Marketing of fresh produce by smallholder farmers: A case study of uThungulu District Municipality, KwaZulu-Natal, South Africa

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DECLARATION

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ABSTRACT

Smallholder farmers in South Africa and in other developing countries often have limited access to factors of production and information. Poor infrastructure, lack of marketing knowledge and lack of transport are amongst the many market-related constraints that smallholder farmers are facing. Consequently, such constraints limit their ability to access markets. This study was conducted in uThungulu District Municipality based on a sample of 80 farmers who were selected using stratified random sampling. The study made use of a structured questionnaire to collect data through face-to-face interviews. A binary logistic regression model was used to identify factors influencing marketing participation decisions among the sampled farmers.

The empirical results showed that extension services contact, quality of roads to market, access to transport, distance to market, and timing of seeking markets had a statistically significant influence on market participation decisions. These findings suggest that an improvement in each of the significant variables can significantly influence farmer market participation decisions. Furthermore, based on the empirical results of the study, policy recommendations are suggested. These include improving dissemination of market information to farmers, encouraging farmers to seek markets before production, and encouraging farmers to add value to their produce.

Key words: Smallholder farmers, market access, market participation decision, logistic regression model, uThungulu District Municipality

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DAFF	Department of Agriculture, Forestry and Fisheries
Df	Degrees of Freedom
DoA	Department of Agriculture
DM	District Municipality
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IDZ	Industrial Development Zone
Km^2	Square kilometres
KZN	KwaZulu-Natal
PTO	Permission to occupy
SA	South Africa
SALGA	South African Local Government Association
Sig	Significance
SMME	Small Medium Micro Enterprise
StatsSA	Statistics South Africa
Std	Standard
TIKZN	Trade & Investment KwaZulu-Natal

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

The South African agricultural sector is characterised by a dual economy comprising well-developed commercial farming, consisting of relatively large-scale farming businesses with established supply chains, and smallholder (subsistence) farmers and emerging farmers who are striving to achieve commercial success (Agriseta, 2010). According to Ortmann and King (2006), citing Lyne (1996) and Matungul *et al*. (2001), smallholder farmers in South Africa and in other developing countries have limited access to factors of production, credit and information, and markets are often constrained by inadequate property rights and high transaction costs.

Agricultural activities, such as crop and livestock production and agricultural marketing, play a vital role in the economic development of a country, employment creation, and in the alleviation of poverty. In rural areas, participating in agriculture has the potential to alleviate poverty and reduce unemployment. By raising agricultural productivity and rural incomes, poverty alleviation and employment in rural areas can be achieved (Machethe, 2004). According to Machethe (2004), households engaging in agricultural production tend to be less poor than those who do not. As a result, governments believe in the development of smallholder farmers in order to improve economic development and establish viable rural livelihoods. Delgado (1998), as cited by Chibanda *et al.* (2009), argued that smallholder agriculture is simply too important to employment, human welfare, and political stability in Sub-Saharan Africa to be either ignored or treated as just another small sector of a market economy.

Each province in South Africa is unique in terms of suitable agricultural commodities that can be produced. In the North-Eastern region of the KwaZulu-Natal (KZN) Province, there is the uThungulu District Municipality which comprises six Local Municipalities. This District Municipality is well endowed with resources for the production of subtropical and citrus fruit, and a variety of vegetables, while sugar cane is the main crop grown commercially (KZN Top Business Portfolio, 2013). The main vegetables produced include cabbages, tomatoes, onions, carrots, butternut, and beetroot. These vegetable crops are mainly produced by rural producers because they serve as staple foods for households and the surpluses are sold to generate income. However, most of this fresh produce is perishable, and if they are to reach

the consumer in the right condition they must be marketed properly using appropriate packaging and handling methods.

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. Improving market access and commercialization of smallholders helps to induce greater investment, productivity, and income (Olwande and Mathenge, 2012). According to Senyolo *et al.* (2009), citing Heinemann (2002), rural people in Africa claim that they cannot improve their living standards because of difficulties in accessing markets. Therefore, having access to formal (commercial) markets allows smallholder farmers to escape the cycle of poverty.

There are some smallholders in uThungulu district municipality 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 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). The major constraints to smallholder commercialization includes poor access to productive resources, markets, market information, public services, technology and skills, high transaction costs, and other factors (Zhou *et al.*, 2013).

1.2 PROBLEM STATEMENT

The South African agricultural sector strategy aims to integrate the majority of subsistence farmers into the commercial agricultural economy (Randela *et al.,* 2008). Successful agricultural marketing is vital to commercialise 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 for sustainable agricultural development in South Africa (Senyolo *et al.*, 2009). Between provinces, the extent to which smallholder farmers use the marketing channels differ considerably, being mainly influenced by the availability of infrastructure and market information (Van Renen, 1997). Smallholder farmers are hindered in participation 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 liberalized, deregulated markets for agricultural products, there are market-related constraints that are faced by emerging farmers which limit their ability to enter mainstream commercial agriculture (Senyolo *et al.*, 2009). Access to emerging high-income agricultural markets (e.g. supermarkets) is seen to be skewed in favour of large-scale suppliers (Omiti *et al.,* 2007). Baloyi (2010) indicates 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. The 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 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.

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).

Other measures to support commercial farmers included the establishment of the Land and Agricultural Bank (Land Bank) in 1912 (to provide subsidized loans to commercial farmers), the Cooperatives Societies Acts of 1922 and 1939 (to secure input supply and output marketing services), and the Marketing Act of 1937 (to control the marketing of agricultural products). Smallholder farmers in the former homelands were not given the support to grow to a commercial farming level. This action created a huge gap between the development of commercial farmers and smallholder farmers. The effects of this gap are still visible among smallholder farmers in the form of poor infrastructure development in rural communities, lack of marketing skills among smallholders, and poor quality of produce.

According to Chikazunga and Paradza (2012), fresh produce markets in South Africa are increasingly dominated by the four retail chains-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. Through observations

and response from smallholder farmers in the uThungulu District Municipality, the study seeks to identify factors that influence smallholder marketing decisions.

1.3 RESEARCH QUESTIONS

The key areas of this research are clustered around the following questions:

(i) What are the socio-economic characteristics of smallholder farmers in uThungulu District Municipality?

(ii) What are the technical constraints and transaction costs that influence market participation among smallholder farmers in uThungulu District Municipality?

(iii) What marketing channels are used by smallholder farmers of uThungulu District Municipality to market their fresh produce?

1.4 OBJECTIVES OF THE STUDY

The main objectives of the study are to:

(i) Identify the socio-economic characteristics of smallholder farmers in uThungulu District Municipality.

(ii) Identify the technical constraints and transaction costs that influence market participation among fresh produce smallholder farmers in uThungulu District Municipality.

(iii) Identify the marketing channels available to smallholder farmers of uThungulu District.

1.5 HYPOTHESIS

The hypotheses tested in order to investigate the extent to which technical constraints and transaction costs influence marketing decisions are as follows:

(i) Technical constraints and high transaction costs such as farming experience, extension services, access to transport and access to market information do not affect smallholder farmers market participation in formal markets.

(ii) uThungulu smallholder farmers do not use formal markets such as supermarkets to sell their produce.

1.6 LIMITATIONS OF THE STUDY

The investigation of marketing of fresh produce products by small scale farmers was done in uThungulu District Municipality. Therefore, the results of the study cannot be generalized for all smallholder farmers in other Districts or other Municipalities in South Africa. This is because even though smallholder farmers share some similarities but the extent of operation, access to markets and other factors are different.

This study also focused on identifying technical constraints, transaction costs and household characteristics that influence market participation decisions. The extent to which identified constraints influence marketing decisions was not covered by the study.

1.7 JUSTIFICATION FOR THE STUDY

Access to markets is essential for selling produce and economic welfare. By accessing markets, farmers are able to sell their produce, earn an income and therefore improve their economic welfare. The ability of small scale farmers to gain access to markets and serve these effectively is crucial for rural development. Smallholder farmers find it difficult to participate in commercial markets due to poor infrastructure, lack of market transport and inability to have contractual agreements (Jari and Fraser, 2009). In order to effectively market his products, a farmer requires relevant infrastructure, labour, technology and coordinated procedures (Otieno *et al.*, 2009). The unavailability of resources and infrastructure necessary for marketing hinders farmers from accessing markets and serve these effectively. The study therefore seeks to identify marketing constraints that limit smallholder farmers in uThungulu District Municipality from accessing formal markets.

While supermarkets can provide a stable and dependable market for farmers' produce, poor farmers in rural areas appear to have limited access to such markets. According to Chikazunga and Paradza (2012), supermarkets often shun smallholder farmers because of the high transaction costs incurred in coordinating them. Supermarkets are bargain hunters, increasingly looking for producers who can guarantee not only competitive prices but also product quality, quantity and consistency. The study by Louw *et al.,* (2004) suggests that in order to gain a foothold in supermarkets, small farmers need to expand their productive capacity, ensure consistent supply and quality, and strive to adhere to supermarket and international grades and standards. Louw *et al.* (2007) state that in South Africa, supermarket chains such as Shoprite and Pick ’n Pay use their own fresh produce sourcing companies, such as Freshmark, or special wholesale companies, such as FreshCo, and distribution centres

to centrally source and internally distribute fresh produce and other merchandise from contracted farmers or suppliers. In the light of the above, the study attempts to determine if uThungulu district smallholder farmers supply commercial markets with their produce.

The intention of the study is to identify factors influencing their marketing decisions, and to identify possible marketing channels available for uThungulu district smallholder farmers. The findings and recommendations of this study will be useful for policymakers in the KZN Department of Agriculture and other relevant stakeholders in their attempts to link smallholder farmers to profitable markets.

1.8 OUTLINE OF THE DISSERTATION

The study is comprised in five chapters. The background information on the study is presented in chapter 1. Literature regarding the smallholder agriculture sector including an overview on smallholder marketing and constraints to smallholder agriculture is reviewed in chapter 2. Chapter 3 gives an overview of the study area, including its location. It further clarifies on the method of data collection and analytical techniques. Descriptive results and the results of the empirical analyses and interpretation are presented in chapter 4. Finally, in chapter 5, the summary, conclusion and policy recommendations are presented.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

In this Chapter a review of the relevant literature that deals with the marketing decisions among small scale farmers is presented. The main issues reviewed include those factors that pose challenges in marketing decisions among small scale farmers. The chapter begins by defining small scale farmers and their importance. It then further identifies both technical and institutional factors that influence market participation decisions among small scale farmers. The chapter ends by reviewing smallholder market access.

2.2 SMALL SCALE FARMERS IN KWAZULU-NATAL

KwaZulu-Natal has a larger area of high quality agricultural land than any other province in South Africa and it is the national leader in several agricultural products (KZN Top Business Portfolio, 2013). Despite the fact that KwaZulu-Natal (KZN) covers only 7.6% of South Africa's land area, agriculture is central to the economy of this province (Statistics South Africa, undated). The KZN Province has 11 District Municipalities (South African Local Government Association, 2011). In uThungulu District Municipality, about 78% of its population resides in rural areas (StatsSA, 2011). Due to limitations in economic opportunities in rural areas, a large number of these rural households are engaged in agricultural production at a small scale level for their survival and income generation.

According to Ortmann and King (2006), small scale farming is usually associated with black farmers who are found mainly in the "former homelands" of the country. There is a perception that smallholder farmers are defined by the size of the land available to them. Chikazunga and Paradza (2013), citing Jacobs (2009), state that smallholder farmers include those who have access to very small pieces of land, sometimes only a couple of hundred square metres such as home gardens and food plots of possibly three hectares to five hectares. A study conducted in two rural areas of KwaZulu-Natal, namely Swayimana and Impendle, by Matungul *et al.* (2001) indicated that allocated plots of arable land to smallholders were quite small, averaging 1.1 hectares in Impendle and 1.8 hectares in Swayimana. According to Cousins (2009), smallholder farmers work on small plots or gardens and rely on additional forms of income such as social grants. In a study conducted in KwaZulu-Natal by Chibanda *et al.* (2009), a smallholder cooperative had only one vegetable tunnel which it used to grow

tomatoes and there was no room for expansion. It is a common situation that smallholder farmers have access to small plots with no room for expansion.

However, Kirsten and Van Zyl (1998) argue that size is not a good criterion for defining small farms. They argued that one hectare of irrigated peri-urban land, suitable for vegetable farming or herb gardening, has a higher profit potential than 500 hectares of low quality land in the Karoo. Therefore, the farm size category is not determined by the land size but rather turnover, or the level of net farm income. A suggested workable definition for small scale farmer is: "*anyone whose scale of operation is too small to attract the provision of the service she/she needs to be able to significantly increase his/her productivity"* (Kirsten and Van Zyl, 1998: 555). According to DAFF (2012), Smallholder farmers are defined as *"those farmers owning small-based plots of land on which they grow subsistence crops and one or two cash crops relying almost exclusively on family labour*". The term 'smallholder' is often used interchangeably with 'small-scale', 'resource poor' and sometimes 'peasant farmer'. Hence, this study uses 'smallholder' interchangeably with 'small-scale'.

According to StatsSA (2013), KwaZulu-Natal is the third highest province in South Africa which has households who are mainly involved in subsistence and smallholder farming. Furthermore, about 28% of agricultural households in KZN are active in vegetable production. In general, small scale farming is mainly for subsistence purposes but also has the potential to produce a marketable surplus. Smallholder farmers produce food to meet their family's needs but may also supply local and regional markets (Chikazunga and Paradza, 2013; Ortmann and King, 2007). In her study, Mthembu (2008) found that Centocow farmers in KZN participated in market by selling their vegetables to neighbours and at monthly pension pay-outs. The study by Tembe (2008) found that smallholder farmers in KwaZulu-Natal, Mbonambi municipality produced amadumbe with one common goal which was to supply them to formal retail shops in nearby towns of Mbonambi, Richards Bay and Empangeni.

According to Department of Agriculture Fisheries and Forestry (2012), farmers differ in individual characteristics, farm size, resource distribution between food and cash crops, livestock and off-farm activities, their use of external inputs and hired labour, the proportion of food crops sold and household expenditure patterns. In fact, different households participate in smallholder farming for various reasons; to some, smallholder farming is practiced as a source of food to the households, as a part time activity, or as a main source of

income (Pauw, 2007). The study conducted in KwaZulu-Natal by Chibanda *et al.* (2009) found that cooperative members joined smallholder farming cooperatives in order to develop the community, create employment, and to provide food security for the members' families. Whatever the reasons are, small scale farming contributes positively toward the betterment of rural livelihoods. Economically, small scale agriculture enhances local economic development as it is a source of employment and keeps most of the income local as the market is predominantly localised (Kutya, 2012). 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 are confronted by a number of constraints which limit their growth to a commercial level. In the communal areas of South Africa, smallholder farmers have limited access to resources, and markets are often constrained by high transaction costs (Machethe, 2004). According to StatsSA (2013), agricultural households in KZN have limited access to basic services such as water and electricity. In her study, Tembe (2008) found that transport was the main challenge for amadumbe producers in KZN, Mbonambi municipality to reach the market. In the study by Chibanda *et al.* (2009), 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.

2.3 IMPORTANCE OF SMALL SCALE FARMING

Agriculture is one of the important sectors through which government can change the social and economic outlook of rural communities (Radebe, 2012). Support to smallholder agriculture can have a significant impact in improving the livelihoods of rural dwellers (Mhlaba and Brey, 2014). Small-scale farming feeds rural families and is one of the best tools to ensure global food security (Pierre, 2014). It plays an important role in poverty reduction and also allows smallholder farmers to be economically self-sufficient.

2.3.1 FOOD SECURITY

The basic definition of food security is that it refers to the ability of individuals to obtain sufficient food on a day-to-day basis (Du Toit, 2011). *"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"* (Food and Agriculture Organization, 2006: 1). According to Food First (2016), the words food security means that everybody is able to get enough healthy food to be well and active. "Food security means that all people at all times have both physical and economic access to enough food for an active, healthy life" (Bajagai, 2016). According to World Food Program (2016), food security has three main elements;

1. *"Food availability - Food must be available in sufficient quantities and on a consistent basis.*

2. *Food access - People must be able to regularly acquire adequate quantities of food, through purchase, home production, barter, gifts, borrowing or food aid.*

3. *Food utilization - Consumed food must have a positive nutritional impact on people. It entails cooking, storage and hygiene practices".*

Most of the world's hungry people live in rural areas (Matshe, 2009). Smallholder farming is suggested to be central in the effort of achieving food security in rural areas. Pauw (2007) found that the majority of black agricultural households are involved in agriculture as a main or extra source of food. Even though smallholder production is quite low, it is important for household food security. According to Xaba (2014), food security forms a big part of the KwaZulu-Natal poverty eradication strategy. The KZN Department of Agriculture and Rural Development budgeted about R15,4 million for 2014/15 food security programmes (Xaba, 2014). The government of South Africa places particular importance on subsistence agriculture in the efforts to secure food security. With adequate support in implementation, monitoring and evaluation systems of smallholder projects, it is possible that subsistence agriculture could potentially contribute more to household food security and livelihoods (Aliber and Hart, 2009).

To ensure long term food security, there is a need to significantly increase the productivity levels of smallholder farmers. This can be achieved by, among others, encouraging smallholder farmers to pursue sustainable intensification of production through improved

inputs (Du Toit, 2011). According to Baiphethi and Jacobs (2009), increased subsistence production has the potential to improve the food security of poor households both in rural and urban areas by increasing food supply, and by reducing dependence on purchasing food in a context of high food price inflation. This means that smallholder production can improve household food security by increasing food supplies and save households from spending their little incomes on buying food. Subsistence production contributes directly to household food security through supply of food and enables households to divert income to meet household's food and other requirements (Aliber and Hart, 2009). Hendriks (2003) suggested that subsistence production renders two distinct nutritional benefits; in the form of whatever food is being produced for own consumption, and in terms of spending up income on even more nutritious foods that the household might not be able to produce themselves. People's diets can be enriched by promoting growth of certain crops and income be spent on purchasing nutritious food that smallholder farmers cannot produce.

2.3.2 JOB CREATION

Agricultural production has been identified as the best mechanism to reduce rural poverty by providing most of the employment in rural areas (Machethe, 2004). In South Africa, agriculture is seen as the primary activity in rural areas, and is expected to create 1 million jobs by 2030. Smallholder producers tend to use labour-intensive methods rather than capital-intensive ones (Mhlaba and Brey, 2014). Large farms, on the other hand, tend to be more capital intensive in production. According to Chikazunga and Paradza (2013), low-interest monetary policy drives down the cost of capital. This makes capital investments relatively cheaper thereby aggravating the inability of the commercial agricultural sector to create jobs.

Therefore, the opportunity for more job creation in agriculture rests with smallholder agriculture sector which face constraints that inhibit the growth of employment in this sector. Smallholder farmers contribute to employment by hiring labour to assist them with marketing their products when transporting produce to the market and when supplying hawkers (Chikazunga and Paradza, 2012). In Tugela Ferry irrigation scheme, some plot holders lend unused plots to relatives or neighbours and a common arrangement involved a plot borrower providing some labour on other plots still used by the lender would be paid for such labour services (Cousins, 2012). Furthermore, he found that often the farmer's own labour was supplemented by that of family members, or by hired-in labourers drawn from local households.

The unemployment rate in Local Municipalities in the uThungulu District Municipality ranges between 29% and 49% (StatsSA, 2011). According to DAFF (2011), it is estimated that the smallholder sector provides full or part-time employment for at least 1.3 million households. However, in most cases, employment created by smallholder is in the form of part-time employment. For instance, in Tugela Ferry, smallholder farmers hired labour on a piece-work basis and generally paid in cash, except in relation to harvesting and marketing, when payment was mostly in the form of crop produce (Cousins, 2012). The number of jobs created per unit of investment is higher in agriculture than in other sectors. Nationally, the agricultural sector as a whole created 54 000 jobs between January and March 2013, an increase of 7.9% and 12.7% year on year (The New Age, 2013). Within this statistics of job opportunities, there is a portion of contribution by smallholder sector indicating the important role played by small scale farming in job creation. According to Zuma (2014), the refurbishment of the 726 hectares Tugela Ferry Irrigation Scheme in KZN will benefit more than one thousand (1000) small-holder farmers and create 2000 seasonal farm worker jobs when the scheme is operating optimally. Furthermore, during the construction of Tugela Ferry Irrigation Scheme 290 jobs were created. This is a confirmation that smallholder farming sector is also able to create indirect job opportunities.

2.3.3 POVERTY ALLEVIATION

Poverty refers to the condition of not having the means to afford basic human needs such as clean water, nutrition, health care, education, clothing and shelter (Du Toit, 2011). According to Machethe (2004), poverty is more pervasive in rural areas, particularly in the former homelands. He further explains that poverty creates additional challenges which limit the ability for people to search for employment, contributing to a long term unemployment trap.

South Africa ranks among the countries with the highest rate of income inequality in the world (Altman *et al*., 2009). As a result, compared to other middle income countries, it has extremely high levels of absolute poverty. Therefore, in an effort to escape poverty, many rural communities participate in small scale farming as their main livelihood activity which serves as a source of food and income. Growing food for subsistence or income generation provides people with nourishment and potential income. Households who are engaged in agricultural production, especially in rural areas, are able to reduce their poverty level (Machethe, 2004). But, because rural communities have less economic opportunities than urban communities, poverty is found to be high in rural areas. There are three ways in which agriculture contributes to poverty alleviation at rural, urban and national levels, namely: (a)

reducing food prices; (b) employment creation; (c) increasing real wages and improving farm income (Du Toit, 2011). According to Baiphethi and Jacobs (2009), in some parts of sub-Saharan Africa, food expenditures can account for as much as 60–80% of total household income for low-income households. Therefore, smallholder agriculture can play an important role in improving livelihoods, and helping in food security and income-generation.

According to Xaba (2014), the KZN Department of Agriculture and Rural Development seek to take subsistence farmers to a level where they start earning an income from their farming activities. This will be achieved by developing household food producers to supply local, external and government markets by means of contributing to the School Nutrition Programme and the Department of Social Development's Nutrition Development Centres. In this regard, smallholder farmers will be able to earn some income and alleviate poverty. In his study, Cousins (2012) found that almost all crops grown by Tugela Ferry irrigation scheme smallholders were grown for sale and only a small amount was generally taken home for household consumption. Improving agricultural performance among African smallholder farming populations offers the greatest prospects for rural populations to escape out of poverty (DAFF, 2012). DAFF (2011) indicated that there were approximately 240 000 black farmers in South Africa who provided livelihoods for more than a million family members as well as temporary employment for 500 000 people. These households are then able to provide for their family needs. In his study, Machethe (2004) observed that households in the rural sector engaged in agricultural activities tend to have better nutritional status than other households.

2.4 CONSTRAINTS TO SMALLHOLDER AGRICULTURE

Small scale farmers are faced with a number of constraints which hinder their growth and progress in agribusiness. According to Ortmann and King (2006), 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.

Chaminuka *et al*. (2008), citing Stilwell and Makhura (2004), mention that a large proportion of rural households continue to lack access to basic services, which are necessary in achieving successful agricultural marketing.

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). For instance, in the Eastern Cape Province and KwaZulu-Natal, there are poor road infrastructures and transport services are not easily accessible to small scale farmers living in the rural areas (Van Renen, 1997). Makhura and Mokoena (2003) and Nieuwoudt and Groenewald (2003), as cited by Chaminuka *et al.* (2008), identified that improved market access for emerging farmers in South Africa is hampered by poor road conditions, high transport costs and distant markets. Mthembu (2008) found that farmers attributed their marketing challenges to lack of resources, lack of relevant marketing skills, and failure to meet market standards such as quality and quantity. Furthermore, the farmers were constrained by poor road infrastructure, lack of effective farmer support services to provide access to inputs, credit, advice and markets. These technical constraints negatively affect marketing of produce.

According to Machethe (2004), one of the key elements in raising agricultural productivity is improving access to credit. Small scale farmers often fail to secure loans due to the issue of loan collateral, which is important to qualify for bank loans. In rural areas ownership of the land belongs to the traditional authority and the farmer is just given the right to use the land. Therefore, small scale farmers do not own assets such as land which can serve as collateral. According to Clover and Darroch (2005), the lack of investment, or start-up capital, and difficulty in accessing investment capital has been identified by Small-Micro-Medium Enterprises (SMME) owners in South Africa as a major constraint to their business' survival and growth. The production and marketing of agricultural produce is therefore affected by both technical and institutional constraints.

Household characteristics can also influence marketing decisions by smallholder farmers. Aliber and Hart (2009) reported that women who participated in smallholder farming out-numbered men and made up 60% of all those involved in farming. This was consistent with the prevalent stereotype of homeland agriculture. Jari and Fraser (2009) found that females

(63%) in vegetable farming formed a greater proportion than men and the majority (72%) of the smallholder farmers were above 49 years of age. This implies, woman who are old in age are more active in vegetable farming than men.

Educated rural people prefer to seek jobs in other sectors than staying at home to farm (Tshuma, 2014). It implies that fulltime farming in rural areas is dominated by individuals who do not have much formal education. According to Jari and Fraser (2009), the educational level among the sampled farmers was generally low, where 18% of the household heads never attended school and 39% went up to primary level. Being uneducated may result to high transaction costs and ultimately produce a negative influence on the marketing decisions. The low level of education of household heads, coupled with their inability to communicate in the nation's business language (English), contributed to the high transaction costs faced by farmers (Matungul *et al.*, 2002). As a result of high transaction costs, the farmers failed to access commercial markets.

2.4.1 TECHNICAL FACTORS IN AGRICULTURAL MARKETING

Technical factors play an important role in product marketing. The availability 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.

Many of the services required to promote smallholder agricultural development are public goods. Therefore, little progress can be expected in achieving the objectives of agricultural development without government involvement (Machethe, 2004). According to Feder *et al.* (1985), cited by Pote (2008), technical constraints also include the absence of equipment to relieve labour shortages, inadequate supply of complementary inputs (such as seeds, chemicals and water), and insufficient human capital. These technical challenges impede business growth and promotion of small scale farmers to commercial level.

2.4.1.1 PHYSICAL INFRASTRUCTURE

Many constraints experienced by small scale farmers arise because they are situated in remote rural areas with poor infrastructural development (Clover and Darroch, 2005). Inadequate physical infrastructure in rural areas, particularly in the former homeland areas, remains a major obstacle to smallholder agricultural growth in South Africa (Machethe, 2004). A large proportion of rural households continue to lack access to basic services (Stilwell and Makhura, 2004). Bogetic and Fedderke (2005), as cited by Gnade (2013) show that South African urban areas are generally well-serviced in terms of electricity, water and sanitation, information and communication technology (ICT), and transportation, while their rural counterparts fall significantly short in these respects.

Good infrastructure is a requirement for achieving higher levels of agricultural productivity and profitability. Chaminuka *et al*. (2008), citing studies by Makhura and Wasike (2003); and Fan and Zhang (2004), mentioned that good infrastructural services are necessary for agriculture and rural development. It is believed that if business growth is to be realized, improvement in the supply and quality of infrastructure services is essential. Business activities such as transportation of goods and storage depend upon infrastructural availability.

According to Naude (1998), cited by Clover and Darroch (2005), SMMEs located closer to urban centres often have better access to services compared to those in poorer rural areas. While telecommunication facilities would help farmers communicate with buyers in the market, good roads facilitate the movement of produce to markets. Road infrastructure has an influence on smallholder market participation, especially if they are located far from consumption centres (Gabre-Madhin, 2001). For instance, good roads would fast track the transportation of produce to the market and enable farmers to get their produce to the market in a secure and timely manner. An improvement in physical infrastructure is expected to promote marketing of farmer produce. Achieving higher levels of agricultural productivity requires the provision of good infrastructure (Machethe, 2004).

2.4.1.2 STORAGE FACILITIES

Storage is an important marketing function, which involves holding and preserving goods from the time they are produced until they are needed for consumption (Bhopal, 2004). It ensures a continuous flow of goods in the market. According to Randela (2003), harvest usually occurs at the same time for all farmers producing the same product leading to a glut

of produce that cannot be consumed immediately. Therefore, through proper storage facilities, some products may be stored and sold later when required.

Because 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 risk of losing the produce, quality of the produce and customers and hence the ability of earning a higher final consumer price.

In rural areas, storage facilities are usually non-existent (Jacob, 2008), which is one of the major constraints to farmers in rural areas (Omiti, 2007). According to Wilson *et al*. (1995) cited by Jari (2009), market infrastructure such as sheds and stalls in spot markets are crucial in maintaining freshness of agricultural produce. Temperature is the single most important factor in maintaining quality after harvest (Bachmann and Earles, 2000). Produce should be cooled to the ideal temperature as quickly as possible after harvest (Roper *et al.*, 2006). According to Gustavsson *et al*. (2011), vegetables straight from the farm can be spoilt in hot climates due to lack of infrastructure for transportation, storage, cooling and markets. Therefore, for long term high quality storage, fresh produce needs to be maintained at proper temperatures (Roper *et al.*, 2006). However, refrigerated storage facilities require electricity which is lacking in most rural areas. In general, farmers who can maintain the quality of the produce will be able to expand their marketing opportunities and will be better able to compete in the marketplace (Bachmann and Earles, 2000).

2.4.1.3 ACCESS TO CREDIT

Improving access to credit is often regarded as one of the key elements in raising agricultural productivity (Machethe, 2004). In the stage of enterprise establishment, small scale farmers may depend on government grants, their own resources and/or those of friends and relatives. The challenge will arise when more capital is needed for their business expansion. In most cases, profits accumulated by the business are often not adequate to meet the expansion needs. This calls for a farmer to seek external finance. According to Jack (2005), cited by Zuwarimwe and Kirsten (2010), smallholder farmers still face problems in attracting external finance and other needed resources to establish and expand their businesses. The poor financial status and the lack of owning assets which can serve as collateral, negatively affects the creditworthiness of small scale farmers. Creditworthiness involves the lender's evaluation that the borrower will have sufficient debt-servicing reserves to meet the terms of the loan

contract, and that the borrower can furnish sufficient collateral to reduce lending risks to an acceptable level (Fenwick and Lyne, 1998). The poor creditworthiness of small scale farmers makes lending institutions reluctant to grant credit to them. Pindyck and Rubinfeld (2005) indicate that formal financial institutions are not keen to engage new entrepreneurs, as they view their activities as risky investment areas. Lack of investment and difficulty in accessing investment capital has been identified by SMME owners in SA as a major constraint to their business survival and growth (Clover and Darroch, 2005).

Access to formal private financial services by smallholder farmers is constrained by high transaction costs, inadequate collateral and poor debt-servicing capacity (Fenwick and Lyne, 1998). The issue of loan collateral is important for small businesses, as they seldom own sufficient fixed assets to qualify for bank loans (Clover and Darroch, 2005). Small scale farmers are restricted from accessing credit from formal private financial institutions because they do not hold title deeds which can serve as collateral for loan applications. In rural areas, land allocation and responsibility over it lie with the tribal authority, the Inkosi (chief) and his Indunas (foremen) (Ortmann and King, 2007). Tribal authority does not issue out any title deeds but rather allocate land and only issue a permission to occupy (PTO) letter. Such a PTO letter is meaningless to financial institutions as it does not certify that land is owned by the letter holder. Difficulties in accessing investment capital may also arise from SMME owners' lack of understanding of loan application procedures, or a private lending institution's bias against SMMEs due to the relatively high costs of administering relatively small loans (Bannock, 2002).

In order to ensure their long-term sustainability, smallholder farmers need adequate capital. Due to the high risks associated with lending to smallholder agricultural cooperatives, financial institutions have been hesitant to provide credit to them (Ortmann and King, 2007). This implies that smallholder farmers find it difficult to raise capital that can improve the marketing of their produce.

2.4.1.4 TELECOMMUNICATION

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, relevant information

(Adejuwon, 2015). Availability of good communication networks plays a vital role in overcoming the challenge of farmers lacking information.

Telecommunications reduce transactions costs, expand productivity, and directly increase economic well-being (Haring, 2002). Telecommunication has a great potential of passing valuable information such as agricultural innovations, markets and technical information to farmers. When telecommunication systems are not available, business people are not informed or updated about business opportunities. Communication mediums such as radio, television, newspapers and the Internet are used to convey information to users. The use of a telephone or cell phone permits the farmer to be in touch with family members, extension officer or other farmers.

Despite great technological and service advances in every country in the world (developed and developing), rural and remote areas continue to suffer poor telecommunication infrastructure (United Nations Economic and Social Commission for Western Asia, 2003). Although radio is the most cost-effective medium of reaching rural people, it is not enough to supply agricultural information to rural farmers (Francis, 1999). According to the Food and Agriculture Organisation (2013), a farmer from his home can use a modem to connect a personal computer over the fixed or mobile telephone network to access distant databases, markets, weather services or any Internet service. The growth of Internet usage provides opportunities to obtain information, communicate with specialists, deliver first-line support and promote new techniques or activities. People use the Internet because it provides them with information they need, and it also provides a communication environment that encourages creativity, expression, enjoyment and experimentation (Richardson, 1997). However, poor telecommunication infrastructure in rural areas limits farmers from benefiting from such communication benefits.

2.4.2 TRANSACTION COSTS IN SMALL SCALE FARMING

Small scale farmers face several barriers that hinder their participation in marketing opportunities (Markelova and Meinzen-Dick, 2009). According to Goetz (1992), Staal *et al.* (1997) and Holloway *et al.* (2000), as cited by Arega *et al.* (2007), the single most important barrier to smallholder market participation in Sub-Saharan Africa are transaction costs. According to Ortmann and King (2006), transaction costs are the costs of organizing and transacting exchanges; they include costs of obtaining information about alternatives and costs of negotiating, monitoring, and enforcing contracts. Arega *et al.* (2007) indicated that

transaction costs are the pecuniary and non-pecuniary costs associated with arranging and carrying out a transaction.

Prior to making any exchange, 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). According to Jari and Fraser (2009), farmers rarely trusted information they had access to because it was unreliable information. Such information was either obtained from other people in the village who were involved in selling or from rural traders. Such 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.

High transaction costs can largely be attributed to poor infrastructure and is one of the major factors constraining the growth of smallholder agriculture in African countries (Machethe, 2004). Lowering transaction costs would be of great benefit to farmers. According to Chaminuka *et al.* (2008), citing Makhura *et al*. (2004), studies indicate that improved infrastructure reduces the cost of transactions for participants in the economy.

Transaction costs have significant negative effects on market participation. Ortmann and King (2006) indicated that high transaction costs, including the costs of information and the costs associated with the distance to formal markets and contract enforcement, are detrimental to the efficient operation of markets for inputs and products. The transactions costs of acquiring inputs and selling farm output could be reduced through improved information and transport infrastructure, and promotion of institutional innovations, such as production and marketing cooperatives (Arega *et al.*, 2007). Acting collectively, smallholders would be better positioned 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 (Omamo, 2006).

2.4.2.1 ACCESS TO INFORMATION

Business opportunities perceived by agribusiness entrepreneurs depend on the availability of information, the entrepreneur's perception of his or her management skills, and other factors (Mkhabela, 2005**)**. Exposure to market information is of vital importance to farmers as it can assist them in making sound marketing decisions. Poulton *et al.* (2000), citing Shepherd (1997), distinguishes between market information and marketing information. They indicate that market information basically consists of data on prices and (sometimes) quantities. Marketing information is a much wider concept, which is likely to include details on potential market channels, payment requirements, packaging, quality and a whole host of information required by a producer to make a successful sale.

When marketing a produce, acquiring information on product prices, price trends and market segments is one of the crucial objectives of any farmer (Ministry for Agriculture and Land Affairs, 1998). According to Ruijis (2002), cited by Jari (2009), information on consumer preferences, quantity demanded, prices, produce quality, market requirements and opportunities is necessary. Access to such market information puts a 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. In remote rural areas, the lack of reliable information is a major constraint (Omiti *et al.,* 2007).

Access to information cannot be viewed in isolation of time because in agricultural production time is of 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 increased risk of poor market performance and failures (Food and Agriculture Organisation, 2013). Access to information among smallholders is generally poor and is compounded by the lack of reliable and efficient means of disseminating information (Jacobs, 2008).

2.4.2.2 TRANSPORTATION

Transportation is of vital importance to business activities as it connects businesses to customers, transports produce to markets, and inputs to farms. Some researchers do not consider transportation costs as a transaction cost component. But, according to Mabuza *et al*. (2013), the inclusion of transport-related variables in their study was meant to account for the opportunity cost of producers' time spent in organising transport to convey their produce to distant markets. Producers who supplied the retail market had an opportunity cost of time spent in organising transport and time spent during transportation. As a result, this study also regards transportation as a transaction cost component.

According to Chonhenchob *et al*. (2009), fresh produce (fruits and vegetables) is extremely sensitive to any physical changes during transportation and handling, which can cause various forms of bruises and cuts on the fresh fruit or vegetable which compromises its quality, aesthetic appeal and reduces its economic value to the farmer and retailer. Therefore, vehicles not suitable for transportation of fresh produce and poor road conditions can drastically reduce the quality of the produce being transported. In transporting fresh produce, time is critically important because fresh produce can quickly get spoilt when in transit for a lengthy time (Bachmann and Earles, 2000). Therefore, fresh produce needs a special refrigerated vehicle and special care during transit.

Besides transporting goods to the market, transport is also used to transport inputs to the farm. If the public transport system is unreliable in the area, inputs may not be obtained on time. As a result, production is negatively affected and ultimately the marketing of the produce. Factors that determine access to input and output markets include distance to the markets, the state of the roads, the cost of transportation and the frequency of visits to these markets **(**Gustavsson *et al*., 2011**)**. Chimuka *et al.* (2008), citing Makhura and Mokoena (2003), state that poor road conditions, high transport costs and distant markets have been identified as factors that hamper improved market access for emerging farmers in South Africa. According to Clover and Darroch (2005), the lack of own transport markedly

increases the transaction costs for farmers based in remote rural areas. Rural communities are spatially isolated in areas that typically have limited cash circulation. These rural areas are dominated by low-income earners forcing farmers to pursue larger and more developed markets, which are usually further away. Smallholders usually need to rely on public transport to bring their output to the market because transport contractors are reluctant to service smallholders due to the poor quality of feeder roads in rural villages (Jacobs, 2008). Although public transport may be available, it is not always adequate for transporting crops to markets.

2.4.3 THE EFFECTS OF HOUSEHOLD CHARACTORISTICS IN AGRICULTURAL MARKETING

2.4.3.1 EDUCATION

Education is one of the most important factors which may contribute to a better livelihood of an individual or community (Gasperini, 2000). South Africa, like other countries, will not develop without well-educated people with a strong agricultural base among all population groups to provide food security for improved nutrition and health (DAFF, 2011). According to Gasperini (2003), education is a fundamental human right and essential for reducing poverty and improving the living conditions for rural people. He further indicates that from a perspective of agricultural improvements, basic education improves farmer productivity and business management.

According to Lindley *et al.* (1996), in order to meet the challenges of agricultural production and food security facing African countries, improvement of a country's human resource capacity for productivity is a pre-requisite. Human resources development enhances the skills, knowledge and abilities of individuals allowing them to reach their full potential thereby improve on productivity (CathsSeta, 2009).Through education and training, human resource development can be achieved. Small scale farmers themselves understand that there is a need for education and training for them to improve on productivity and business management. In the study by Madikizela and Groenewald (1998), respondents were unanimously in favour of training courses in vegetable gardening, produce marketing, record keeping, farming skills, nutrition, administration and business.

Education could be the key for equipping rural farmers to manage their businesses profitably and sustainably (Collett and Gale, 2009). Van der Walt (2005), as cited by Ortmann and King

(2007), indicated that poor management, lack of training, conflict among members (due mainly to poor service delivery), and lack of funds were important contributory factors to the smallholder cooperative failures in Limpopo province. Furthermore, farmers were constrained by relatively poor education, lack of access to information, and infrequent contacts with their local extension officers, who also may not understand the cooperative concept because of limited exposure to it. Even though experience and business talent are important, education may increase a person's potential to a maximum extent. Education helps an individual to learn how to think, how to work properly, and how to make decisions (Ashwini, 2011).

In developing countries, women make up the majority of the agricultural sector and integrating agricultural training with enterprise training can help these smallholder women to manage and market their production more effectively and take advantage of new agricultural opportunities (Collet and Gale, 2009).

Human knowledge can be improved through formal and informal education systems. Formal agricultural education training (e.g., at universities or agricultural colleges) is needed for the production of skilled manpower to serve the agricultural sector through extension, research, entrepreneurship and commerce, while non-formal agricultural education is particularly needed for training of farmers, farm households and workers and for capacity building in a wide range of community based organisations and groups (DAFF, 2011).

2.4.4 INSTITUTIONAL FACTORS

Institutional constraints may arise directly or indirectly from a perceived lack of either government or private sector support (Clover and Darroch, 2005). In defining institutions, North (2000) states that institutions are the rules, norms and procedures that guide how people within societies live, work and interact with each other. Institutions are divided into formal and informal institutions. Formal institutions are usually enforced by the government and refer to legal rules such as laws, contracts, and constitutions. On the other hand, informal institutions refer to non-legal rules that are enforced by peers and these include norms of behaviour, self-imposed codes of conduct, customs, and religions. It is by both formal and informal institutions that societies are generally governed.

2.5 SMALLHOLDER MARKETING

Marketing is defined as the process of determining the needs and wants of consumers and being able to deliver products that satisfy those needs and wants (Kotler, 2010). It is through market research that information on the needs and wants of consumers can be obtained. This information assists the farmer in developing a good marketing strategy, which he can use in competing in the market. Small scale producers generally cannot compete with commercial farmers on price or volume, so they have to compete using other tools such as quality and service (Roos, 2010).

According to Cant (2010), marketing involves all of the activities that are necessary to move a product from the producer to the consumer. The activities include packaging, transport, processing, storage and lastly the retail sale of agricultural products. Marketing activities also include the planning, pricing, promotion and distribution of products (Agricultural Marketing Resource Center, 2007). There is a need for small scale farmers to understand that marketing is a process that does not commence at harvesting time but rather starts before planting a crop through market survey and analysis. Such knowledge is crucial in marketing as it influences a farmer's marketing decisions. Other factors that influence marketing includes market and physical infrastructure, market accessibility, and market channels available. A major problem confronting rural and emerging farmers is the marketing of their products (Bediako and Debrah, 2007).

2.5.1 SMALLHOLDER MARKET ACCESS

Agriculture remains one of the most important sectors through which government has committed to change the social and economic outlook of South Africa (Radebe, 2012). Furthermore, Radebe (2012) mentioned that this could be achieved by improving the performance of small scale farmers through market accessibility. When small scale farmers have access to markets, they will have an opportunity of enhancing their livelihoods; hence, change their social and economic outlook. Omiti *et al*. (2007), citing Pingali (1997), mentioned that improvements in market participation are necessary to link smallholder farmers to markets in order to set opportunities for income generation. However, there is doubt about the capability of smallholder farmers to participate effectively in the market due to their limited access to capital, infrastructure and extension services (Tshuma, 2014).

Constraints limiting smallholder farmers from greater market access to food markets are associated primarily with under-developed infrastructure, ranging from the non-existence of

local market spaces to unreliable sources of market information (Jacobs, 2008). Factors such as poor infrastructure, lack of market transport, and inability to conclude contractual agreements are some of the factors limiting rural farmers from accessing formal markets. Omiti *et al.* (2007) found that poor market access in Kenyan villages were due to poor roads (farmers incur high transportation costs) and losses due to perishability. This is the case in many other villages across Africa, including South Africa.

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 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 and Meinzen-Dick, 2009).

Due to the short shelf life of fresh produce, large buyers would procure fresh produce directly from farmers. Because small scale farmers often fail to meet quantity and/or quality specifications or deliver produce on time as demanded by the market, large buyers prefer commercial farmers over small scale farmers. Furthermore, according to Fraser *et al*. (2003), large buyers are hesitant to deal with smallholder farmers because of the relatively small quantities of produce of unknown quality and they are geographically dispersed. It is therefore often not economical for large buyers to deal with smallholder farmers. Maintaining consistency in their supply is a challenge for smallholder famers and this reduces their chance of securing formal supply contracts. As a result, formal markets (such as supermarkets and wholesalers) avoid contracting with small scale farmers.

In South Africa, supermarkets are now dominant players in most of the agri-food chains and reportedly account for the major share of retail turnover of 55% (Matoti *et al*., 2007). Supermarkets are bargain hunters, increasingly looking for producers who can guarantee not only competitive pricing but also quality, quantity and consistency (Chikazunga and Paradza, 2012). According to Louw *et al*. (2008), in order for smaller scale farmers to supply

supermarkets or wholesalers they need a certain size of production, high quality products, certain size and type of product, and consistency in quality and supply, requirements which they find difficult to consistently meet. According to Kirsten *et al.* (2008), it has been argued that small scale farmers are not able to meet the standards that are set by the formal sector and are therefore excluded from the formal market. To meet their quantity size and quality, supermarkets may be forced to transact with a number of small scale farmers. However, because of the high transaction costs incurred in coordinating many smallholder farmers, they are often rejected by supermarkets. The solution may be in the formation of co-operatives which could strengthen small scale farmers' bargaining power and negotiations with large buyers and reduce transaction costs (Ortmann and King, 2007). Large businesses (e.g. supermarkets) understand and acknowledge that consumers are the focal point of the business; meeting customer needs and standards is of utmost importance. To ensure that their products meet both local and international standards, supermarkets such as Shoprite and Pick 'n Pay tend to procure from established farmers who already export produce (Kirsten *et al*., 2008). Normally, it is commercial farmers who export produce and therefore meet supermarkets' preferences. Constraints encountered by smallholder farmers influence them to sell through informal channels such as local shops and neighbours (Matungul *et al*., 2001). However, such a local market is often saturated or purchases are not backed by effective demand to make sales meaningful for the desired benefits (Bediako and Debrah, 2007).

Small scale farmers in South Africa in general are geographically dispersed and distant to markets and therefore reaching the markets can be difficult, particularly where refrigerated transportation is required (Matoti *et al*., 2007). Thus, the local market is the easiest to reach not only due to logistical differences since transportation, quality standards, and scale issues are less of a concern at the local level, but also because of less competition from larger domestic and international producers (Markelova and Meinzen-Dick, 2009). According to Louw *et al.* (2008), the informal food marketing system distributes food through general dealers, cafes, spaza shops, street vendors, hawkers, tuck shops and street corner stalls in areas like townships and former homelands where supermarket retail outlets are absent or have been absent.

The opportunity though for smallholders to raise their incomes depends not only on their ability to sell their produce at local level but also at regional and even export markets. However, international markets may be challenging for small scale farmers to explore because international standards on quality and food safety may be too onerous for small scale

farmers. Through collective action, though, small scale farmers may be able to reach larger regional and international markets. Collective marketing would better position farmers so that transaction costs for their market exchanges may be reduced and they are able to tap into high-value markets, allowing them to compete more effectively with large farmers and agribusinesses (Markelova and Meinzen-Dick, 2009).

2.5.2 MARKETING CHANNELS AVAILABLE TO SMALL SCALE FARMERS

According to Cant (2010), there are five types of markets in which businesses operate. These markets are as follows:

1. **Consumer Market** – consists of both individuals and households who buy goods and services for personal consumption.

2. **Business-to-Business Markets** –made up of organizations that buy goods and services for further processing.

3. **Reseller Markets** – Buy goods and services and resell them at a profit.

4. **Government Markets** – Are made up of government agencies that buy goods and services to produce public services or transfer these goods and services to others who need them.

5. **International Markets** – Consist of foreign buyers including consumers, producers, resellers and government.

Small scale farmers have the potential to participate in all of the above markets. Consumer markets are the easiest to penetrate by small scale farmers and the ease of entry becomes more difficult in international markets. In consumer markets, farmers directly meet with consumers; e.g. through farmers' markets. These markets give farmers an opportunity of avoiding middlemen and selling directly to consumers. They are ideal for small scale farmers who cannot produce enough to meet the large demands of supermarkets (Myles *et al.*, 2011). Direct marketing is a marketing channel which is beneficial to both farmers and consumers. Consumers have an opportunity to purchase fresh produce while farmers get to enjoy higher returns on their produce by removing the middleman. According to Myles *et al.* (2011), farmers can have an option of selling to consumers at retail prices if the farmers' markets are properly set up and managed.

2.6 SUMMARY

The chapter reviewed literature on constraints to smallholder agriculture and smallholder marketing. A small scale farmer is defined and the profile of small scale farmers of KwaZulu Natal was briefly outlined. The chapter has outlined the importance of small scale farming by highlighting its contribution to food security, poverty alleviation and job creation.

The constraints to smallholder agriculture that pose challenges among smallholder farmers in marketing were discussed. The main technical factors that constraints smallholder farmers in marketing include physical infrastructure, storage facilities, access to credit and telecommunication. The two transaction costs in agricultural marketing discussed were access to information and transportation. The discussion on smallholder marketing highlighted on smallholder market access and marketing channels available to small scale farmers.

CHAPTER 3
RESEARCH METHODS

3.1 INTRODUCTION

In this chapter an overview of the study area as well as the methods used for data collection and analysis are presented. The chapter starts with a description of uThungulu District Municipality, the area where the study was conducted. The area's location, climate, agricultural production and infrastructure are explained. The sampling techniques and data collection methods and the analytical techniques used for the study are then also presented. The variables used in the logistic regression model and their expected signs are then defined.

3.2 THE STUDY AREA

3.2.1 Location

The study is conducted in uThungulu District Municipality, which lies in the north-eastern region of the KwaZulu-Natal Province (KZN Top Business Portfolio, 2013). The total area of KwaZulu-Natal Province is 94 361 square kilometres (South Africa Info, 2014). While KwaZulu-Natal covers a relatively small portion of South Africa's land area (7.7%), a significant percentage of the country's smallholder farmers are based in this province (Trade and Investment KwaZulu-Natal, 2013). Furthermore, the Province has a total of 6.5 million hectares of land for farming purposes of which 82% is suitable for extensive livestock production and 18% is arable land. The principal language in KwaZulu-Natal is isiZulu, followed by English and Afrikaans (StatsSA, 2013)

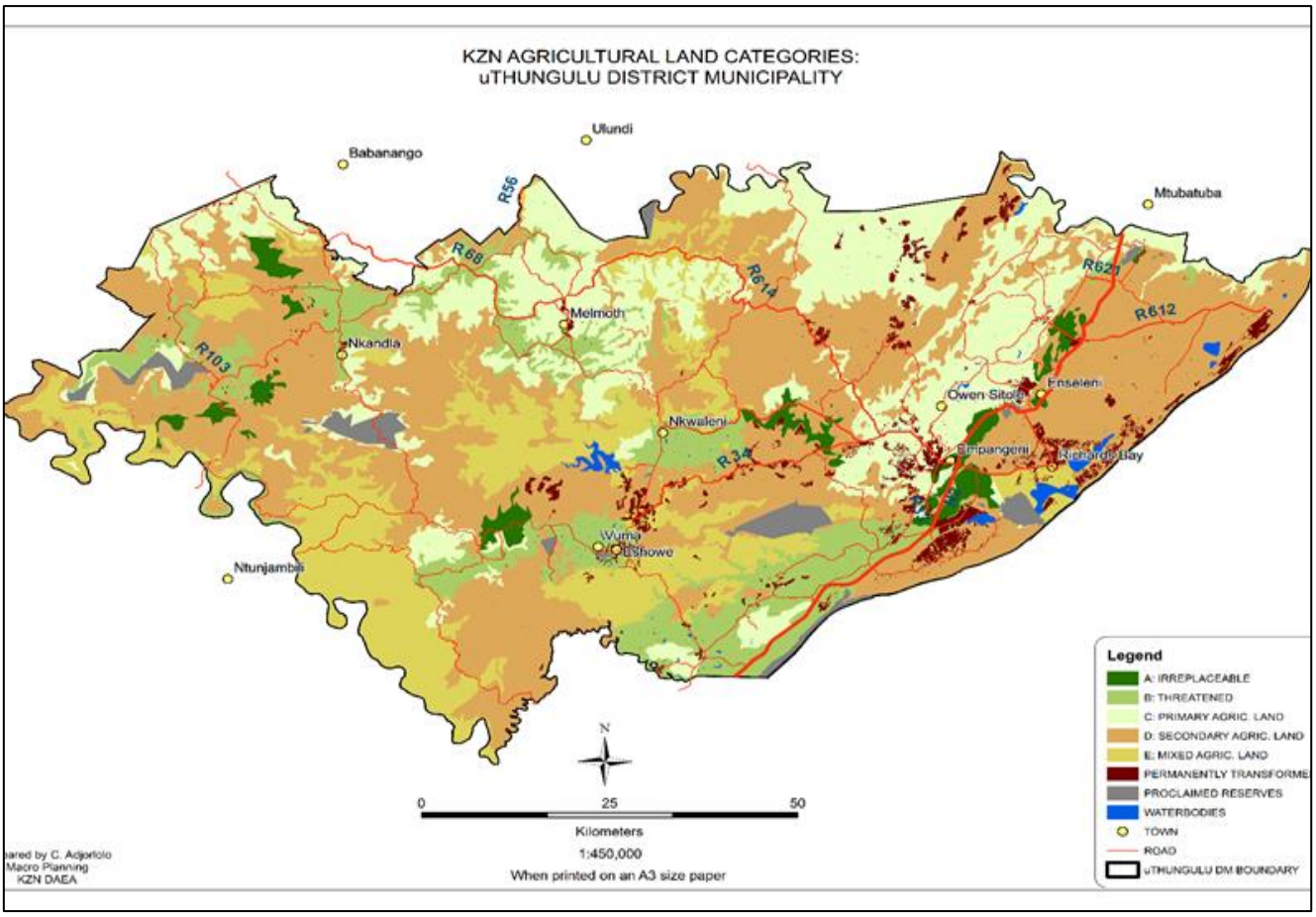

Figure 3.1: Map showing KZN Agricultural Land Categories for uThungulu District Municipality (KZN Department of Agriculture and Environmental Affairs, 2012)

The uThungulu District Municipality is 8 213km² in extent and covers the area from Gingindlovu in the south, to the Umfolozi River in the north, and inland to Nkandla (Local government handbook, 2013). It is one of the 11 District Municipalities in KwaZulu-Natal and comprises of six local municipalities: Nkandla, Mthonjaneni, Mbonambi, uMlalazi, uMhlathuze and Ntambanana. (Richards Bay IDZ, 2012). Figure 3.1 gives an indication that the district has towns which includes Eshowe, Nkandla, Melmoth, and others.

3.2.2 CLIMATE

The warm climate throughout the year (mild winters, hot and humid summers) and good seasonal rainfall makes uThungulu District a good location for agricultural development (Richards Bay IDZ, 2012). According to KZN Top Business Portfolio (2013), the climatic conditions of the district are very diverse due to the topography, which plays a major role in modifying rainfall and temperature. The mean annual rainfall decreases from an average

1,200 – 1,400mm along the coastal region to an average of 650mm inland. Similarly, mean annual temperatures decrease from 21ºC along the coast to 16ºC inland. The good climatic conditions of uThungulu District are conducive for productive farming activities.

3.2.3 AGRICULTURAL PRODUCTION

uThungulu District Municipality practices both commercial and subsistence agriculture. The KwaZulu-Natal coastal belt yields sugar cane, wood, oranges, bananas, mangoes and other tropical fruit, with sugar cane being the main crop grown for commercial agriculture (KZN Top Business Portfolio, 2013). Due to reliable rainfall and fertile soils, the region's agricultural sector has become very productive, and is known for its specialist capability in several types of farming. Figure 3.1 show that uThungulu district municipality has a large land for primary agriculture as well as secondary agriculture (agro-processing). The coastal belt areas include sand stone, shale and mudstones, whose soils have a high agricultural potential.

In uThungulu District Municipality, the agricultural sector is one of the basic economic sectors as it impacts significantly on employment, income generation, economic linkages, land tenure and land reform, and environmental considerations (National Disaster Management Center, 2013). Subsistence agriculture is practiced in the rural (tribal) areas, which are characterized by high levels of poverty and under-development (KZN Top Business Portfolio, 2013). In these areas, there are limited economic opportunities and poor infrastructure. The education level of the smallholder farmers is very low and they mainly grow fresh produce, both for own consumption and selling.

3.2.4 INFRASTRUCTURE

The Municipality is striving to improve the area of uThungulu District. Most areas within the District have access to electricity and piped water. A good internal road network links the commercial hub of Empangeni to the industrial and tourism hub of Richards Bay, with an intense movement of people, goods and services taking place (KZN Top Business Portfolio, 2013). As indicated on Figure 3.1, there are arterial roads throughout the district municipality. According to Strachan (2007), the Municipality has a well-developed road network on a national, district, and local scale, but the condition of the majority of the local roads is poor, and access is problematic in wet conditions. For instance, Mbonambi area has sandy conditions such that many of its roads are not accessible during the wet season. The improvement of the road infrastructure will facilitate better market accessibility.

Along the R66 road between Nkwalini and Melmoth there are two marketing stalls (Ndundulu marketing stalls) which are operational. The stalls are used by the local community to sell fruits and vegetables. However, it is noticeable that there are quite a number of non-operating marketing stalls erected around the District Municipality. According to TIKZN (2013), the development of small scale farmers in the area is hindered by low skills and limited market access. However, Owen Sithole College of Agriculture in the area makes a great contribution to the advancement of agriculture.

3.3 SAMPLING

A population is the full set of cases from which a sample is taken (Welman *et al.*, 2005). Involving all the members of the population in a research project is normally impractical. Therefore, a sample which is representative of the population is selected and its results can be generalized. According to Welman *et al.* (2005), results which can be generalized are applicable not only to the people who participated in the original research but to other people of the same population as well. Because uThungulu smallholder farmers experience the same conditions within the municipality, the results drawn from the participating farmers will also be representing those uThungulu farmers who were not necessarily part of the original research. Because the study of uThungulu district municipality will be represented by farmers from all six local municipalities, all the conditions faced by uThungulu farmers will be covered. In that way, the result of the study would represent the situation of uThungulu smallholder farmers.

The target population of this study were small scale farmers in uThungulu District Municipality. These are small scale farmers who either own land or have the right to the agricultural use of a piece of land. Since the research covers a wide geographical area, uThungulu District Municipality, interviewing all the members of the population would have imposed difficulties. Thus, a sample which was representative of the whole population was selected. A sample can be selected using either a probability or non-probability sampling method. For the purpose of this study a probability sampling method was chosen because each member of the population has a known non-zero probability of being selected into the sample (StatPac, 2014).

The sampling procedure was started by making use of the cluster sampling method. According to Kumar (2005), cluster sampling is based on the ability of the researcher to divide the sampling population into groups called clusters and then to select elements within

each cluster using stratified or simple random sampling. Using the cluster sampling method, the study area was sub-divided into six clusters which are the six Local Municipalities. In other words, each of the six local municipalities represents a cluster. Within each of the clusters (Local Municipalities), stratified random sampling was used and farmers were divided into strata, according to the type of farming being practiced. The list of crop farmers was obtained from the uThungulu district database of project lists. The farmers were divided into two groups, namely, vegetable and field crop farmers. Since livestock does not fall under the scope of fresh produce, livestock farmers were not part of the study. Through simple random sampling, a representative sample was selected from the two strata, vegetable and field crop farmers.

In random sampling, each element in the population has an equal and independent chance of selection in the sample (Kumar, 2005). A simple random method was used to select a sample size of 80 farmers. According to Bless and Smith (2000), the minimum statistical sample size that is required to get reliable statistics is at least 30 units. Therefore, a sample size of 80 farmers was considered to be sufficient to obtain reliable statistics. The list of crop producing small scale farmers of uThungulu District Municipality was obtained from the Extension Officers of the Department of Agriculture.

3.4 DATA COLLECTION METHOD

Data were collected from respondents through interviews using interviewer-administered questionnaires. Both qualitative and quantitative data were collected through this method. Using an administered questionnaire means that there is an interviewer who reads questions to respondents and records their answers.

Since the study was conducted in a former homeland, it was perceived that the majority of respondents from which data were to be collected were illiterate. According to Levy and Lemeshow (1991), information can be obtained from respondents who can neither read nor write when using administered questionnaires. Therefore, the use of questionnaires which are interviewer-administered was to accommodate possible illiterate respondents and also alleviate the problem of misinterpretations or misunderstandings of words or questions. Also, as Kumar (2005) states, an interviewer is able to supplement information obtained from responses with those gained from observation of non-verbal actions. Another advantage of administered questionnaires is that an interviewer will be in a position to probe for more information from respondents during the interview.

The questionnaire consisted of both open-ended and closed-ended questions. With open-ended questions respondents were allowed to freely express their views, while closed-ended questions were used for the benefit of obtaining information from respondents without consuming much of their time. Interviews were done at farmers' places of production and an extension officer servicing that particular ward was notified. During the data collection process, the participants were told about the objective of the study and how the study could affect them. On average, interviews did not take more than 25 minutes per respondent.

3.5 ANALYTICAL TECHNIQUE

The data collected from respondents were captured into a Statistical Package for Social Scientists (SPSS). To analyse the data, this study made use of the logistic regression technique as well as graphs, tables and descriptive statistics (mean, frequency and percentages). Montshwe *et al.* (2007), citing Kleinbaum (1994), indicates that the logistic regression approach can be used to describe the relationship of several independent variables to a dichotomous dependent variable. Furthermore, the two main reasons for using logistic regression in economics research are that the logistic function is extremely flexible and easily applicable, and that the interpretation of the results is straight forward and meaningful.

3.5.1 LOGISTIC REGRESSION MODEL

In order to predict the impact of independent variables on a dependent variable, a logistic regression model was used. In statistics, **logistic regression** is a type of regression analysis used for predicting the outcome of a categorical dependent variable based on one or more predictor variables (Statistics Solutions, 2015). Pote (2008), citing DeMaris (1992), explains that the term "logit" refers to the natural logarithm of the odds (log odds) which indicates the relative probability of falling into one of the two categories on some variable of interest. According to Statistics Solutions (2015), logistic regression is a generalized linear model where the outcome is a two-level categorical variable. The model is able to show how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

With logistic regression, the researcher is predicting a dichotomous outcome. In logistic regression, the *Y* variable is generally binary (i.e., it takes on the values 0 or 1 only). This study used the logistic regression because independent (X) variables were thought to be related to a dichotomous dependent (Y) variable. According to Jari (2009), citing Gujarati (1992), logistic regression does not assume a linear relationship between the dependent

variable and independent variables, but requires that the independent variables be linearly related to the logit of the dependent variable. Since the study assumes two outcomes are available, namely "participating in markets" or "not participating in markets", a binary model is set up which defines Y=1 for situations where the farmer is participating in markets, and Y=0 for situations where farmer is not participating in markets. The linear equation:

$$E(Y_i) = ß_1X_{i1} + ß_2X_{i2} + \ldots + ß_pX_{ip} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

will not work because the dependent *Y* variable in this case is not binary. Therefore, for the outcome $\boldsymbol{Y_i}$ to take a binary value, a special function $f(E(\boldsymbol{Y_i}))$, which is called the logistic function, has to be found.

So the special function is:

$$f(E(Y_i)) = ά + ß_1X_{i1} + ß_2X_{i2} + \ldots + ß_pX_{ip} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

Therefore, the outcome, Yi, takes the value 1 with probability pi and the value 0 with probability 1 − pi. Hence, the logistic Regression model formula is stated as follows:

$$Logit\ (Pi) = ln(Pi / 1 - Pi) = ß_0 + ß_1X1 + \ldots + ßnXn + Ut \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

where:

ln(Pi / 1 – Pi) = logit for market participation decisions

Pi = participating in markets

1-Pi = not participating in markets

$ß_0$ = intercept

$ß_1, ß_n,$ = coefficient

X = independent variables

Ut = error term

Randela *et al.* (2008) used a logistic regression model as a research tool. The model was chosen because it has the ability to determine the effect of variables on the probability of commercialisation, plus the effect of individual variables. It also yields the highest predictive accuracy possible with a given set of predictors. This study also made use of logistic regression because it explains the relationship between several independent variables and a dependent variable, which is binary in nature.

3.5.2 SPECIFICATION OF THE MODEL

The logistic regression model explains the relationship between a dichotomous dependent variable and independent variables. In this study, the dependent variable is market participation decision while independent variables are factors expected to influence such decisions.

Market participation decision describes the decision to market or not. It is hypothesized that the independent variables of the study have associations with the dichotomous dependent variable. In the model Pi represents the probability of market participation and (1 – Pi) represents the probability of not participating in markets.

Equation 3 suggests that market participation decision by smallholder farmers is affected by multiple factors. The factors (independent variables) which were thought to influence market participation decisions were defined and given their anticipated signs (see Table 3.1 below).

Table 3.1: Definition of independent variables and their anticipated signs

Independent Variable	**Variable description**	**Anticipated sign**
Household Characteristics		
Age (AGE)	Age of farmer in years	-
Gender (GENDER)	Male = 1, Female = 2	+
Education(EDUC)	Education level of household head	+
Farming experience (FARMEXP)	Number of years in farming	+
Public Service		
Extension services contact (EXTSERV)	Number of contacts per month	+
Quality of roads to market (QUALROAD)	Good roads = 1, 0 otherwise	+
Financing		
Access to credit (CREDACCESS)	Have access = 1, 0 otherwise	+
Transactional Costs		
Access to transport (TRANSPACCESS)	Own transport = 1, 0 otherwise	+
Distance to market (MKTDIST)	Distance to market in kilometers	-
Access to market information (MKTINFO)	Have access = 1, 0 otherwise	+
Timing of seeking markets (MKTSKTIME)	Before production = 1, 0 otherwise	+

By fitting the variables into the model, the model is presented as follows:

$$\text{Logit (Pi)} = ln(\text{Pi} / 1 - \text{Pi}) = ß_1 + ß_6(\text{AGE}) + ß_2(\text{GENDER}) + ß_3(\text{EDUC}) + ß_4(\text{FARMEXP}) + ß_5(\text{EXTSERV}) + ß_6(\text{QUALROAD}) + ß_7(\text{CREDACCESS}) + ß_8(\text{TRANSPACCESS}) + ß_9(\text{MKTDIST}) + ß_{10}(\text{MKTINFO}) + ß_{11}(\text{MKTSKTIME}) + \text{Ut}$$

According to Poulton *et al.* (2000), market information basically consists of data on prices and sometimes quantities. Such market information assists farmers in making better marketing decisions. Market information also strengthens farmers' negotiating ability during transactions with buyers; hence avoiding possible exploitation from buyers (Coetzee *et al.*, 2004).

The independent variables listed in Table 3.1 and their anticipate signs are discussed below:

AGE (in years): Rural farming communities mostly consist of the elderly. Young farmers are rare to find but the future of rural agriculture lies with the young. According to Buckmaster (2012), very young and very old heads of the household are less likely to produce fruits and vegetables for sale in the market. Very young head of the household may be too inexperienced to effectively participate in the market, and a very old head of the household may not be healthy enough to manage market participation for the household. Because young farmers are thought to be better educated than elderly farmers and are much stronger physically and mentally than older farmers, perhaps they stand a better chance of participating in markets. This assists them in going out to look for markets more easily than the older farmers. Hence, younger farmers were expected to be more active in market participation than elderly farmers. This follows what Buckmaster (2012) found that age and gender of the head of the household affected the probability of a household participating in the fruit and vegetable market. It was therefore expected that age would have a negative influence on market participation. This means as farmers age increases, the chances of deciding to participate in markets decreases. The age variable was measured by capturing the age of the farmer in years.

GENDER: In most cases, women are actively involved in crop production because they have the responsibility of cooking for the family. Women would produce crops to supplement purchased food and ensure the family has something to eat every day. Hence, most produce by female farmers is used for own consumption. In the study by Mmbando *et al.* (2015), it

was found that more male–headed households participated in maize and pigeon markets than female-headed households; the main reason for this was that female-headed households were lacking access to productive assets (land, labour and capital) hence their production capabilities were limited. The gender variable was expected to have a positive effect on market participation. The farmers were either male or female, where the former took a value of one and the latter a value of two.

Education (EDUC): As highlighted in the literature review, education is critical for rural development and equipping rural farmers to manage their businesses profitably. Therefore, the farmer's level of education (EDUC) was thought to have an influence on market participation. The study by Mmbando *et al.* (2015) found that market participants were more educated than non-participants. Farmers who have some form of education were therefore expected to participate in markets. Educated farmers are thought to be able to communicate and negotiate better, hence gaining an upper hand in securing markets. The study by Randela *et al.*, (2008) found that the ability to speak or understand English was found to have a positive effect on the level of commercialisation. It was expected that farmers' years of formal education would increase the likelihood of participating in markets. The education variable (in years) was set as a continuous variable and expected to have a positive value.

Farming experience (FARMEXP): Skill or knowledge acquired by doing something over a length of time is very useful in business. Farmers with more experience in farming may have more experience in marketing. Experienced farmers may have better ability to communicate with buyers and a better understanding of the needs of the market. The study by Pote (2008) found that farming experience was very important in market access because farmers adapt to information regarding markets. Therefore, the number of years of farming experience was expected to positively influence the marketing decision of farmers

Extension services contact (EXTSERV): In rural communities where there are poor communication networks, extension services play an important role in passing information to farmers. Extension services are closely linked to information availability (Jari, 2009). It was expected that contact with extension services would improve access to market information and increase the likelihood of farmers participating in markets. Extension services contact was set as a continuous variable (number of contacts per month) and it was expected to have a positive influence on market participation.

Quality of roads to market (QUALROAD): The availability of good road was expected to exert a positive influence on market participation (Jari and Fraiser, 2009). Quality of roads determines accessibility to markets and can have a major influence on farmers selling on markets (Gabre-Madhin, 2001). Poor quality roads can inhibit farmers from accessing markets or lead to delays in moving the produce to the market. On the other hand, good quality roads can exert a positive influence on market participation. Quality of roads to market was measured by the conditions of roads that are accessible to households. The variable took the value of one where the farmer had access to good roads and zero otherwise.

Access to market information (MKTINFO): In measuring this variable, sampled farmers were interviewed and asked about their sources of market information. Access to information has been set as a dummy variable, where a farmer with access to information took a value of one and a farmer that had no access to information a value of zero. The study by Mabuza *et al.* (2013) found that producers who were unaware of prevailing prices in alternative markets and had difficulty in accessing price information were more likely to sell their mushrooms at the farm gate. Therefore, it was expected that access to information would have a positive influence on market participation.

Access to credit (CREDACCESS): Access to credit facilities can assist farmers to buy agricultural inputs and finance other cost items. However, access to key financial services is generally scarce in rural areas. This variable was measured by determining whether farmers had access to any credit facilities or not, taking a value of one where the farmer had access to credit facility and zero otherwise. This variable was assigned a positive sign as it is expected to positively influence market participation.

Access to transportation (TRANSPACCESS): Transportation facilitates the movement of produce from the farmer to the market. Availability of reliable transportation helps farmers connect with markets easily and increase chances of exploring distant markets. Sampled farmers indicated the mode of transport they were using. Farmers who owned vehicles were expected to stand a better chance of participating in marketing, especially in distant markets. The difficulty encountered in organising transport significantly influenced farmers to sell their mushrooms at the farm gate (Mabuza *et al.*, 2013). Therefore, a positive influence on market participation was expected; hence, the variable was assigned a positive sign. The variable took a value of one where farmers owned a vehicle and zero otherwise.

Distance to market (MKTDIST): Distance to market indicates the transportation cost of moving the product to the market. The further is the farmer located from the market, the less likely the farmer would participate in that market because of higher transportation charges. Hence, it was expected that as market distance increases the likelihood of participating in markets decreases. The variable was set as a continuous variable and was measured by capturing the actual distance to market.

Time of seeking markets (MKTSKTIME): It is the duty of the farmer to look for markets and make potential buyers aware of the produce available. Because fresh produce can quickly get spoiled, time of seeking markets is very crucial. It is hypothesized that the ability of the farmer to seek markets before production exerts a positive influence on market participation. This variable was set as a dummy variable and those farmers who sought markets before production took a value of one and zero otherwise.

CHAPTER 4
PRESENTATION OF THE RESULTS

4.1 INTRODUCTION

The empirical results of the study are presented in this chapter. The chapter begins with the presentation of socio-economic analysis of respondent farmers, which covers demographic characteristics, asset ownership, and market related variables. The empirical result of the logistic regression model in accordance with the research objectives was then presented.

4.2 SOCIO-ECONOMIC ANALYSIS OF RESPONDENT FARMERS

Table 4.1 below presents demographic characteristics and asset ownership of sampled households.

Table 4.1: Descriptive statistics for demographic characteristics and asset ownership (n = 80)

Demographic Characteristics of the heads of household		**Frequency**	**Percentage** (%)
Gender	Male	27	34
	Female	53	66
Marital	Single	37	46
	Married	37	46
	Widowed	6	8
Age	20 – 29	22	28
	30 – 39	16	20
	40 – 49	21	26
	> 50	21	26
Education	No Formal Education	16	20
	Primary School only	14	18
	Secondary School only	44	55
	Tertiary Education	6	8
Main source of Income	Farming Income Only	20	25
	Government Grant	35	44
	Pension	21	26
	Other Business Income	4	5
Asset Ownership		**Frequency**	**Percentage** (%)
Land Size	<1ha	17	2
	1ha - 2ha	30	38
	2.1ha - 4ha	26	32
	4.1ha - 5ha	5	6
	>5ha	2	3
Land Ownership	Allocated by Local Authorities	54	67
	Inherited	10	13
	Other	16	20

The results presented in Table 4.1 show that 66% of the respondents are females. This indicates that female-headed households are more actively involved in fresh produce farming than males. This is consistent with Cousins (2012) who found that in Tugela irrigation scheme the great majority of plot holders were women rather than men. A possible reason for this may be that women are the ones who are expected to cook for families and ensure there is food to eat on the table. Being officially unemployed, woman often become actively involved in growing fresh produce while male counterparts seek jobs or keep livestock. However, about one-third of respondents were males who were farming.

Sample farmers were assessed on their marital status, which was classified into four categories, namely: single, married, widowed and divorced. Table 4.1 shows that there were no respondents who were divorced and 46% of the respondents were married. The remaining percentage (54%) of respondents falls into the single or widowed groups. Since both single and married farmers were present, it could be concluded that marital status of an individual does not necessarily influence farming decisions.

Respondents were asked if they have any other source of income besides farming. About 75% of the respondents indicated that they do have other sources of income while 25% only receive farming income. As indicated in Table 4.1, a larger portion (44%) of respondents who have other sources of income earn such incomes from government grants and only 5% earn theirs from other businesses. There were no respondents that source other income from employment. This suggests that a number of people in the study area are unemployed and rely on government grants, pension or other businesses for other income. The findings are similar to those of Jari and Fraser (2009) who found that household incomes of the respondents were received from among other main sources; farming, pensions, social grants, and other small household business activities.

Results indicate that the amount of land available to farmers varies from farmer to farmer. As shown on Table 4.1, only 3% of the respondents had a land size above 5 ha and about 21% of the farmers had a land size below 1ha. The minimum land size was 0.3 ha while the maximum land size was 5.5 ha. The finding is consistent with Matungul *et al.* (2001) who found that smallholders in Swayimana and Impendle were allocated quite small plots of arable land. Furthermore, the results indicate that the largest proportion of the survey farmers (67%) carry out their farming activities on land allocated by the Local Authority. This implies that most smallholder farmers do not own the land they farm on, even though they

have rights to use it. Without title deeds, these farmers cannot use the land as collateral for securing loans. Significantly, some of the respondents (20%) have acquired land in other forms which include land being donated or being family-owned land. To a lesser extent, the land is inherited (13%). The finding is consistent with Cousins (2012) who found that plots of Tugela Ferry irrigation scheme smallholder farmers were considered to be family rather than individual property, but control of production and income was exerted by the individual user.

In order to understand the status of smallholder market participation, it is important to understand their socio-economic factors first. Farmers were asked to rate the conditions of their roads. As shown in Table 4.2, 45% of the respondents indicated that they have access to moderate road conditions. Although most roads are gravel roads they are in condition that allows easy flow of transport. The 35% of farmers who rated roads as poor indicated that the roads are impassable during rainy seasons. For these farmers, marketing their produce far from their community may, therefore, pose a challenge.

Access to market information is vital because it allows a farmer to be informed about the prevailing market conditions and, therefore, is more likely to participate in marketing. Jari and Fraser (2009) reported that farmers took chances and went to the market place without any information and would charge the same price as other people selling at that selling point. Perhaps these smallholders were producing good quality produce which meet market standards, but lack of market information limited these farmers from probing for higher prices or exploring profitable markets. Table 4.2 indicates that 41% of the respondent farmers had no access to market information, which may have a negative effect on their marketing decisions. For instance, there was a respondent who indicated that he had produced good, large beetroots, but Spar could not take them as they were too large. Apparently, the store needed small size beetroots because they are tastier and is what their customers want. Had the farmer been informed prior to production about market requirements, his beetroots would most likely have been produced according to market standards.

Table 4.2 below summarises the descriptive statistics for market-related variables

Table 4.2 Descriptive statistics for market-related variables (n = 80)

Market Related Variable		**Frequency**	**Percentage** (%)
Sources of market information	Has no source	33	41
	Extension officer, co-farmers & store shelves for prices	24	30
	Media, internet & store shelves for prices	10	13
	Books and internet	13	16
Conditions of Road	Good Roads	16	20
	Moderate Roads	36	45
	Poor Roads	28	35
Access to extension service	Once a month	33	41
	Twice a month	13	16
	Four times a month	17	21
	Whenever needed	17	21
Farmer rating of extension service	Satisfactory	13	16
	Good	31	39
	Very good	36	45
Farmer knowledge acquired	Knowledge Acquired Through Training	3	4
	Knowledge Acquired Through Experience	57	71
	Knowledge Acquired Through Training & Experience	20	25
Type of market	Does not sell	11	14
	Sell at farm & to neighbours	20	25
	Sell at farm, to neighbours & other markets	36	45
	Sell to local supermarkets only	1	1
	Sell to large retailers only	5	6
	Sell to hawkers only	7	9
Distance from place of production to the Market	0km	39	49
	1km - 10km	14	18
	11km - 20km	15	19
	21km - 50km	8	10
	>50km	4	5
Mode of transport	Owned transport	16	4
	Hired transport	38	47
	Buyer's Transport	5	6
	Public Transport	3	4
	Sells locally	31	39
Transport Cost to Market	R0.00	39	49
	R20.00 - R50.00	6	8
	R51.00 - R150.00	16	20
	R151.00 - R300.00	6	8
	R301.00 - R500.00	10	13
	>R500.00	3	4
Ease of Finding markets	Easy	1	1
	Fair	41	51
	Difficult	38	48
Timing of Seeking markets	Before production	0	0
	Two weeks before harvest	38	48
	Once produce is ready for market	42	52

It is important that market information is obtained from reliable and trusted sources. Jari and Fraser (2009) found that farmers had access to unreliable information and rarely trusted such information. But, they had no option because those were the only sources accessible to them. According to Table 4.2, about 30% of the respondents indicated that their source of market information are extension officers, other farmers, and store shelves for prices. A concern is that 41% of the respondent farmers had no sources of market information. This suggests that these farmers do not know what the market wants or needs. The result conforms to the findings of Shao *et al.* (2004) who found that a farmer lacked market information that could guide her to decide on what to production for the market.

The study also assessed frequency of visits by extension officers. As shown in Table 4.2, 40% of respondents indicated that they are visited by extension officers once per month and only 21% mentioned four times a month. About 21% of the farmers indicated that an extension officer does not make frequent visits but visits whenever they are needed. They pointed out that the reason for this is that an extension officer often does not have access to own transport. Apparently, some extension officers do not have own cars and have to share government vehicles to visit farmers. This suggests that the extension officer would fail to visit famers if a government vehicle is not available or is being used by another extension officer.

Respondents were also given three choices to choose from in indicating the availability of the extension officer: never available, sometimes available and always available. None of the farmers responded that the extension officer is never available. But only 44% pointed out that the extension officer is always available. Again, the reason given by farmers was that their extension officers have transport challenges. When sample farmers rated the quality of service received from extension officers, about 45% rated extension services to be very good and 39% as good. None of the farmers rated the service as poor but there were about 16% of respondents who thought the extension service was satisfactory. Such a response suggests that farmers were generally happy with the service of extension offices.

However, when asked if they receive any marketing assistance from extension officers, only 6% responded yes. The 6% farmers indicated that the type of marketing assistance they receive is market identification and produce transportation to the market. This suggests that extension officers are not well informed and knowledgeable when it comes to marketing issues.

Education and training gives vital knowledge to farmers. The literature review pointed out that both formal and informal education systems serve the promotion of knowledge and motivates human resources (Contò *et al.*, 2013 citing Sharghi *et al.*, 2010). In this study, sample farmers were unanimously in favour of training courses as they all indicated that they do need some form of training. This is positive because it shows that the farmers are willing to learn new things. When asked about what training they require, a number of topics were chosen. For instance, most of the farmers indicated that they need training in crop production, record keeping, marketing, and value adding. Farmers were also assessed on their status of participating in educational activities. The study found that 34% of the respondents had never participated in any form of training. Apparently, only 1% of the respondent farmers had ever attended an educational trip, which suggests that these farmers are not exposed to learning by observation.

Farmer knowledge is one of the contributing factors in the success of a farming business. Normally, farming knowledge can be acquired through training or experience. Results in Table 4.2 show that a small portion of farmers (4%) indicated that they acquired farming knowledge through training. The majority of sample farmers (71%) said they acquired farming knowledge through farming experience. The remaining 25% indicated that the farming knowledge was acquired through training and farming experience.

Smallholder farmers fail to maintain consistency in production leading to failure in securing contractual agreements. This was confirmed when surveyed farmers confirmed that none of them had any contractual agreements. The study also found that surveyed farmers use different marketing channels for different reasons. As indicated in Table 4.2, sampled farmers used both the local informal market and formal market to sell produce. About 25% of the farmers sold their produce locally either on farm or to neighbours. The findings are consistent with Mthembu (2008) who found that market participation among the Centocow farmers included selling vegetables to neighbours. This study also found that only 45% of farmers used more than two markets: farm gate, neighbours and other markets (supermarkets, retail, and hawkers). The findings are consistent with Cousins (2012) who found that Tugela Ferry Farmers were also selling to roadside hawkers and to local consumers from areas of settlement close to the scheme.

As highlighted in the literature review, smallholder farmers in South Africa in general are geographically dispersed and distant to markets and therefore reaching the markets can be

difficult (Matoti *et al*., 2007). The availability of reliable transport becomes important because unreliable transport can lead to delays. As indicated in Table 4.2, only 4% of the respondent farmers use own transport to take produce to the market. About 47% of the sampled farmers use hired transport and get exposed to a number of transport challenges which include high transport cost and poor type of transport (small bakkie with no canopy for protection against sun and dirt). When respondents were asked about the main problems that they face in moving their produce, they mentioned high transport costs and lack of transport. Some of the farmers who could not afford to pay for transport costs were forced to sell their products locally (farm gate selling and selling to neighbours). In this study, only 8% of respondent farmers indicated that they pay below R50.00 per load and about 22% pay above R300.00 per load for transport.

Transport plays a critical role as it links the farmer to the consumer and determines if the produce can be delivered timeously. From the results as shown in Table 4.2, about 47% of sampled farmers used hired transport while only 4% used their own transport. Respondents indicated that transporters charged whatever amount they felt like charging at that particular time. There is no fixed rate that they charged. For instance, one transporter saw that the farmer generated a better sale income than usual and asked that he be paid a higher price than the initially agreed price. Market distance also influences the extent to which farmers participate in different types of markets. Results in Table 4.2 show that 49% of the respondents did not transport produce to the market (0km distance) implying that they did not sell to buyers who used own transport or sold locally and, therefore, did not require transport. Among those who transport produce to the market, only 5% transport their produce to markets of distances above 50km. The average market distance among the sampled farmers was 14.5km.

The surveyed farmers were asked a question of how difficult it is to find markets. As shown in Table 4.2, only 1% of the respondents were of the view that it was easy to find markets. About 48% believed it difficult to find markets while the remaining 51% believed it to be fair (not easy or difficult exercise but is an achievable exercise). Also, farmers were asked when they look for markets or buyers. None of the respondents indicated that they look for markets before production. Just more than half of the respondents (51%) indicated that the market is sought once the produce is ready for market. The surveyed farmers indicated that it is not

possible to seek markets before production because a sample produce is required by the potential buyer. Therefore, they are forced to look for markets once produce is available.

4.3 EMPIRICAL RESULTS OF THE LOGISTIC REGRESSION MODEL OF FACTORS INFLUENCING MARKETING DECISIONS

Logistic regression does not assume a linear relationship between the dependent and independent variables but is an approach to predicting a dichotomous outcome. In logistic regression, a coefficient measures the independent contribution of a variable to variations in the dependent variable. According to Montshwe *et al.* (2007), the estimated coefficients of the different variables show the change in the predicted logged odds associated with a unit change in independent variables. The sign of the coefficient indicates the type of influence of the variable on the logit (whether positive or negative). If the coefficient value is positive, it means that there is a positive relationship between the dependent and independent variable. The opposite is true if the coefficient value is negative.

The significance values (p-values) show whether a change in the independent variable significantly influences the logit at a given level. If the significance level of the variable is small (less than 0.10) then the parameter is useful to the model. This means, if the significance value is equal to or less than 0.10, then it suggests that the there is sufficient evidence to support a claim presented by the coefficient value. If the significance value is greater than 0.10 (10% significant), then it shows that there is insufficient evidence to support a claim presented by the coefficient value.

The odds ratio EXP(B) value indicates the increase in odds from a one unit increase in the selected variable. It represents the ratio-change in the odds of the event of interest for a one-unit change in the predictor. When the dependent (y) and independent variables (x) are both dichotomous, the odds ratio is the probability that Y is 1 when X is 1 compared to the probability that Y is 1 when X is 0. If the odd ratio is less than one, then a change in the variable is less likely to influence the dependent variable, and if the odd ratio is greater than one, a change in the variable is more likely to influence the dependent variable (Statistics Solutions, 2015).

The standard error measures the accuracy with which a sample represents a population. The success of the logistic regression can be assessed by considering the goodness-of-fit tests, such as model chi- square, as indicators of model appropriateness. In this study, the model

chi-square was used as a measure of goodness of fit. The results of the logistic regression analysis are presented in Table 4.3 below:

Table 4.3: Factors influencing marketing participation: logistic regression analysis

Parameter	**Coefficient**	**Std. Error**	**P-Value**	**Odds Ratio (Exp(B))**
Intercept	-29.536	7.949	0.000	
Age (AGE)	0.786	0.285	0.005***	2.756
Gender (GENDER)	-2.176	1.401	0.287	7.932
Education(EDUC)	1.236	0.855	0.378	3.441
Farming experience (FARMEXP)	1.473	1.132	0.454	3.879
Extension services contact (EXTSERV)	2.269	0.808	0.051**	9.665
Quality of roads to market (QUALROAD)	0.976	0.596	0.101*	2.654
Access to market information(MKTINFO)	-0.193	0.478	0.687	0.825
Access to credit (CREDACCESS)	-0.847	0.752	0.589	3.996
Access to transport(TRANSPACCESS)	2.084	1.043	0.046**	8.033
Distance to market (MKTDIST)	-1.962	0.961	0.034**	4.354
Timing of seeking markets(MKTSKTIME)	3.425	1.387	0.014***	30.718
Goodness-of-Fit				
	Chi-Square	**df**	**Sig.**	
Pearson	38.366	35	0.104	
Deviance	26.956	35	0.046	
Pseudo R^2			0.69	

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level.

The suitability of the logistic regression model was measured using the goodness-of-fit test. The results indicate that the logistic regression model fits the data well and is well suited to predict the influence of independent variables on market participation decisions. The Pseudo R^2 of 0.69 indicates a moderately strong relationship of 69% between the predictors and the prediction.

4.3.1 SIGNIFICANT VARIABLES IN THE MODEL

In the study, significant variables refer to those variables which are found to have an influence on the marketing decision of farmers. As shown in Table 4.3, of the eleven independent variables used in the model, six variables were found to be significant; age, extension services contact, quality of roads to market, access to transport, distance to market, and timing of seeking markets. It was also noted that the estimated coefficients of six variables are consistent with the *a priori* expectations.

A positive and significant relationship was found between age of the respondents and market participation. This relationship is consistent with the *a priori* expectation. The value of the odds ratio (2.756) indicates that it is more likely that farmer market participation will increase with an increase in age. The findings are consistent with Randela *et al.* (2008) who also found a positive and significant relationship between household commercialisation and age of the respondents. Their possible explanation was centred on the findings by Matungul *et al*. (2001) who found that older and more experienced household heads tend to have more personal contacts, allowing discovery of trading opportunities at low cost. However, it can be noted that Amaya and Alwang (2011) assumed that older farmers are less likely to sell through distant markets.

As highlighted in the descriptive results, extension services play a critical role in servicing farmers. Extension services are closely linked to information availability in the form of dissemination of farming advice and knowledge to farmers. Results in Table 4.3 indicate that the positive relationship between extension service contact and market participation decision is consistent with the *a priori* expectations. The significant positive effect of extension service on market participation implies that an increase in extension services contact results in an increase in market participation. This is supported by an odds ratio value (9.665), indicating that it is more likely that farmer market participation will increase with an increase in extension service.

According to Baloyi (2010), factors that determine access to output markets include state of roads, distance to markets, and cost of transportation. As expected, the estimated coefficient of quality of roads to market was positive and significant, implying that an improvement in the quality of roads results in an increase in market participation. Baloyi (2010) also found that lack of access to transportation among smallholder farmers was a major constraint when

it came to accessing markets in towns. It was therefore expected that access to transportation could have a positive influence on market participation decision. The results shown in Table 4.3 indicate that access to transport is consistent with the *a priori* expectations. The significant and positive relationship between access to transportation and market participation decision implies that when farmers have access to transport, there is a greater chance of them participating in markets. This is consistent with Olwandle and Mathenge (2012) who reported that transportation had a positive effect on the probability of maize market participation. The value of the odds ratio (8.033) supports the higher probability of an increase in market participation decision with access to transport.

Rural farmers are usually located far from towns and have to travel long distance to access markets in town. Baloyi (2010) found that farmers supplying to agricultural markets were located closer to towns; farmers who supplied vegetables to Spar in Thohoyandou were only 14 kilometres away from the town. It was expected that farmers who are further away from the market are less likely to participate in markets probably because of high transport costs. The results show that the estimated coefficient of distance to market is statistically significant and negatively related to market participation. Mmbando *et al*. (2015) also found that maize and pigeonpea market participation decreased for farmers located far away from the market.

Seeking markets once produce is ready for marketing is disadvantageous because fresh produce has a short shelf life. Produce ready for market gets spoiled or its quality reduced when there is a delay in securing a market. Timing of seeking markets was therefore anticipated to have a positive influence on market participation. As expected, timing of seeking markets has a statistical positive effect on market participation. The high value of the odds ratio (30.718) indicates a higher likelihood of an increase in market participation when there is an increase in good timing of seeking markets.

4.4 SUMMARY

This chapter presented empirical evidence of factors influencing market participation decisions among smallholders of uThungulu District Municipality. Results of the descriptive analysis were discussed and factors influencing market participation decisions were defined and tested using a logistic regression model. Variables which were found to significantly influence the probability of market participation were age, extension services, quality of roads to market, access to transport, distance to market, and timing of seeking markets.

CHAPTER 5
SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.1 SUMMARY

Agricultural marketing plays a vital role in the economic development of a country and in the alleviation of poverty. In some rural households, agricultural production and marketing serve as a main source of income. However, smallholder farmers are confronted by a number of constraints which limits their growth to a commercial level. The limited ability by smallholder farmers in accessing viable markets for their produce is a major challenge for sustainable agricultural development in South Africa.

The main objective of this study was to identify the factors which affect marketing decisions of a sample of uThungulu District smallholder farmers. This study is important because its recommendations can be useful in aligning smallholder farmers in the agricultural supply chain and linking them to potential markets. The study was conducted in the uThungulu District Municipality in the province of KwaZulu-Natal, South Africa. This region comprises of six Local Municipalities.

A stratified random sampling method was used to select farmers from a cluster of six Local Municipalities. A sample size of 80 farmers was then obtained using simple random sampling. In collecting the data, a questionnaire was designed and the data collection process involved administered (face-to-face) interviews. To analyse the data, descriptive analyses and the logistic regression model were used. Descriptive analyses made use of frequency, mean, minimum and maximum values, and graphs in analysing the data. The logistic regression model tested the factors that influence farmer market participation decisions. The independent variables used in the study were age, gender, extension services, access to market information, access to market transport, timing of seeking markets, access to road infrastructure, access to credit, distance to market and education. Seven variables were consistent with the *a priori* expectations and six variables were found to be statistically significant, namely age, extension services, quality of roads, access to market information, access to market transport, and timing of seeking markets.

5.2 CONCLUSION

Variables that were found to have a relatively higher probability of influencing uThungulu smallholder farmers to participate in markets were age, extension services contact, quality of roads to market, access to transport, distance to market, and timing of seeking markets. It implies that an improvement in each of the significant variables can significantly influence farmer market participation decision. The results also found that sampled farmers used both the local informal market and formal market to sell produce. The markets used included neighbours, supermarkets and retail store.

5.3 POLICY RECOMMENDATIONS

This section suggests policy recommendations based on the empirical results of the study. In an effort to help smallholder farmers improve their market participation, the recommended policies can be considered.

- **Improve dissemination of market information to farmers**

Smallholder farmers who lack market information can be easily exploited by better informed buyers. Exploitation of smallholder farmers can be prevented by providing these farmers with market information to enhance their negotiating ability during transactions with buyers.

The study found that most surveyed farmers did not have access to market information. It was also noted that a large number of farmers who did access market information obtained it from extension officers. Such results give an indication that smallholder farmers largely depend on extension officers for information. It implies that extension officers should be used more as a source of information to farmers. However, although smallholder farmers do receive extension services but, about 94% of respondents indicated that they did not receive any marketing services from extension officers. For extension officers to disseminate useful market information, they should be well-informed about market information. Providing better extension services to farmers by improving marketing knowledge of extension workers could be an important policy option to influence smallholder farmers to participate in markets.

It is therefore suggested that extension officers should be acquainted with market information tools for them to be better informed about market issues. For instance, there is an Extension Suite Online programme which is an online system that provides valuable agricultural information including market prices. There is also a marketing information system which is

again an online system that was developed by DAFF to provide market related information. Such information acquired by extension officers through information tools and other forms can then be disseminated to farmers.

Nowadays, it is much cheaper to own a cell phone and there are smart phones which are also cheap. As smallholder farmers can easily own a cell phone, such a technology can be used to disseminate information, such as market prices and produce market demand. For those who do not own smart phones, they can be sent information through sms while those with smart phones can download market information applications.

Another way of passing information to smallholder farmers could be through the formation of farmer groups where information can be shared. Farmers within the same local municipality or area can group together and meet at certain intervals with an aim of sharing information. In such meetings, commercial farmers, market agents or any other relevant stakeholder can be invited to share market information with farmers.

- **Encourage farmers to seek markets before production**

Smallholder farmers often engage in agricultural production without having investigated possible markets for their produce. For instance, it is only a few farmers in this study who indicated that they search for markets before production. It means that a large number of farmers search for markets either during production or once the produce is ready to be sold. Consequently, a farmer often loses large quantities of produce to spoilage when a market cannot be found on time.

It is therefore recommended that farmers are encouraged by, for instance, extension officers to seek markets prior to production. At least they need to know the possible marketing channels that they could consider.

- **Encourage Value Adding**

As highlighted in the literature review, small scale farmers often fail to participate in formal markets due to the strict requirements demanded by formal markets. In meeting these requirements, value adding activities such as packaging are critical. In this study, a large number of farmers indicated that they do not add any value to their produce, hence failing to access some formal markets.

It is therefore recommended that smallholder farmers are encouraged and supported by both government departments and private entities to add value to their produce. This can be done by putting up small packaging houses in a central location so that they accommodate all farmers within a radius of at least 10km. Such support can be provided by relevant provincial government departments (such as Department of Agriculture and Rural Development) in conjunction with private entities. In this way, famers may be able to have their produce packaged and thus increase their chances of participating in formal markets.

- **Reduce Transport Challenges through Collective Marketing**

The results have shown that access to transportation has a positive influence on farmers' marketing decisions. Transportation is therefore a crucial factor in influencing farmers' decision to market produce. Without transport, it is not possible for a farmer to reach distant markets, and the farmer would be limited to sell to local markets (e.g. neighbours).

Among other transport challenges, smallholder farmers do not have access to transport or they cannot afford to pay for a transport fee. The farmers could minimize transport challenges by, for example, coordinating a transporter to take their produce to market. Such a transport could service farmers who are within a certain geographical radius. This can be done in a form of collective marketing which will enable farmers to share transportation costs to distant markets. Such transport coordination will enable farmers to gain access to distant markets that they could have not been able to reach individually due to high transport costs. Collective marketing also strengthens the bargaining position of farmers.

- **Improvement of Infrastructure**

The government could play a role in influencing smallholder farmers marketing decisions by improving public infrastructure. The emphasis could be directed towards improving the quality of roads in rural areas. Poor quality roads (bumpy or uneven gravel road) mean that it takes longer for the produce to reach the market resulting to the transporter charging a higher fee. Therefore, road infrastructure improvement could reduce travelling time and transport costs thereby influencing farmers to access distant markets.

5.4 PROPOSED FUTURE RESEARCH

The findings of the study were based on the response from farmers. Other relevant stakeholders such as extension officers and market representatives were not interviewed.

Hence some of the information such as standards required by markets and skills and knowledge of extension officers was not obtained. Therefore, there is a need for further research that will involve the participation of extension officers and market representatives.

The study only focused on technical constraints and transaction costs that influence market participation. There is a need for further research on the influence of other factors, such as economic, institutional and political factors on market participation.

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APPENDIX 1: Questionnaire for Smallholder Farmers

UNIVERSITY OF KWAZULU-NATAL

COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE

SCHOOL OF AGRICULTURAL, EARTH AND ENVIRONMENTAL SCIENCES

INFORMED CONSENT

Lolu cwaningo ngolwe project isihloko sayo sithi "Ukudayiswa komkhiqizo ngabalimi abancane: ucwaningo olwenziwa kuMasipala Wesifundazwe uThungulu, KwaZulu-Natali, Ningizimu Afrika". Usuphavayiza walolu cwaningo ngu **Dr Lloyd Baiyegunhi** (033 2605 437) kanye no **Professor Gerald Ortmann** (033 2605 492) abase Nyuvesi yaKwaZulu-Natali, phansi kwesikole seZolimo, uMhlaba kanye nezeSayensi yeZemvelo, kanti owenza lolu cwaningo ngu **Mr Ntokozo Mdlalose** (082 5144 003). Inombolo yehovisi yezocwaningo kwiNyuvesi (**HSSREC**) ithi 031 2608 350.

Kubonakele ukuthi abalimi abancane banenkinga ekudayiseni kahle imikhiqizo yabo. Ngakho-ke kwavela ukuba kwenziwe lolucwaningo onhloso yalo kuwukubheka ukuthi yiziphi izinto ezinomthelela ekudayisweni komkhiqizo ngabalimi abancane. Lolucwaningo luzosiza ukuthi kube nomhlahlandlela wokuthi abalimi abancane bangasizwa kanjani ukuxhumana nezimakethe. Uyacelwa ukuba ubambe iqhaza kulolu cwaningo ngokuthi uphendule imibuzo engathatha cishe imizuzu engaphansi kwamashumi amathathu ukuyiphendula. Umuntu ubamba iqhaza kulolucwaningo ngokuzithandela, akaphoqelekile kanti futhi angahoxa noma nini futhi noma ngasiphi isizathu. Uma ukhetha ukungalibambi iqhaza, akukho lutho oluzokulahlekela. Zonke izimpendulo zomuntu zizogcineka ziyimfihlo. Ukuqinisekisa lokhu, angeke kubhalwe igama lomuntu kwizethulo zocwaningo kanti futhi amaphepha ezimpendulo azogcinwa endaweni ephephile engavuleleke kumuntu kuphela lo owenza lolucwaningo. Uma selushicilelwe ulwazi, amaphepha ophendule kuwo azoshiswa ukugcina ukuphendula kwakho kuyimfihlo.

Besicela usho ukuthi uyavuma yini ukuthi singasebenzisa noma sishicilele izithombe zakho kulolucwaningo. Yebo ☐ Qha ☐

Besicela uveze ukuvuma kwakho ekubambeni iqhaza kulolu cwaningo ngokuthi ubhale igama lakho uphinde usayine lapha ngezansi.

Mr/Mrs/Ms:.....Signature:.....Date:.....

SURVEY QUALITY CONTROL

Date of Interview: …… Local Municipality:……

Place:…… Ward:……

A) DEMOGRAPHIC DETAILS

Please fill in relevant information and where relevant mark with an X

A.1 GENDER		**A.2** AGE (Years)					**A.3** FARMER STATUS	
M	F	≤ 19	20-29	30-39	40-49	≥50	FULL TIME	PART TIME
1	2	1	2	3	4	5	1	2

A.4 Marital Status

SINGLE	1	MARRIED	2	WIDOWED	3	DIVORCED	4

A.5 Farmer Highest Education Level *(Please mark with an X)*

No formal education	**Primary School only**	**Secondary/ High School**	**Tertiary Level**	**Other***(please specify)*
1	2	3	4	5

A.6 Do you have any other source of income besides farming income?

Yes [1] No [2]

A.7 If yes, please indicate below the source of income

Source of income	**Tick**	**Source of income**	**Tick**
Government grant	1	Pension	3
Formal employment	2	Business (other than farming business)	4
Other (please specify)			5

A.8 Amongst the following, what is your main objective for farming?
(Please tick correct option)

Own Consumption	Marketing	Own consumption and marketing
1	2	3

B) LAND AND FARMING

B.1 What is the amount of farming land in use? …… Ha

B.2 How did you acquire the land? *(Please tick relevant option)*

Bought	1	Renting and/or share cropping	2	Leased	3
Inherited	4	Allocated by Local Authority	5		
Other (*Please specify*)					6

B.3 How do you cultivate your land? *(Please tick relevant option)*

	Own	**Borrowed**	**Hired**
B.3.1 Tractor	1	2	3
B.3.2 Government mechanization	1	2	3
B.3.3 Animal Traction	1	2	3
B.3.4 Hand	1	2	3
B.3.5 Other (Please Specify)			

B.4 Please list crops you farm with.

……

……

……

.....

B.5 Who are your production input suppliers?

Item	**Supplier's Name**	**Distance (km)**	**Reason for using the market**

C) HUMAN CAPITAL ENDOWMENTS

C.1 For how long have you been farming?.....years

C.2 Does any member of your household have the following skills?

SKILL	**Yes**	**No**		**Yes**	**No**
Crop production	1	2	Record Keeping	1	2
Financial management	1	2	Marketing	1	2

C.3 What type of labour are you using? *(Please tick where relevant)*

Hired Labour	1	Seasonal Labour	4
Neighbour	2	Own self	5
Family Labour	3	Other (Please specify)	6

C.4 How do you rate the farming knowledge? *(Please tick correct option)*

C.4.1 Farmer Knowledge	Poor	1	Average	2	Good	3
C.4.2 Workers Knowledge	Poor	1	Average	2	Good	3
C.4.3 How knowledge was acquired?	Education	1	Training	2	Experience	3

C.5 How often do you attend or participate in the following educational activities?

Type of educational activities	**Never**	**Once a month**	**Once in three months**	**Once in six months**	**Other** *(please specify)*
C.5.1 Farmers/information days	1	2	3	4	5
C.5.2 Agricultural Workshops	1	2	3	4	5
C.5.3 Agricultural short courses	1	2	3	4	5
C.5.4 Educational tours	1	2	3	4	5

C.6 Who amongst the following provides you with farming advice?

Government Extension officer	1	Friends	3
Development Agencies	2	Other farmers	4
Other (Please specify)			5

D) MARKETING

D.1 How difficult is it for you to look for buyers? *(Please tick correct option)*

Easy	1	Fair	2	Difficult	3

D.2 When do you start looking for buyers? *(Please tick correct option)*

Before production	1	Two weeks before harvesting	2	Once produce is ready for market	3

D.3 Where do you sell your produce and how far is that market?
(You can tick more than one)

Market	**Tick**	**Distance (in Km)**	**Market**	**Tick**	**Distance (in Km)**
Sell at the farm	1		Sell to neighbours	4	
Sell by the road side	2		Sell to local supermarkets	5	
Sell to large retailers (i.e. Spar, etc.)	3		Other (Please specify)	6	

D.4 Do you have regular customers? **YES** 1 **NO** 2

D.5 Who are your current customers? *(Please tick correct appropriate)*

Friends/ neighbours	**Hawkers**	**teachers**	**pensioners**	**Government institutions**	**Spaza shops**	**Other** *(Please specify)*
1	2	3	4	5	6	7

D.6 If there are other possible markets, please mention them below.

…….....

……

……

D.7 Do you have any contractual agreements (formal or informal)? (Give Details)

……

……

.....

D.8 How is your produce moved to the marketing points? *(Please Tick as appropriate)*

	TYPE OF TRANSPORT					
	Truck	Bakkie	Bus	Other (Specify)	Distance to Market	Cost of a single trip to market (R)
D.8.1 Own transport	1	2	3	4		
D.8.2 Hired vehicle	1	2	3	4		
D.8.3 Public transport	1	2	3	4		
D.8.4 Buyers transport	1	2	3	4		
D.8.5 Other (*Please Specify*) ……..	1	2	3	4		

D.9 Is there any produce you could not sell in the past? **Yes** [1] **No** [2]

D.10 If yes, please name the product and the reason for not being able to sell it.
(Fill the Table below)

Product	**Reason**
1.	
2.	
3.	
4.	

D.11 What happens to the unsold produce?

Eat with family	Give friends and neighbours	Donate	Loose to spoilage	Sell at low prices	Keep it and sell later	Process
1	2	3	4	5	6	7

D.12 Before selling your produce, what value adding activities do you perform?

none	washing	packaging	processing	Other *(please specify)*
1	2	3	4	5

E) MARKET INFORMATION

E.1 What or who are your sources of information? *(Please tick where relevant)*

Sources	**Type of information provided**			
	Prices	**Market opportunities**	**Product demand**	**Other** *(Please specify)*
E.1.1 Extension officer	1	2	3	4
E.1.2 Media	1	2	3	4
E.1.3 Friends	1	2	3	4
E.1.4 Co-farmers	1	2	3	4
E.1.5 Buyers	1	2	3	4
E.1.6 Other	1	2	3	4

E.2 How do you want the information to be delivered? *(Please tick as appropriate)*

Post	1	Telephone	4	Cell phone SMS	6
Internet	2	Tribal meeting	5	Extension officers	7
Farmer groups	3	Other *(Please Specify)*			8

F) PRICING

F.1 Do you perform price surveys, before selling? **Yes** [1] **No** [2]

F.2 How is price set during the sales? *(Please tick as appropriate)*

We set the price	1	It is market driven	3	It is dictated by buyers	5
We negotiate	2	Based on production costs	4	Based on other farmer's price	6
Other *(Please specify)*					7

G) PROBLEMS OF MARKETING

G.1 The challenges faced in running the project *(Please tick as appropriate)*

The search for information	1	Lack of support by the government	3
Financial	2	Problems associated with crime	4
Other (please specify)			5

G.2 The major problems in marketing the produce *(Please tick as appropriate)*

Transport	1	Lack of packaging house	3	Market identification	4
Financial	2	Other (please specify)			5

G.3 Suggest ways in which such problems (listed in G.2) **can be addressed**

……

……

G.4 What problem do you experience in moving your produce?

(Please tick as appropriate)

Small size of transport	1	Lack of transport	2	High transport cost	3	Other (Specify)	4

G.5 Do you need any form of training to improve your skills?

Yes 1 **No** **2**

G.6 What specific training is needed? *(Please tick correct option)*

SKILL	**Yes**	**No**	**Reason why you think or say so**
G.6.1 Crop production	1	2	
G.6.2 Record keeping	1	2	
G.6.3 Marketing	1	2	
G.6.4 Value Adding	1	2	
G.6.5 Other (Please *Specify*) ……	1	2	

G.7 Please indicate by ticking if you keep any of the following farming records

Type of Record	**Tick**	**Type of Record**	**Tick**	**Type of Record**	**Tick**
Financial Records	1	Production Records	2	Labour Records	3
Other *(Please specify)*					4

G.8 What missing resources you consider useful in improving your enterprises?

Production Inputs	1	Infrastructure	3	Packinghouse	5
Technical Information	2	Technical Equipment	4	Labour	6
Other *(please specify)*					7

H) INFRASTRUCTURE AND CAPITAL

H.1 Indicate the type of infrastructure you have access to and rate it condition.

Infrastructure	**Tick**	**Condition**		
		Poor	Moderate	Good
H.1.1 Roads	1	2	3	4
H.1.2 Dam	1	2	3	4
H.1.3 Municipal water	1	2	3	4
H.1.4 Borehole	1	2	3	4
H.1.5 Electricity	1	2	3	4

H.2 Which assets do you have? *(Please tick correct option)*

Type of Asset	**Tick**	**Type of Asset**	**Tick**
Irrigation System	1	Fencing	4
Storeroom	2	Packinghouse	5
Implements	3	Other *(Please specify)*	6

H.3 Do you have access to credit? Yes [1] No [2]

H.4 If yes, please indicate below the type of credit *(You can tick more than one)*

TYPE OF CREDIT	**TICK**	**TYPE OF CREDIT**	**TICK**
Borrowing from bank	1	Borrowing from your family	3
Borrowing from friends	2	Other (Please Specify)	4

H.5 Have you ever received government funding? Yes [1] No [2]

H.6 If yes, please indicate below the form of funding *(You can tick more than one)*

FORM OF FUNDING		**FORM OF FUNDING**		**FORM OF FUNDING**	**TICK**
Cash	1	Fencing	3	Implements	5
Irrigation System installation	2	Production inputs	4	Tools	6
Other (Please Specify)					7

I) EXTENSION SERVICES

I.1 How often do an extension officer visit you?

Never	1	Once a week	2	Once a month	3	Twice a month	4
Other *(Please specify)*							5

I.2 In your opinion, how do you view the quality of the extension workers who visit you?

Poor	1	Satisfactory	2	Good	3	Very good	4	Excellent	5

I.3 Do you receive marketing assistance from extension officers?

Yes | 1 | **No** | 2 |

I.4 If yes, what kind of assistance (e.g. market identification, etc.)?

….....

……

……

I.5 Are extension officers always available when you need them?

(Please tick correct option)

Never available	1	Available sometimes	2	Always available	3

THANK YOU FOR YOUR COOPERATION!!!!!