the respondent is 57.12. This shows the average age of smallholder vegetable farmers. The minimum age of the respondents is 23 years while the maximum age is 92 years. The emigration of young people from rural areas to urban areas for non-agricultural jobs due to their lack of interest in farming may have a negative impact on agricultural development because the current farmers are aging.

#### 4.4.2 Household size

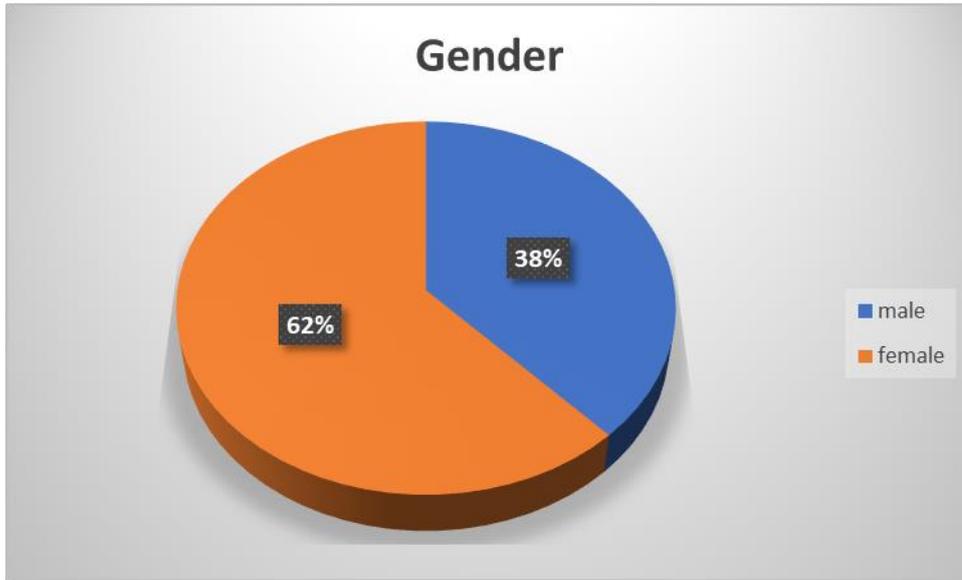
The mean value for household size was 5.57, which is the average number of members who live with the respondent in the same house. The smallest household size is 1 and the highest number of dependents is 17. These household size outcomes indicate the number of members who depend on the respondent's income from vegetable production.

#### **4.4.3 Farming experience in years**

The table further shows that the mean value for the respondent's number of years in farming is 11.33. This is the average number of years that the respondents have been in vegetable farming. The minimum number of years that the respondents have been involved in cooperative vegetable farming is 0 years and the maximum is 55 years. Older people have been in farming for many years when compared to the youth who have mostly inherited the farms from their grandparents. Farming experience is important in addressing some of the challenges that could be faced during production.

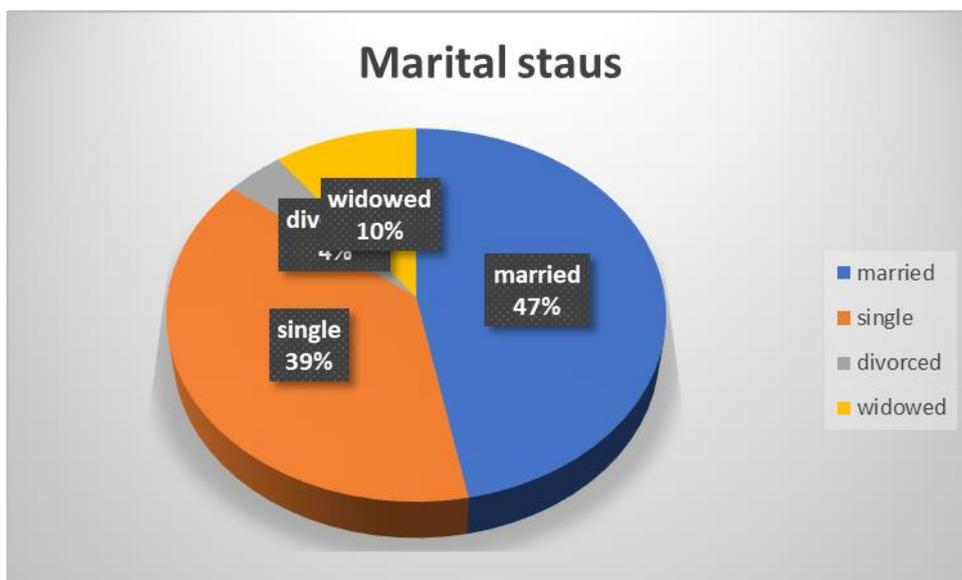
#### **4.4.4 Number of years in schooling**

The table above shows that the mean value of the number of years that the farmer went to school is 8.01. The highest number of years that the respondents attended school is 16 and the lowest is 0 which implies that some of the smallholder farmers interviewed managed to reach tertiary level while others did not attend school at all.



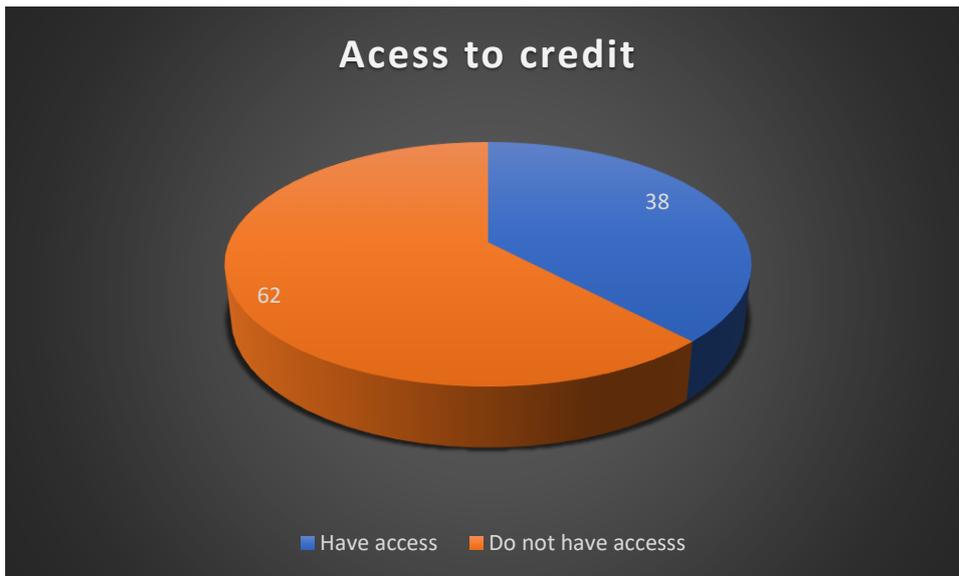
**Figure 4.1 Gender**

The results also revealed that 38% of the farmers were males and 62% were females. These findings indicate that the study area is dominated by females in vegetable production. This may be because vegetable production is very tedious to the extent that men cannot cope or might be because women take most responsibility of their household food security.



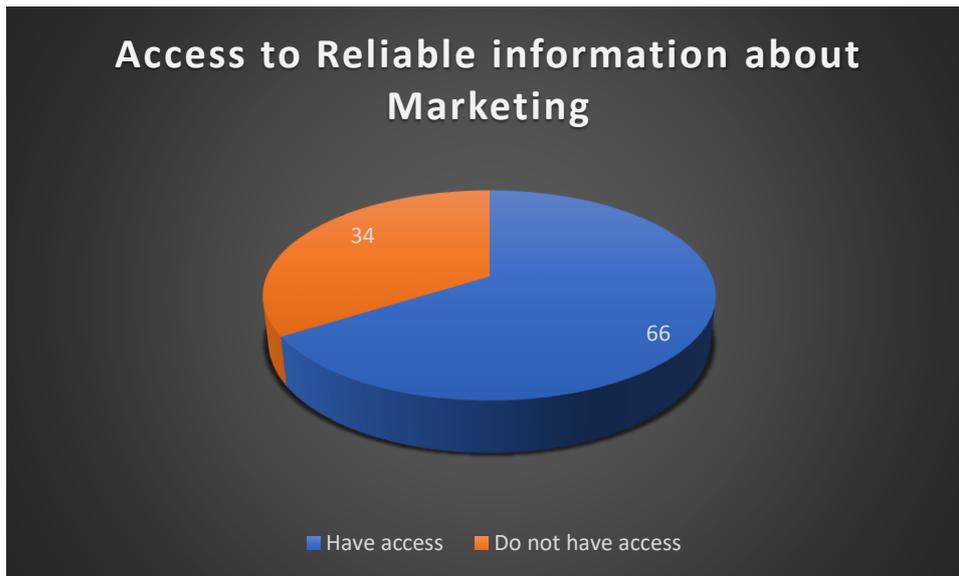
**Figure 4.2 Marital status**

The results on figure 4.2 show that 10% of the farmers are widowed and 39% are single while only 4% are divorced and 47% of the respondents are married. According to Moobi and Oladele (2012), a high percentage of married farmers helps to provide family labour.



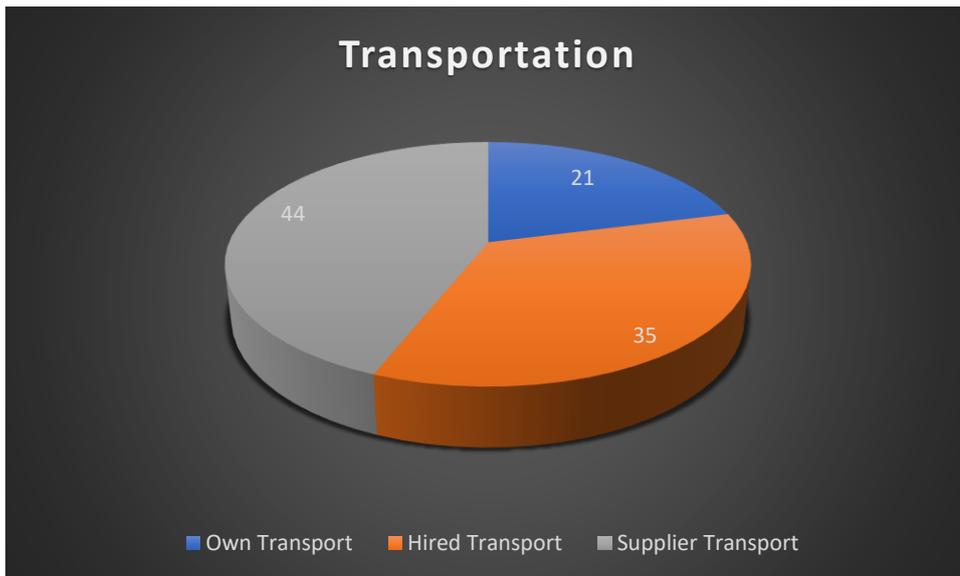
**Figure 4.3 Access to credit**

Figure 4.3 shows that 62% of the farmers do not have access to credit while 38% have access to credit. The lack of access to credit may be because many smallholder farmers do not have properties that may be held as collateral and may also result from the lack of information about available sources of lenders, types of credits offered and the interest rates charged by borrowers. Adeleke *et al.* (2010) stated that the main reason for commercial banks not to lend money to agricultural enterprises is because of it being risky.



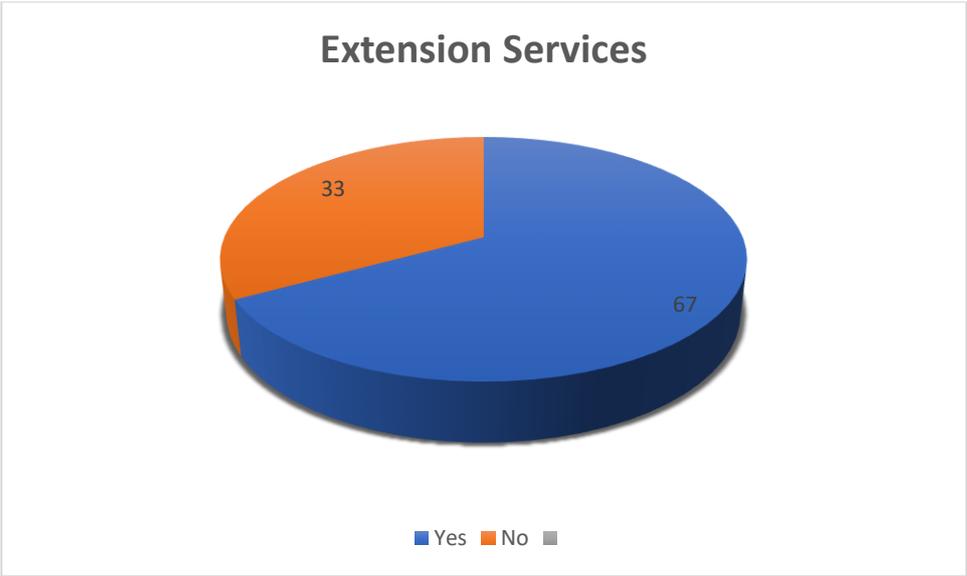
**Figure 4.4 Access to reliable information about marketing**

Figure 4.4 shows that 66 % of the farmers have access to reliable information while 34% do not have access to reliable information. Most of the farmers who did not have access to marketing information are located in rural areas since Polokwane Municipality is divided into deep rural areas and semirural areas. Access to market information is important if farmers are to make proper market-related decisions. Farmers who do not have access to reliable marketing information incurred numerous losses, especially those who were farming perishable products. If they were to sell, they were sometimes forced to sell their products at ‘throw away’ prices.



**Figure 4.5 Transportation**

Figure 4.5 shows that 21% of the farmers had their own transport, 35% used hired vehicles and 44% used a supplier transport. Owning transport to transport products to the market can be instrumental in how fast a farmer can access the market and whether or not the farmer will incur losses, especially perishable products or selling their products at 'throw away' prices. For this reason, ownership of transport was assessed. Farmers without transport either relied on hiring, which they cited as increasing their production costs or relied on buyers coming to buy from them. Others said that they carried their produce on their heads to the market or used wheelbarrows. The farmers indicated that lack of transport limited their access to lucrative markets or limited how much they could sell. Those who owned transport complained of the ever-increasing petrol prices and mechanical breakdowns.



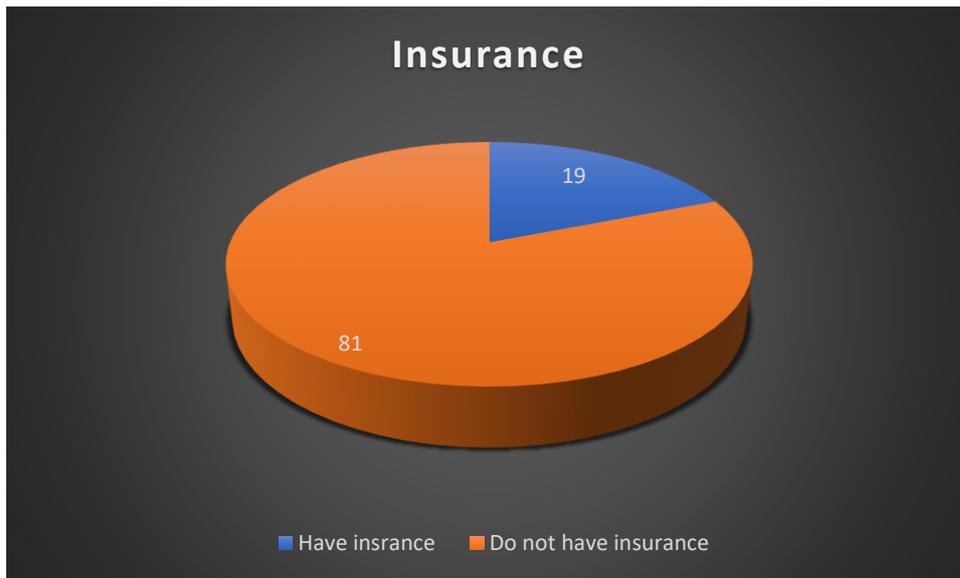
**Figure 4.6 Extension Services**

The figure above shows that 67% of the farmers had access to extension service while 33% did not have access to extension services. Most of the farmers complained about knowing about the extension officers and their duties but had never seen them on their farms.



**Figure 4.7 Access to Storage**

This figure above shows that 52% of the farmers did not have access to storage while 48% had access to storage. Among the 52% that had access to storage, such storage was not really reliable due to the fact that the vegetables can still be spoiled after a shorter period of the time. Thus, they do not have proper storage facilities that ensure that the vegetables can be kept fresh for a longer period of time. A majority of the farmers did not even grade their produce before being sold and this may have led to declines in farm income. Due to the lack of storage facilities, farmers tend to use traditional techniques which cause humidity, high loss and reduce quality of produce for small-scale farmers.



**Figure 4.8 Insurance**

The results also show that 81% of the farmers did not have insurance against natural disasters, loss of income, theft and fluctuating market prices while 19% had insurance. Among the 19%, having insurance included keeping money for unforeseen circumstances while others had contracts with supermarkets that guaranteed insurance if they keep on producing for them.



**Figure 4.9 Training in Agricultural Markets**

Farmers were asked if they had any training in marketing and the findings from the survey are presented in Figure 4.9. It is clear from the figure that most (54%) of the farmers did not have marketing training. This was one of the contributing factors to their inability to market their products effectively. Most of those who indicated that they had any form of training came from Polokwane and have degrees in Agriculture. They further indicated the role that universities and Agricultural College played in enhancing the status of farmers in the municipality. The universities and agricultural colleges are very active in community engagement, specifically enhancing the farmers' knowledge on agricultural production. There were also those who indicated that the Limpopo Department of Agriculture (LDA) organised workshops that they were invited to attend, where they got to know how to market.

## **4.4 Empirical Results**

Table 4.3 presents the Tobit analysis results from the Polokwane Local Municipality in Limpopo Province. The results revealed a Log-likelihood of 49.66 with a probability chi-square of 0.008. Pseudo R squared of 0.5747, implying that 57 percent of the variation is explained. A positive log-likelihood simply means that the likelihood is larger than one and it does not represent the probability of the data by itself (STATA, 2007). According to Greene (1990), a log-likelihood with a continuous dependent variable such as the Tobit Model censored between 0 and 1, can either be a negative or positive. From the total of 12 variables, about 4 variables were found to be significant. The Tobit results indicated age, access to credit, access to storage, farming experience in years as statistically significant factors hindering marketing among smallholder vegetable cooperative farmers (the factors are indicated in indicated in Table 4.2). The results are discussed in this section.

### **4.4.1 Age**

This is the period of time in which an individual has existed from birth to present. It is measured in the number of years. The variable AGE (age of the respondent) was found to be positive and statistically significant at 5% level and has positive effect on marketing of smallholder vegetable cooperative farmers. This implies that increase in the number of years of sampled smallholder vegetable farmers has likelihood of increasing marketing among smallholder vegetable cooperative farmers. Miruts (2016) states that the age of the farmer plays an important role in describing the level of experience the farmer has with regard to agricultural production. Older farmers tend to be more experienced in the production of vegetables than younger farmers. The youth have important roles to play in agriculture since their participation affects the current and future situation. Young farmers are more responsive, learn quickly, have new ideas and adopt effective farming methods quickly. This differs with the findings of Geoffrey et al. (2014) which stated that younger people are more enthusiastic to participate in the pineapple market than the older people are.

### **4.4.2 Farming experience in years**

Farming experience was found to be positive and statistically significant at 1% level of significance and has a positive effect on the likelihood of marketing among smallholder vegetable cooperative farmers. This implies that smallholder farmers' participation in marketing has likelihood to increase with the number of years the farmers have been

involved in farming. A farmer with more years in farming is assumed to have knowledge on prices, market location and standard requirements and would therefore make a better decision to sell their produce compared to those with fewer years in farming. Sebopetji and Belete (2009) conducted a study in the Letaba Local Municipality, South Africa, where they analysed the decision of farmers to use credit or not. The results revealed that farmers' decision to acquire credit was positively and significantly affected by farming experience which aligns with the results of this study.

#### **4.4.3 Access to credit**

The variable access to credit was found to be negative and statistically significant at 10% level and has a negative effect on marketing of smallholder vegetable cooperative farmers. This implies that increase in access to credit has likelihood to decrease marketing among smallholder vegetable cooperative farmer. This means that if farmers have access to credit, there will be a reduction of factors that hinder them from marketing. This is rather expected because if farmers have access to credit, they will use the money for the betterment of their farms. According to Kebedom and Ayalew (2012), the availability of credit enables farmers to focus on increasing their farm inputs other than focusing on limited resources. Matsane and Oyekale (2014) state that farmers' lack of access to credit can be due to the lack of property which can be used as collateral by lenders; and also lack information about the types of credits available for farmers and their interest rates. Awotide et al. (2014) state that credit gives farmers an incentive to invest into new technology and also to purchase inputs such as agrochemicals.

#### **4.4.4 Access to storage**

The variable access to storage was found to be positive and statistically significant at 5% level of significance and has positive effect on marketing of smallholder vegetable cooperative farmers. This implies that increase in access to storage has likelihood to increase marketing among smallholder vegetable cooperative farmers. The storage of vegetables plays a significant role in the distribution chain given the perishable nature of such produce. Most farmers used traditional methods or facilities for storing their produce including open air sheds, kitchen and traditional pit. Once vegetables were harvested, they were immediately taken to the markets. Other vegetables were kept in wet sacks in open air sheds. For most farmers, tomatoes were kept in their kitchen.

#### **4.4.5 Access to reliable information about marketing**

Access to reliable information about marketing was found to be positive and statistically significant at a 5% level. This implies that increase in access to reliable information has likelihood to increase marketing among smallholder vegetable cooperative farmers. Generally, farmers were not aware of consumer demand, lacked knowledge and clear understanding of markets, market facilities, marketing niches and market intelligence information. Vegetable farmers who have access to better market information are likely to access the market. Perhaps this might be because access to market information helps in planning the marketing process of any farm business (Magesa, Michael & Ko, 2014). If farmers have more reliable information about marketing of vegetables, they will be able to make better decisions. Mittal and Mehar (2013) state that farmers use multiple sources of information because a single source might give them incomplete information.

#### **4.5 Discussion of insignificant variables**

Variables such as the gender of the farmer, educational level, marital status, household size, training in agricultural marketing, access to extension and insurance were found to be insignificant, as indicated below.

##### **4.5.1 Gender of the farmer**

The gender of the respondent was found to be statistically insignificant. The study shows that farming is dominated by females. This means that males have less probability of marketing their produce. This also suggests that females dominate the vegetable production. Instead of focusing on vegetable production, males would rather look for off-farm employment. Hence, most males are breadwinners. The responsibility for other chores means that women have less time available to devote themselves to farm labour. This is because national agricultural policies often assume farmers are mostly men. As a result, women farmers rely on rain-fed agriculture, and have poor access to inputs (fertilizers, seeds and water), to extension, to credit, and to markets for their products and they own small pieces of land or have no land at all.

##### **4.5.2 Household size**

Household size was found to be statistically insignificant. Household size is an important unit for analysis because it assumes that household members tend to share resources and decisions are made jointly by responsible household members.

### **4.5.3 Education level**

Level of education was found to be statistically insignificant. According to Kebedom and Ayalewi (2012), farmers with a background of higher education have better chances of accessing information and easily understand it. The results are different to those of Ramoroka (2012) who found the level of education of farmers in Limpopo positively significant to the value of vegetables marketed in formal markets. Lack of education affected the ability of farmers to adopt new technologies. This meant that farmers needed basic education in order to enhance their exposure to and understanding of new technologies, technical and managerial skills. In the sample, a much larger percentage of women than men had no formal education. Although some may have benefited from the advice offered by extension officers, that did not compensate for the lack of formal education needed to enable them to access information. The purpose of education is to improve the understanding of risk and its effects on agriculture. According to Guta *et al.* (2020), the educational level of the farmers increases their ability to get information on how to produce and sell vegetable increases (i.e., the more farmers became educated, the more likely they were to produce and sell more at market price).

### **4.5.4 Transportation cost**

Many farmers faced the problem of high transaction costs due to expensive transportation and the need to pay for marketing/selling vegetables to markets in Polokwane. A lack of alternative markets made this situation all the more difficult. Various forms of transport were used to take the produce depending on the nature and quantity of the crop and distance to the market. Carts and wheelbarrows were relatively cheap and reliable means of transportation, especially when the quantities of produce were small and only transported over short distances. In the case of transport to urban markets, the produce was transported to the market by either paid transport by the cooperative or the supermarket's own transport. However, using paid transport such as small trucks or a van had problems. They were unable to service all routes, sometimes they broke down and farmers were restricted on the quantities of produce they could carry to those transports. Trucks and lorries were the most common mode of transportation of vegetables from the farms to the markets in Polokwane. According to Ramoroka (2012), smallscale farmers who pay less for transporting their vegetables to the market will increase their market participation than

those who pay less. Thus, transport to the market is an important aspect in agricultural business and improves the marketing and distribution of the produce. These findings imply that being a member of a group helped in reducing transaction costs by reducing the cost of transport. Thus, members of cooperatives were able to access markets much better than non-members. These findings are also in line with those of Korir *et al.* (2015).

#### **4.5.5 Access to extension**

The variable access to extension services was found to be negative and statistically insignificant. Zwane and Kekana (2014) emphasise that extension plays a role in disseminating agricultural information, assisting farmers in acquiring managerial skills, helping farmers in understanding the importance of project sustainability and resource conservation. According to Matsane and Oyekale (2014), farmer's access to agricultural extension service increases the farmer's knowledge and productivity. In this study, during focus group discussions and meetings, the sampled smallholder farmers explained that the extension workers were not consistent and some of them rarely visited their villages. Further investigation showed that the extension workers were biased towards farmers' cooperatives, because some farmers mentioned that they received excellent extension services. One can conclude that unspecialised agricultural extension support can result in smallholder farmers not becoming efficient with regard to marketing. According to Amusa *et al.* (2015), the impact of extension services provided by extension officers might not relate best to the needs of the farmers.

#### **4.5.6 Insurance**

The variable insurance was found to be statistically insignificant. Generally, the smallholder farmers concentrated and focussed on production activities and showed relatively little interest in postharvest and marketing activities.

**Table 4.4: Table of Empirical Results**

<b>Variables</b>	<b>Coefficients</b>	<b>SEE</b>	<b>T-ratio</b>	<b>P&gt;T</b>	<b>Marginal effect</b>
Constant	0.1441182	0.1562305	0.92	0.358	0.1441272
Gender	0.0119375	0.0369385	0.32	0.747	0.0119264
Age	0.0058707*	0.002294	2.56	0.012	0.0058716
Marital status	-0.0075776	0.011698	-0.65	0.519	-0.0076775
Education level	0.0034	0.0040744	0.83	0.406	0.0035
Household size	0.0022335	0.0093553	0.24	0.812	0.0022344
Access to storage	0.230633**	0.1083844	2.13	0.036	0.220733
Access to reliable information about marketing	0.1214943*	0.065044	1.87	0.022	0.1223953
Access to credit	-0.841238*	0.0479361	-1.75	0.082	-0.84124
Access to extension services	-0.0042097	0.0467862	-0.92	0.928	-0.0042086
Insurance	0.1144544	0.0932056	1.23	0.222	0.1144533
Training in agricultural marketing	0.0390745	0.0395903	0.99	0.326	0.0390644
Farming experience in years	0.0094403***	0.0033511	2.82	0.006	0.0093402
Log-likelihood	-49.66				
Prob>chi square	0.088				
Pseudo R square	0.5749				
Likelihood ratio chi square	29.10				

#### **4.6 Summary of the results**

The study aimed to assess the factors hindering marketing among smallholder vegetable cooperative farmers in the Polokwane Local Municipalities. The study discovered that the degree of marketing hindrances faced by smallholder vegetable cooperative farmers in the Polokwane Municipality was medium. The Tobit Model results indicated that access to credit, access to extension age, access to storage and farming experience in years were the factors affecting marketing among smallholder vegetable cooperative farmers. Access to credit was found to be negatively significant, access to reliable information about marketing was found to be positively significant, age was found to be positively significant, access to storage was found to be negatively significant and farming experience was found to be positively significant.

## CHAPTER 5

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents a recap of research objectives and methodology, conclusion and policy recommendations of the study. It also highlights the extent to which objectives and hypotheses posed at the beginning of the study have been addressed by the analysis. The purpose of this last chapter is to provide the conclusions drawn from the key findings of the study, make policy recommendations and suggest areas for further research.

#### 5.2 Summary

The study aimed at assessing factors hindering marketing among smallholder vegetable cooperative farmers in the Polokwane Municipality. The study used the multistage random sampling technique for collecting data at Polokwane Municipality. Data was collected from different villages and was based on proportion to size. The total sample for the study was hundred and twenty.

The objectives of the study were to: identify and describe socio-economic characteristics of smallholder vegetable cooperative farmers in the Polokwane Municipality (objective one); examine the influence of socio-economic characteristics of smallholder vegetable cooperative farmers on cooperative marketing (objective 2); identify factors that hinder marketing among smallholder vegetable cooperative farmers and constraints that smallholder vegetable cooperative farmers face in the study area (objective 3).

The research questions for the study were: what are the socio-economic characteristics of smallholder vegetable cooperative farmers? What is the influence of socio-economic characteristics of smallholder vegetable cooperative farmers on cooperative marketing? What are the factors that hinder marketing among smallholder cooperative farmers and the constraints that they face in the study area? The study used SPSS for the Descriptive statistics of the selected variables and, STATA was used for data analysis with Tobit Model.

### **5.3 Conclusions**

This paper has attempted to identify factors hindering marketing among smallholder vegetable cooperative farmers in the Polokwane Municipality. Evidence from the research supports literature that pointed out that, smallholder farmers face challenges in marketing their produce. Furthermore, there are some challenges in the market environment that hinder marketing among smallholder farmers. The statistically significant variables are access to reliable information about marketing, access to credit, age, farming experience in years and access to storage.

The results of this study suggest several ways in which smallholder farmers can actively market their produce. The findings suggest that an adjustment in each one of the significant variables can significantly influence the likelihood of better marketing vegetables. That is, access to storage and access to credit that affect marketing among smallholder vegetable cooperative farmers such variables can help farmers improve the marketing of their produce.

Furthermore, 5% of the farmers were lowly affected by the factors that hinder marketing. About 11.5% of farmers were not affected. 54% of the farmers were medium affected by the factors that hinder marketing while 32% were highly affected by the factors that hinder marketing among smallholder vegetable cooperative farmers. The results indicate that there are marketing hindrances among smallholder vegetable cooperative farmer. Furthermore, farm size, source of water, quantity of vegetables, quality of vegetables, agricultural inputs type of vegetables, subsidies, crop rotation, crop insurance and crop sharing were identified as factors hindering marketing among smallholder vegetable cooperative farmers in the Polokwane Municipality.

In order to achieve objective two and three, data analysis was carried out using the Tobit Model. The results revealed that there are factors hindering marketing among smallholder vegetable cooperative farmers in the Polokwane Municipality. For instance, the Tobit regression results indicated access to reliable information about marketing, access to credit, access to storage, age and farming experience in years to be statistically significant variables.

Access to credit was found to be positively and statistically significant at 5% level. Access to reliable information about marketing was found to be positive and

statistically significant, age was found to be positive and significant at 5%, access to storage was found to be positive and statistically significant at 5%, access to credit was found to be negative and statistically significant at 10% and farming experience in years was found to be negative and statistically significant at 1%.

## **5.4 Recommendations**

### **5.4.1 Access to credit**

Access to credit can assist farmers by improving production through the purchase of inputs or new technologies which serve as a risk management strategy. Due to lack of collateral, most farmers fail to have access to financial credit. Farmers should be educated on the terms and conditions of loan agreements and banks should try to charge reasonable interest rates for small-scale farmers because they do not produce more compared to commercial farmers. Most of the financial institutions are a distance away from the small-scale farmers, especially those living in the rural areas. So, it is very important that loan banks be established close to farmers which will encourage them to take loans.

### **5.4.2 Extension services**

The study indicated that many smallholder vegetable cooperative farmers had no access to extension services. Therefore, the study recommends the provision of agricultural extension services in order to provide farmers with risk management information and to increase the number of extension visits because the limited number of extension services provided to farmers results in insufficient agricultural information.

### **5.4.3 Access to reliable information about marketing**

Information plays an important role in acquiring knowledge about the type of agricultural commodities that are trending in the market. Farmers need this information in order to meet market demands. Such information should be made available to farmers and it should be easily accessible. More resources need to be made available such as access to information in a language that farmers can understand. Due to lack of market access, farmers would only produce a limited quantity of vegetables. This might be due to high competition among smallholder farmers. Farmers would target the same market and, in the end,, they would not make the profit they were expecting which serves as a risk. Extension services play an important role in assisting farmers to identify and access potential markets.

## 7. References

- Abdullah, M.D & Hossain, M.R. (2016). A new cooperative marketing strategy for agricultural products in Bangladesh. *World Review of Business Research*, 3:130-144.
- Adeleke, S., Abdul, B.K & Zuzana, B. (2010). *Smallholder agriculture in east Africa: Trends, constraints and opportunities*. African Development Group, Working Paper Series No. 105, African Development Bank, Tunis, Tunisia. Internet file retrieved on 11 May 2013.
- Adejuwon, D.A. (2015). *Infrastructure and connectivity: A national view*. pp 45-89.
- Ajates, R. (2020). *Agricultural cooperatives remaining competitive in globalised food system at what cost to the members of cooperative movement and food sustainability*. Dundae: University of Dundae.
- Alderman, H., Hiappori, P., Haddad, L., Hoddinott, J., and Kanbur, R. 1995. Unitary versus collective models of the household: is it time to shift the burden of proof? *World Bank Research Observer* 10, 1-19
- Aku, A., Mshenga, P., Afari, S.V & Ochieng, J. (2018). Effect of market access provided by farmer organizations on smallholder vegetable farmer's income in Tanzania. *Cogent Food & Agriculture*, 4:1560596.
- Amusa, T.A., Okoye, C.U & Enete, A.A. (2015). Determinants of climate change adaptation among farm households: A heckman double stage selection approach in southwest Nigeria. *Review of Agricultural and Applied Economics*, 2: 3-11.
- Antwi, M & Seahlodi, P. (2011). Marketing constraints facing emerging small-scale pig farmers in Gauteng province, South Africa. *Journal of Human Ecology*, 36(1):37-42.
- Aworh, C.O. (2015). Promoting food security and enhancing Nigeria's small farmers' income through value-added processing of lesser-known and under-utilized indigenous fruits and vegetables. *Food Research International*, 76(4):986–991. <http://dx.doi.org/10.1016/j.foodres.2015.06.003>.
- Balarane, A & Oladele, O.I. (2012). Awareness and use of agricultural market information among small scale farmers in Ngaka Modiri Molema District of North West Province. *Life Science Journal*, 9(3): 57-62.

Baloyi, J.K. (2010). *An analysis of constraints facing smallholder farmers in the Agribusiness value chain: A case study of farmers in the Limpopo Province*. Unpublished thesis. Pretoria: University of Pretoria.

Banaszak, I. (2008). *Determinants of successful cooperation in agricultural markets: evidence from producer groups in Poland*. Heidelberg: Strategy and Governance of Networks. p.56.

Becchetti, L., Castriota, S & Michetti, M. (2013). The effect of fair trade affiliation on child schooling: evidence from a sample of Chilean honey producers. *Appl Econ*, 45:3552–3563.

Berg, M. M. 2001. "Off-farm income, risk, and agricultural production: a case study of smallholders in India's semi-arid tropics." *Unpublished PhD thesis, Wageningen University*.

Bernard, T & Spielman, D. (2009). Reaching the rural poor through rural producer organizations: A study of agricultural marketing cooperatives in Ethiopia. *Food Policy*, 34: 60–69.

Berthelot, J. (2012). *The European Agricultural Cooperatives, Promoters of the Unequal Globalization*. Solidarité. Available: <http://solidarite.asso.fr/Papers-2012>.

Bienabe, E., Corone, L.C., Lecoq, J. and Liagre, L. 2004. Linking small holder farmers to markets: lessons learnt from literature review and analytical review of selected projects. CIRAD TERA TA 60/15 73. Breton: The World Bank

Bijman, J., Poppe, K & Cook, M. L. (2012). *Support for farmers' cooperatives: Case study report*. Wageningen: Wageningen UR.

Böhm, S., Pervez, B.Z. & Pretty, J. (2014). *Ecocultures: Blueprints for sustainable communities*. Abingdon: Routledge.

Bonin, J.P., Jones, D.C. and Putterman, L. 1993. Theoretical and Empirical Studies of Producer Cooperatives: Will Ever the Twain Meet? *Journal of Economic Literature*, XXXI: 1290-1320.

Botlhoko G.J & Oladele O.I. (2013). Factors affecting farmers' participation in agricultural projects in Ngaka Modiri Molema district North West province, South Africa. *Journal of Human Ecology*, 41(3): 201-206.

Butt, T. M., Hassan, M.Z.Y., Sahi, S.T., Atiq, M., Jabbar, A., Ahmad, I., Luqman, M. & Shafique, W. (2009). Role of rural youth in agricultural and rural development: A self-perceived case study of Okara District, Punjab, Pakistan. *Journal of Agricultural Extension and Rural Development*, 3(2): 23–28.

Chamberlin, J. & Jayne, T.S. (2011). *Unpacking the meaning of “market access”*. Michigan: Michigan State University.

Cheney, G., Lair, D.J & Kendall, B.E. (2013). Making organization matter: Looking back and looking ahead. *Organization*, 20 (1): 67–77.

Chhetri, N., Chaudhary, P., Puspa, B.E., Tiwari, C & Yadawd, B. (2012). Institutional and technological innovation: Understanding agricultural adaptation strategies. *Journal of Agricultural Science*, 6 (11): 99–128.

Chikazunga, D & Paradza, G. (2012). *Can smallholder farmers find a home in South Africa’s food-system? Lessons from Limpopo Province*. Pp. 39-97.

Department of Agriculture, Forestry and Fisheries. (2012). *A framework for the development of smallholder farmers through cooperative development*. Pretoria: Department of Agriculture, Forestry and Fisheries, South Africa.

Dorward, A. and Kydd, J. 2005. Making Agricultural market systems work for the poor: Promoting effective, efficient and accessible coordination and exchange. Imperial College, London.

Du Toit, D.C. (2011). *Food security document*. Directorate Economic Services Production Economics unit. Pretoria: Government Printer. [Online]. Available: [www.daff.gov.za](http://www.daff.gov.za). [Accessed 05 May 2012].

Earth Observing System. (2020). *Agricultural cooperatives, types; pros and cons: listening to the pulse of the planet*. pp. 1-16.

Ebert, A. W. (2014). Potential of underutilized traditional vegetables and legume crops to contribute to food and nutritional security, income and more sustainable production systems. *Sustainability*, 6(1): 319–335.

Food and Agriculture Organization. (2013). *Telecommunication and agriculture*. [Online]. Available: [http://regency.org/t\\_in\\_act/pdf/english/agri.pdf](http://regency.org/t_in_act/pdf/english/agri.pdf). [Accessed 11 June 2013].

- Francesconi, G.N & Heerinck, N. (2010). Ethiopian agricultural cooperatives in an era of global commodity exchange: Does organization form matter? *J Afr. Eco.*, 20:153–177.
- Geoffrey, K.S. (2014). *Determinants of market participation among small-scale pineapple farmers in kericho country, Kenya*. Pp.1-80
- Goodman, D., DuPuis, E.M & Goodman, M.K. (2011). *Alternative food networks: Knowledge, practice, and politics*. Abingdon: Routledge.
- Guta, R.M., Negash, R., Bekele, A.E & Namera, D.B. (2020). Smallholder market participation and its associated factors: Evidence from Ethiopian vegetable producers. *Cogent Food & Agriculture*, 6(1): 1783173.
- Gustavsson, J., Cederberg, C., Sonesson, U., Van Otterdijk, R., & Meybeck, A. (2011). *Swedish institute for food global food losses and food waste*. p.231.
- Hart, G. 1992. Imagined unities: constructions of "the household" in economic theory. In *Understanding Economic Process*." (S. Ortiz, and S. Lees, Eds.), pp. 111-129. Monographs in Economic Anthropology. University Press of America, Lanham.
- Iliopoulos, C. & Valentinov, V. (2018). Member heterogeneity in agricultural cooperatives: *A systems theoretic perspective*. *Sustainability*, 10 (4):1271.
- International Cooperative Alliance (ICA). (2007). *What is a cooperative?* <http://www.ica.coop/coop/index.html,2007-07-11>
- Ismail, I.J., Srinivas, M., & Tundui, H. (2015). Transaction costs and market participation decisions of maize small holder farmers in Dodoma region, Tanzania. *Global Journal of Biology Agriculture and Health Sciences*, 4(2): 12–20.
- Janvry, A. D., Sadoulet, E., Fafchamps, M., and Raki, M. 1992. Structural adjustment and peasantry in Morocco: a computable household model. *European Review of Agricultural economics* 19, 427-453.
- Johnson, G.I., Weinberger, K & Wu, M.H. (2008). The vegetable sector in tropical Asia: Importance, issues and a way ahead. *In International Symposium on the Socio-Economic Impact of Modern Vegetable Production Technology in Tropical Asia* 809. pp.15-34.

Kapuya, T., Saruchera, D., Jongwe, A., Mucheri, T., Mujeyi, K., Traub, L.N & Meyer, F. (2010). The grain industry value chain in Zimbabwe. *Unpublished draft prepared for the Food and Agricultural Organization (FAO)*.

Kebedom, A & Ayalew, T. (2012). Analysing adoption and intensity of use of coffee technology package in Yergacheffe District, Gedeo Zone, SNNP Regional State, Ethiopia. *International Journal of Science and Research (IJSR)*, 3 (10): 1945–1951.

Kereth, G.A., Lyimo, M., Mbwana, H.A., Mongi, R.J & Ruhembe, C.C. (2013). Assessment of post-harvest handling practices: Knowledge and losses of fruits in Bagamoyo District of Tanzania. *Food Science and Quality Management*, 60 (88): 8–16.

Kherallah, M. and MinoT, N. 2001. Impact of Agricultural Market Reforms on Smallholder Farmers in Benin and Malawi. IFPRI Collaborative Research Project. International Food Policy Research Institute, Washington DC.

Kokkinidis, G. (2015). Spaces of possibilities: Workers' self-management in Greece. *Organization*, 22(6):847–71.

Kontogeorgos, A., Sergaki, P & Chatzitheodoridis, F. (2017). An assessment of new farmers' perceptions about agricultural cooperatives. *Journal of Developmental Entrepreneurship*, 22(1): 1750003.

Kormelinck, A.G., Plaisier, C., Muradian, R & Ruben, R. (2016). Social capital and agricultural cooperatives: Experimental evidence from Ethiopia. In: *Cooperatives, economic democratization and rural development*. p.123.

Kotler, P. (2010). What is marketing? [Online]. Available: <http://www.learnmarketing.net/marketing.htm>. [Accessed 17 January 2013].

Mabuza, M.L., Ortmann, G & Wale, E. (2013). Effects of transaction costs on mushroom producers' choice of marketing channels: implications for access to agricultural markets in Swaziland. *South African Journal of Economic and Management Sciences*, 17 (1): 99-111.

Lapar, M.L., Holloway, G., and Ehui, S., 2002. *Policy options promoting market participation of smallholder livestock producers: A case study from the Philippines*.

Socioeconomics and Policy Research Working Paper 47, International Livestock

Research Institute. [Online]. Available: <https://hdl-bnc.Lapar, M.L., Holloway, G., and Ehui, S.,ca/dspace/bitstream/10625/26025/1/122246.pdf>. [Accessed on 15 April 2014].

Limpopo Department of Agriculture, 2008. Background Document. Limpopo: GovernmentPrinter.[Online].Available: <http://www.lida.gov.za/index.php?Entity=Background>. [Accessed 17 April 2012].

Louw, A., Jordaan, D., Ndanga, L., and Kirsten, J.F., 2008. *Alternative marketing options for small-scale farmers in the wake of changing agri-food supply chains in South Africa*. *Agrekon* 47 (3), pp. 287-308.

Louw, A., Vermeulen, H., Kirsten J., Madevu, H., 2007. *Securing small farmer participation in supermarket supply chains in South Africa*. *Development Southern Africa*: 24 (4),pp. 539-551.

Machethe, C. L., 2004. Agriculture and Poverty in South Africa: Can Agriculture reduce poverty. [Online]. Available: <http://www.sarpn.org.za/documents/d0001005/P1125-Agriculture-PovertyMachethe2004.pdf>. [Accessed 30 April 2012].

Magesa, M.M., Michael, K & Ko, J. (2014). Access to agricultural market information by rural farmers in Tanzania. *International Journal of Information and Communication Technology Research*, 4: 264–273.

Magesa, M & Michael, K. (2020). Access to the use of agricultural markets by smallholder farmers measuring informational capabilities. *International Journal of Information and Communication Technology Research*, pp. 1-21.

Mangisoni, J. 2006. Markets, Institutions and Agricultural Performance in Africa. ATPS special paper series No. 27, the African Technology Policy Studies Network, Nairobi. Online: <http://www.atpsnet.org/content/files/documents/.pdf>. [Accessed: 20-05-2011].

Makoni, E., Tsikirayi, C., Urombo, J & Mandisodza, F. (2014). The impact of value chain constraints on potato farmers: A survey of Nyanga District Smallholder Irish potato farmers (2008-2013). *Prime Journal of Business Administration and Management*, 2(3):1398–1408.

- Matsane, S.H & Oyekale, A.S. (2014). Factors affecting marketing of vegetables among small-scale farmers in Mahikeng Local Municipality, North West Province, South Africa. *Mediterranean Journal of Social Sciences*, 5(20): 390.
- Marcis, J., Bortoluzzi, S.C., de Lima, E.P., et al. (2018). Sustainability performance evaluation of agricultural cooperatives' operations: A systemic review of the literature. *Environment, Development and Sustainability*, 21: 1111–26.
- Markelova, H., Meinzen-Dick, R., Hellin, J & Dohrn, S. (2009). Collective action for smallholder market access. *Food Policy*, 34(1): 1–7.
- McCarthy, L., Touboulic, A & Matthews, L. (2017). Voiceless but empowered farmers in corporate supply chains: *Contradictory imagery and instrumental approach to empowerment*. *Organization*, 25(5): 609–35.
- Mdlalose, N. (2016). *Marketing of fresh produce by smallholder farmers: A case of uThungulu district municipality Kwazulu Natal South Africa*. Pp. 1-96.
- Mittal, S & Mehar, M. (2013). Agricultural information networks, information needs, and risk management strategies: A survey of farmers in Indo-Gangetic Plains of India. Working paper 10. *International Maize and Wheat Improvement Center*.
- Miruts, E. (2016). Analysis of the factors affecting adoption of soybean production technology in Pawe District, Metekele Zone of Benshangul Gumuz Regional State, Ethiopia. *World Science News*, 3 (3):122–137.
- Mondol, M.H. (2010). Crop agriculture of Bangladesh: Challenges and opportunities. *Bangladesh Journal of Agricultural Research*, 35 (2): 235-245.
- Moobi M.N & Oladele O.I. (2012). Factors influencing small scale farmers' attitude and participation in formal financial markets in Mahikeng Municipality. *South African Journal of Human Ecology*, 39(1): 11-17.
- Mntuyedwa, N. (2013). Rural areas still behind in infrastructural development. [Online]. Available: <http://thenetworks.co.za/2013/01/rural-areas-still-behind-in-infrastructuredevelopment/> [Accessed 15 August 2014].

- Mwakiwa, E., Katema, T & Vomitadyo, I. (2016). An economic analysis of high-value horticulture crop productivity: Green peas (*Pisum sativum*) in Zimbabwe. *Journal of Economics and Sustainable Development*, 7(2): 1–9.
- Nilsson, J., Svendsen, G.L & Svendsen, G.T. (2012) Are large and complex agricultural cooperatives losing their social capital? *Agribusiness*, 28(2): 187–204.
- Ochieng, J., Niyuhire, M.C., Ruraduma, C., Birachi, E & Ouma, E. (2014). *Bean utilization and commercialization in great lakes region of Central Africa: The case of smallholder farmers in Burundi*.
- Oluwatayo, I.B. (2009). Towards assuring households-food security in rural Nigeria: Have cooperatives got any place? *International Journal of Agricultural Economics and Rural Development*, 2(1): 52-61.
- Olwandle, J & Mathenge, M. (2012). *Market participation among poor rural households in Kenya*. Paper presented at International Association of Agricultural Economists. Triennial Conference, Brazil.
- Omiti J., Otieno, D., McCulloch, E. and Nyanamba, T. 2007. Strategies to promote market-oriented smallholder agriculture in developing countries: A Case of Kenya. AAAE Conference Proceedings (2007), 259-264.
- Ortmann, G. F., and King, R. P., 2006. Small-scale farmers in South Africa: Can agricultural cooperatives facilitate access to input and product markets? Staff Paper Series PO6-4. Department of Applied Economics College of Agricultural, Food, and Environmental Sciences. University of Minnesota.
- Ortmann, G.F., and King, R.P., 2007. Agricultural cooperatives II: Can they facilitate access of small-scale farmers in South Africa to input and product markets? *Agrekon* 46 (2), pp. 219-244.
- Otekunrin, O.A., Momoh, S & Ayinde, I.A. (2019). Smallholder farmers' market participation: Concepts and methodological approach from sub-Saharan Africa. *Current Agriculture Research Journal*, 7(2): 139–157.
- Parker, M. (2017). Alternative enterprises, local economies, and social justice: Why smaller is still more beautiful. *Management*, 20(4): 418–34.

- Parker, M., Cheney, G., Fournier, V., et al. (2014). *The Routledge companion to alternative organization*. London: Routledge.
- Pingali, P., Khwaja, Y. and Meijer. M. 2005. Commercializing small farms: Reducing transaction costs. ESA Working Paper No. 05-08. *Agricultural and Development Economics Division. Rome: FAO*
- Poulton, C., Dorward, A., and Kydd, J. 2005. The future of small farms: new directions for services, institutions and intermediation. *Paper Presented at The Future of Small Farms Workshop, 26-29 June 2005, Imperial College, Wye, UK*
- Ramoroka, K.H. (2012). *Participation and utilisation of formal vegetable markets by smallholder farmers in Limpopo: A Tobit II approach*. MSc Thesis. Turfloop: University of Limpopo, South Africa.
- Ravinder, R. (2017). Cooperatives in South Africa: A review. *Indian Journal of Science and Technology*, pp. 1-73.
- Sadoulet, E., and Janvry, A. D. 1995. "Quantitative development policy analysis." *The Johns Hopkins University Press, Baltimore*
- Sala, S. (2010). *The role of information and communication technologies for community-based adaptation to climate change*. [Online]. Available: [http://www.fao.org/uploads/media/ap606e\\_2.pdf](http://www.fao.org/uploads/media/ap606e_2.pdf). [Accessed 17 July 2013].
- Samantaray, S.K., Prusty, S & Raj, R.K. (2009). Constraints in vegetable production-experiences of tribal vegetable growers. *Indian Research Journal of Extension Education*, 9(3): 32-34.
- Safri, M. (2015). Mapping noncapitalist supply chains: Toward an alternate conception of value creation and distribution. *Organization*, 22(6): 924–41.
- Sebonkile, C.T & Mbohwa, C. (2015). *The nature role and status of cooperatives in the South African context*. pp. 21-23.
- Sebopetji, T.O. & Belete, A. (2009). *An application of probit analysis to factors affecting small-scale farmers' decision to take credit: A case study of the Greater Letaba Local Municipality in South Africa*. Turfloop: University of Limpopo, South Africa.

Senyolo, G.M., Chaminuka P., Makhura, M.N & Belete, A. (2009). Patterns of access and utilization of output markets by emerging farmers in South Africa: Factor analysis approach. *African Journal of Agricultural Research*, 4(3): 208-214.

Siddique, A.B.M. (2015). The role of cooperative society for marketing agriculture products in Bangladesh. *Global Journal of Management and Business Research: emarketing*, 15(5): 1-2.

Singh, I., Squire, L., and Strauss, J. 1986. Agricultural household models: extensions, applications and policy. The Johns Hopkins University Press, Baltimore.

Stats, S.A. (2011). Mid-year population estimates 2011: Report P0302. Pretoria: Statistics South Africa.

Stockbridge, M., Dorward, A., and Kydd, J. 2003. Farmer Organizations for Market Access: Learning from Success. *Briefing Paper. Wye College, University of London, UK.*

Strauss, J. 1986. The theory and comparative statistics of agricultural household models: a general approach. In "Agricultural Household Models: Extensions, Applications and Policy." (I. Singh, L. Squire, and J. Strauss, Eds.), pp. 71-91. *The Johns Hopkins University Press, Baltimore and London.*

Stringfellow, R., Coulter, J. Lucey, T. McKone T. and. Hussain, A. 1997. Improving the access of smallholders to agricultural services in sub-Saharan Africa: farmer cooperation and the role of the donor community. *Natural Resources Perspectives 20. London: Overseas Development Institute*

Tembe, P.N., 2008. The potential role of amadumbe marketing for rural small-scale farmers in Mbonambi municipality. Unpublished Thesis (M Social Science: Community Resources), *School of Agricultural Sciences and Agribusiness, Faculty of Science and Agriculture, University of KwaZulu-Natal, Pietermaritzburg.*

Teweldemedhin, M.Y & Kafidi, L. 2009. Risk management strategies of cattle farmers in Namibia: Case study from Omaheke and Otjozondjupa regions. *Journal of Agricultural Extension and Rural Development*, 1(2): 063–070.

Tita, D.F. (2008/9). A transaction cost analysis of factors affecting market arrangements in the agroforestry tree product value chain in Cameroon. Internet file

retrieved on 31st March 2013 from: <http://www.worldagroforestry.org/downloads/publications/PDFs/B16462.PDF>.

Thirlwall, A.P. 2003. Growth and Development with Special References to Developing Economies, 8th edition. *Palgrave Macmillan, New York*.

Tshuma, M.C. (2014). Understanding the small-scale agricultural sector as a precondition for promoting rural development in South Africa. *African Journal of Agricultural Research*, 9 (31): 2409-2418.

Uchezuba, I.D., Moshabele, E & Digopo, D. (2009). Logistical estimation of the probability of mainstream market participation among small-scale livestock farmers: A case study of the Northern Cape Province. *Agrekon*, 48(2): 171-183.

Van Renen, E. 1997. The Batat marketing drive: improving market Access for small scale farmers. *Agrekon*, 36 (4), pp. 648-655.

Verhofstadt, E & Maertens, M. (2014). Can agricultural cooperatives reduce poverty? Heterogeneous impact of cooperative membership on farmers' welfare in Rwanda. *Applied Economic Perspectives and Policy*, 37(1):86-106.

Wilson, F & MacLean, D. (2012). The big society, values and co-operation. *Work, Employment & Society*, 26(3): 531–41.

Wooldridge, J.M. (2013). *Introduction to econometrics: A modern approach (5<sup>th</sup> edition)*. Cengage Learning.

Xaba, B.G & Masuku, M.B. (2012). Factors affecting the choice of marketing channel by vegetable farmers in Swaziland. *Sustainable Agriculture Research*, 2(1): 112–123.

Yohannes, M. (2015). *Performance and challenges of vegetable market: The case of Kombolcha district east Hararghe Zone, Oromia National Regional State, Ethiopia*. p.8.

Zhou, R., Minde, I.J & Mtigwe, B. (2013). Smallholder agricultural commercialization for income growth and poverty alleviation in southern Africa: A review. *African Journal of Agricultural*, 8 (22): 2599-2608.

Zuwarimwe, J & Kirsten, J. (2010). The role of social networks in development of small-scale enterprises in the Chimanimani district of Zimbabwe. *Agrekon*, 49(1): 17-38.