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**MARKET PARTICIPATION OF COMMERCIAL BLACK FARMERS IN GAUTENG
PROVINCE, SOUTH AFRICA**

By

CECELIA MABONGA SHANDU

Submitted in partial fulfillment of the requirements for the degree

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In the

Department of Crop Sciences

FACULTY OF SCIENCE

TSHWANE UNIVERSITY OF TECHNOLOGY

Supervisor: Prof. P. Soundy

Co-Supervisor: Dr. G.M. Senyolo

NOVEMBER 2018

DECLARATION

I, the undersigned, hereby certify that, unless specifically indicated to the contrary in the text, this thesis is the result of my original work. To the best of my knowledge and belief, it contains no material previously published or written by another person nor material which, to a substantial extent, has been accepted for the award of any degree or diploma of the Tshwane University of Technology or any other institution of higher learning, except where due acknowledgement has been made in the text.

SHANDU CM.

Student number: 212010642

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DEDICATION

This manuscript is dedicated to my beloved mother, Mrs. Thandie C. Masondo, and to my children.

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I would like to express my heartfelt gratitude to everyone and to the organisations that contributed to the success of this study. Without your input, time and patience, it would have been impossible to succeed.

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ABSTRACT

Marketing agricultural produce is important amongst commercial Black farmers as a mechanism contributor in rural employment and income generation. In South Africa, most commercial Black farmers are characterised by poor market participation through lack of land ownership and as a result, reduced investment on farming business. The objectives of this study were to describe the socio-economic characteristics of commercial Black farmers, and to identify factors that influence market participation of commercial Black farming enterprises in Gauteng Province. The study population was represented by a few regions of Gauteng Province where data was collected. Multistage sampling procedure was employed to contact 50 respondents. Semi-structured questionnaires were used to collect data through face-to-face interviews. The data was analysed using descriptive statistics, and the Heckman two-stage selection model. Excel and SPSS computer programmes were used to process the data. The results showed that farm labour, access to extension services, crop production, access to credit and marketing contracts significantly influenced the decision to for market participation, and significantly influenced the choices commercial Black farmers made. The study recommends that for holistic market participation among commercial Black farmers, an increase in farm labour, access to extension services and marketing contracts through proper marketing skills must be in place. The Government and other policy makers should increase access to market information, which would increase the ability of farmers to participate in markets.

Key words: commercial, market, market participation.

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ACRONYMS AND ABBREVIATIONS

%	Percentage
BTC	Belgian Technical and development Corporation
CC	Contingency Coefficient
CRDS	Comprehensive Rural Development Strategy
DAFF	Department of Agriculture, Forestry and Fisheries
DBSA	Development Bank of Southern Africa
EAC	Eastern African Countries
GDP	Growth Development Product
IFAD	International Fund For Agricultural Development
MPD	Market Participation Decision
OECD	Organisation for Economic Cooperation and Development
PTO	Permission To Occupy
RSA	Republic of South Africa
Std. Dev	Standard Deviation
SPSS	Statistic Package for Social Science
STATS SA	Statistics South Africa
VIF	Variance Inflation Factor

CHAPTER 1: INTRODUCTION

1.1 Background

The agricultural industry becomes a major role player in the livelihoods of communities (Mango *et al.*, 2017: 98), because in both developing and undeveloped countries rural communities depend on agriculture. This was seen in the South African growth development product (GDP), where agriculture was the major contributor. This sector was followed by the mining industry. It was brought to the attention of policymakers that market access to farmers is a priority in promoting rural development strategies (Fischer and Qaim, 2012). The market accessibility was aimed at improving rural household's income, and one of the strategies to increase farmer's market participation. The enhancement of market participation was affected by government policies, which were set prior to apartheid governance. In the 1980s the African Government, adjusted programmes which then led to market liberalisation and reduction of Government's involvement in agricultural activities (Abu *et al.*, 2006). The South African democratic governance has undertaken drastic changes socially and economically in the agricultural sector following the abolishing of apartheid (Kirsten *et al.*, 1980: 19). Furthermore, It introduced reform programmes to create a more open and market-oriented economy. The reform programmes were formed for the inclusion of previously disadvantaged farmers who were excluded in the mainstream of the economy of South Africa. The country has two dominant dualism sectors, which are a commercial sector and subsistence sector (O'Laughlin *et al.*, 2013: 9). The commercial sector is dominated by White farmers with technological advancement, whereas the subsistence sector is dominated by Black farmers with poor technological exposure. Black farmers generally refers to farmers who are Africans, Coloureds and Indians who

are South African by birth (Mafisa Credit Policy, 2009). These Black farmers are commonly known as developing farmers, smallholder farmers, small-scale farmers, emerging farmers and growing farmers due to the past (Mafisa Credit Policy, 2009). The dualism in the agricultural sector was the result of the apartheid legacy that began with the controversial Natives Land Act (no. 27 of 1913). It was followed by approximately 70 years of Government policies and subsidies to advance the White commercial agricultural sector. These privileged White farmers occupied 80% of the land (Oettle *et al.*, 1998: 15), whilst Black farmers were forcedly removed from their land and prohibited to farm on a large scale (Hebinck *et al.*, 2011: 15). The remaining 15% of South Africans farmed small-scale with infertile soil.

The new democratic Government introduced new laws and policies in the agricultural sector (Mapholi *et al.*, 2014: 59), however these were for the inclusion of Black farmers who had been excluded in the agricultural economy of the country. Land reform programmes were introduced in 1994, one of which would ensure Black farmers were being included in this sector. This land reform policy targeted the redistribution of 30% of agricultural land (24.5 million hectares) to Black household communities, but due to unforeseen circumstances the target was not reached and resulted in poor performance in 2014 (Mapholi *et al.*, 2014: 59).

The access to land enables farmers to participate in the market. According to Cain (2012), market is defined as a group of buyers and sellers with the same focus and needs, and every market has its own characteristics of how the goods are sold and

purchased. Therefore, there was a focus on creating market accessibility to effectively integrate Black farmers into the mainstream of the national economy (Ngenoh *et al.*, **S.a**: 15). The markets provide an opportunity to earn income from sales of farm produce and contribute to the household food security and poverty reduction. However, the predominance of market participation has pushed the emergence of globalisation. Moreover, this presents huge opportunities through value adding of produce and market participants to benefit countries where their principal economic activities rely on agriculture. These reform programmes were made to help Black farmers remain competitive to continue function in local, regional and international markets. In addition, access to high-valued markets was to focus attention on pro-poor and enable Black farmers to meet the cost of fertiliser, improved crop varieties, irrigation facilities and other necessary production factors. However, the government-marketing board was introduced, which developed a number of policies and acts and enabled the Minister of Agriculture to assert a marketing scheme to control the marketing of a particular commodity. However, this board excluded categories of farmers such as smallholder farmers and part-time farmers, being more in favour of commercial farmers (Van Rooyen *et al.*, 1995: 5). This board was operating in terms of the Marketing Act 59 of 1968. The board had policies and instruments to control inflated producer prices above market-related levels and encouraged distorted relative product prices (OECD, 2006: 6-19). One of the policies that may be counted in this act was the Export Subsidies Act of 1931, which aimed to enhance the high volume of export products. This was done in the form of subsidies to keep prices as low as possible or to provide handling and storage.

Due to the performance of the government marketing boards, the act was deregulated, which provided limited government intervention in the marketing of agricultural products (Act no. 47 of 1996). Furthermore, the deregulation process entailed the removal of retail price controls, import and export control and the removal of fixed price single channel marketing, which resulted in the global market exposure of the South African producers (Thindisa, 2014:50).

Agricultural transformation, switching from subsistence agriculture to market-orientated agriculture, has formed a major topic for rural development and agricultural development (Barret, 2008). It is believed the transformation will significantly boost the incomes of farmers and increase the welfare of smallholder farmer, as well as contribute to the economic growth (Zhou *et al.*, 2013). However, the study done by Jaleta *et al.* (2009), revealed that smallholder market participation does not only require perfect output markets, but efficient and low-cost factor markets that will truly capture opportunity cost of inputs.

The production of crops within the Province contributed, on average, to approximately 30.87% of the gross income from agriculture (StatsSA, 2017). This production of crops has yielded an opportunity to invest more by smallholder farmers (Aku, 2017: 1). Vegetables are known for providing good nutrition to the human body, therefore this motivates farmers to participate in the market to generate income and also to be food secure for their families and the country as a whole. Crop production can be performed on a small piece of land, which attracted policymakers to pay more attention as it can

be grown in a small area and produces quick income generation due to the short life cycle (Aku, 2017: 2). According to Ramoroka (2012: 1), market participation is a source of economic development. The markets offer agricultural household's a comparative advantage and welfare gains from the sales (Ramoroka, 2012: 1). Therefore, the study will look at how market participation plays a significant role in ensuring improved income and welfare for commercial Black farmers through diverse channels. In addition, it will further look at how farmers' welfare can be achieved by raising income, market increase, and purchasing power, which in turn creates demand for consumer goods, which will then ensure market participation.

1.2 Justification of the study

Market participation is the integration of subsistence farmers into input and output markets by income generation (Adenegan *et al.*, 2012: 30). According to Sigei (2014: 2), defined market participation as a process by which the producers sell their produce and can partake in different markets, which can be informal or formal. The democratic Government intervened in promoting access to the market for Black farmers. The deregulation process was formed, which entailed the removal of retail price controls, import and export controls, and fixed price single channel marketing (Adenegan *et al.*, 2012: 31). The results of the deregulation process meant South African producers were suddenly exposed to global markets (Thindisa, 2014: 50). From the 1970s onwards, the South African Government established a number of homeland development cooperations (Vink, 2008: 7). The development funded large and smallholder creation of irrigation schemes. However, this approach did not yield any positive results because of its social and economic implications and high cost in maintenance. It

created a high level of dependency among the farmers. As a result, the increase in social unrest and political conflict in 1980's promoted gnarled sustainability and reduced smallholder production levels (Van Averbek and Mohamed, 2006: 138). Black farmers faced difficulties in taking advantage of market opportunities because of lack of information on prices and technology, lack of connections to established market actors, distortions or absence of input and output markets and credit constraints (Markelova *et al.*, 2008: 1). South Africa is also characterised by poor market participation by commercial Black farmers due to lack of land ownership (Sharp *et. al.*, 2007: 49). This research will contribute to literature on household labour supply to rural development policies. Such policies will aid in the reduction of the unemployment rate through marketing crop products.

The study will further reveal the livelihood diversification practices which households develop and adapt overtime so as to escape the social challenges associated with unemployment and poverty. Studies on socio-economic factors affecting commercial Black crop producer farmer's market participation have not previously conducted within the province and these farmers were not previously categorised in Gauteng Province. This study will gather and analyse those factors affecting household market participation in the Province.

1.3 Problem statement

The marketing environment for commercial Black crop producer farmers is challenged by difficulties in participating in the market as a result of more uncertainties, and barriers (Baloyi, 2010: 12). Therefore, this proposed a monitoring tool that would minimise risks, re-organise and capitalise on opportunities. However, globalisation and technology believes in monitoring consumer's behaviour towards market participation and directs how agribusiness should be conducted (Baloyi, 2010: 12). Despite the opportunities created by globalisation and industrialisation, commercial Black farmers find it difficult to participate in the high value markets. In order to address these issues, a study needs to be conducted to generate information by characterising commercial Black farmers in Gauteng Province, and in-depth assessment of factors affecting market participation. The proposed research project will contribute towards the knowledge on factors that contribute to commercial Black farmer's decisions to participate in the market.

1.3.1 Hypothesis

It is hypothesised that socio-economic factors influence market participation of commercial Black farmers in Gauteng Province.

1.4 Aim

This research paper sought to discover factors that influence market participation on market outputs experienced by commercial Black farmers in the agricultural sector in

South Africa. The research proposed a logistic model that will highlight the factors influencing market participation of commercial Black farmers.

1.4.1 Objectives

The general objective of the study was to identify and compare the socioeconomic characteristics that determine factors influencing market participation of commercial Black farmers in Gauteng Province, South Africa.

The specific objectives of the study are:

- To describe the socio-economic characteristics of commercial Black farmers in Gauteng Province.
- To identify socio-economic factors which influence market participation of commercial Black farmers in Gauteng Province.

1.5 The significance of the study

South Africa's unequal wealth distribution is one of the merger challenges. This study will focus on the role of proper land utilisation and agricultural sustainability. Land is viewed as an important factor for agricultural activity and rural development. The Government can benefit from monitoring the performance of the beneficiaries land reform programmes. The findings of the study will be shared with Government officials and traditional leaders who have allocated land to farmers; it will also be made

available to farmers as well. Adopting the recommendations could help farmers optimise their land utilisation, productivity and profitability and also encourage them to look themselves as businessmen/woman for their agricultural practices. Their hard work starting small enterprises on small plots or developing into large-scale farming can promote job creation and economic empowerment, thus contributing to food security.

1.6 Organisation of the study

The dissertation is subdivided into six chapters. The first chapter gives the background on the subject and justification of the study and outlines the problem statement, the research hypothesis, and aims and objectives of the study that will be guiding the study. The second chapter discusses the literature review on commercial Black farmer's market participation. This includes the elaboration of South African history to land distribution, and the post-and pre-apartheid regimes. In the third chapter, the methodology is presented, the study area is described and data collection procedures, methods used in data analysis and the approach is given. Chapter 4 presents the results of the descriptive analysis of key variables, Chapter five gives model results, and in Chapter six, the findings are summarised and major conclusions and recommendations arising from the findings are made.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter discusses key issues on factors that determine market participation among commercial Black farmers. This chapter therefore, presents literature review on the importance of farmer's participation to markets, and factors affecting market participation.

2.2 South African agricultural sector

The agricultural sector in South Africa is branded by direct historical government interventions, whereby the government provides some kind of support to farmers (Peach, 2015:19). This direct government intervention was manifested through commodity policies, factor policies and technology policies, as revealed by Vinkand Kassier (1998). However, the agricultural policy was affected by the Agricultural Marketing Act of 1937, Land Act of 1913 and 1936, subdivision of Agricultural Land Act of 1970, and other policies, such as tax policies, and by classifying technology services as own affairs. According to Kassier and Groenewald (1992), the government intervention reached a high point around 1980 with a variety of laws, statutes and regulations controlling access to the use of natural resources, finance, labour and marketing of agricultural products.

South Africa is a diverse country and rich in terms of land area, which comprises farm

land of 86 million hectares and is divided into a range of farming regions (Peach, 2015: 17). Twelve percent of the land is suitable for the production of rain-fed crops due to its climatic soil combination, and 3% is considered as fertile land. However, livestock farming is considered major in the agricultural sector. South Africa is known for water scarcity, and in dry seasons the country experiences severe droughts. In 2015 the Minister of Agriculture declared severe draught in North-West, Kwa-Zulu Natal, Mpumalanga and Free State provinces (Ngoepe, 2015: 1). This condition resulted in the country having to import R2.2 million of maize by the year 2015. The agricultural industry in South African remains an important sector of South Africa's economy (RSA, 2010: 7), which was observed in South Africa's GDP that showed an increase of 2.83% from 1993 to 2017. However, this sector stimulates economic growth through backward and forward linkages with other economic sectors.

According to Genis (2012: 1), the foundation for South Africa's large-scale commercial farming sector was laid by government policy intervention between 1910 and 1980. This legislation was done to segregate White and Black farmers and then orderly facilitate marketing. It was followed by institutional interventions and direct subsidies that decreased the White farmers' dependence on Black labour. The legislation also protected White farmers from overseas competition. White commercial farmers continued to receive financial support and subsidies to the value of R3912 billion during the 1980s and early 1990s primarily to purchase land, implements and livestock, for debt consolidation, to improve infrastructure, for emergency draught schemes and among other things, to convert marginal land (Kirsten *et al.*, 2007). By then, the agricultural marketing board was in charge of controlling the commodity crop, and

determining the price. The Marketing Control Boards were formed during 1937 to control the commodity of crops that were allowed to be marketed (Vink *et al.*, 2012: 3); it was further established as the Marketing Act of 1937. The control board mainly had a monopoly over imports and exports, as well as supply and demand for specific commodities (Hall and Cousins, 2015: 2). However, during this apartheid era White commercial farmers were receiving support from the government in the form of subsidies (Oettle *et al.*, 1998: 16). The pricing was done on a pan-territorial and pan-seasonal system. The farmers were receiving the same amount in price regardless of the distance to the market. Those that travelled greater distances spent more on transport costs than those who were close-by. The control board was responsible for appointing the single channel market agents, which were the local supply cooperatives in the area. The infrastructure of these cooperatives was developed with loans from the Land Bank to create large grain storage facilities to cater for pan-seasonal pricing systems of delivery (Hall and Cousins, 2015: 2).

2.3 Importance of farmer participation in the markets

Market participation is the source of economic development. Markets offer households the opportunity to specialise according to comparative advantages and thereby enjoy welfare gains from trade (Segei, 2014: 6). According to Ramoroka (2012: 2), market participation is any market-related activity that promotes the selling of produce. In general, marketing starts with the farmer's decision on what to produce, how much to produce, as well as when to produce. Therefore, the clear understanding will determine the nature and the needs of the farmer's market participation. Marketing of agricultural produce plays an important role in the country and the world as a whole (Matsane and

Oyekale, 2014: 390) in terms of poverty alleviation, food security and economic growth. Consequently, many people depend on agriculture for their livelihoods (World Development Report, 2008: 1). Furthermore, the authors have an estimate of 86% of rural people who rely on marketing agricultural products as a livelihood option. Marketing agricultural products provides jobs for 1.3 billion commercial Black farmers and landless workers (Tita, 2008/9). Mid-eighties, the Government of India identified horticultural (vegetable) crops as a means of diversification for making agriculture more profitable (Samantaray *et al.*, 2009: 153). Matsane and Oyekale (2014: 390) define marketing as a business activity connected with the flow of goods and services from producers to consumers. Agriculture is the back bone of many African economies (Balarane and Oladele, 2012: 57). In South Africa, the agricultural sector is comprised of well- developed commercial farming (Antwi and Seahlodi, 2011: 37) of which the small number of commercial operators are predominantly White farmers (Senyolo *et al.*, 2009: 208). The commercial Black farmers are in the deep rural areas (Antwi and Seahlodi, 2011: 37). This shows a disturbing separation between commercial Black and White farmers. Lehohla (2012: 43-44) defined commercial farming as any farming activity that aims to generate an additional or main source of monetary income; the study conducted by Kirsten and Van Zyl (1998: 552) agreed with this statement. The study outlined that there is no certainty in assessing commercial viability as it is not about size or profit. Therefore, in this study commercial farming will be viewed in terms of the reasons for engagement in farming, which in this case is to generate additional or main monetary income. It explains why the unequal distribution of agricultural inputs, such as land, farm assets, support services, market access, infrastructure and income, persists in South Africa (Antwi and Seahlodi, 2011: 208). Commercial Black farming involves small-scale production operations with fewer

resources with which to operate. However, to successfully succeed in marketing agricultural products, there should be thorough production planning to meet the specific demand and market prospects (Matsane and Oyekale, 2014: 390). This will guide the direction of marketing prospects and enable the farmer to make an informed decision about farm business as a whole. Market participation decisions change farmer's attitudes from being a subsistence farmer to a commercial farmer (Segei, 2014: 6). These farmers will however be motivated through income generating. The market participation of the farmers is crucial to sustaining economic growth, food security and poverty alleviations in the country as a whole. The commercial Black farmer's market participation does not only provide the farmers with income generation from sales, but creates employment for the farmer and rural communities (Sigei, 2014: 6).

2.4 Factors influencing market participation

There are a number of determinants for the market participation of smallholder farmers, which are broadly characterised as internal and external factors (Osmani and Hossain, 2015: 165). The external factors include population growth and demographic changes, technological change and introduction of new commodities, development of infrastructure and the market institutions, development of the non-farm sector and the broader economy, rising labour opportunity costs and macro-economic, trade and sectoral policies affecting prices and other driving forces. Conversely, the development of input and output markets, institutions, such as property rights and land tenure, market regulations, cultural and social factors affecting consumer preferences, production and market opportunities and constraints, agro-climatic conditions and other

market-related risks can also affect market participation and are classified as external factors (Osmani and Hossain, 2015: 166). Furthermore, Osmani and Hossain (2015: 167) found that farmers who have larger farm sizes were more likely to participate in the market. Macro factors include economic and trade policies, market reform, rural infrastructure improvement and development of legal and contractual environments; these factors are the driving forces in the market participation. However, Rahut *et al.* (2010), Egbetokun and Omonoa (2012), and Onoja *et al.* (2012) discovered that demographic characteristics, such as gender of the household head, ethnicity and location, are the determinants for market participation. The study conducted by Egbetokun and Omonoa (2012) identified demographic characteristics as influences to farmer's decisions to participate in the market. They discovered that factors such as the age of the farmer, marital status, sources of labour, farming experience, farm size were the major determinants that influenced farmer's participation in the market. According to Onoja *et al.* (2012), farm characteristics, such as distance to market, and market-related information, such as the price of the commodity, determined the probability to participate in the output markets. However, market participation is not a stand-alone factor, accessibility of the market is one of the major key factors to market participation. The extent to which market access for smallholder farmers has improved with market liberalisation varies across countries. For most African farmers, market access is an issue (Selowa *et al.*, 2015: 162); furthermore, the author states that the problem of market participation is inter-linked with the farmer's inability to meet market standards, low volume of produce, wide dispersion of producers, the presence of middle men and perceived low prices in the formal markets. In the study done by Delgado (1998), results indicated that smallholder market participation in rural areas is problematic because of a wide range of barriers

and constraints, namely lack of assets (e.g. land tenure and collateral), market information, appropriate training, limited access to services necessary for crop production and high costs involved in production and marketing. In the study done by Mthembu (2008: 2), the results revealed factors that contributed to difficulties in acquiring markets included lack of access to productive land for farming, lack of provision of and access to water, lack of access to markets, illiteracy and related problems, minimal access to financial assistance, high transaction costs, poor infrastructure such as roads, minimal access to co-operatives and marketing organisations. The study also revealed that smallholder farmers were located far away from the markets and had poor access to infrastructure. In the study done Martey (2014: 1682), the market participation of smallholder farmers in most developing economies was difficult because of numerous constraints and barriers, which reflected in the hidden costs that make it difficult to access the input and output markets. However, regardless of their selected farming niche, they were faced with many difficulties before being able to enter the market (Ncube, 2010: 14). Most of these farmers lack knowledge, information and resources required to meet formal market demands. A lack of formal agreements to enable them to meet these requirements further discourages these farmers from investing in such an enterprise. In addition, these requirements (quality of a product, sanitary measures) are such that it overwhelms the technical and organisational capabilities of the small entrepreneur. The study conducted by Tshilowa (2015: 16) identified the role of institutional support to market participation. Access to finance or credit and extension support were the institutional support identified. It revealed that access to finance or credit would help in the production start-up inputs, such as seeds and fertilisers, as these are expensive. The financial needs of farmers are classified in three ways, through own funds

(savings), by borrowing money through grants from government and other stakeholders. The farmer's limitation to access credit declines agricultural productivity in the agricultural sector (Tshilowa, 2015: 9), therefore financial accessibility goes hand-in-hand with development and the adoption of new technology (Moses, 2014). The DBS, previously independent and self-governing homelands (DBSA, 2005), collaborated and shifted their focus to be central in farmer's support programmes. Their aim was to fund agriculture in the homelands through a loan scheme to increase agricultural productivity and promote commercial agriculture. However, this financial support was strictly for agricultural projects within homeland areas.

The study conducted by Gebremedhin and Jaleta (2010), divulged that commercial transformation of subsistence farming depends on both market orientation and the determinants of market participation in crop output market. However, market orientation interventions enhance market participation. In addition, the distance to the nearest market and the availability of market information are found to be significant factors in household degree of participation in the market (Osman and Hossain, 2015: 166).

The agricultural extension services are also an important factor in improving agricultural systems worldwide (Kidd *et al.*, 2000). However, this should be a principal responsibility of the Government for many years. Extension services are the factors that can influence the provision of land utilisation via knowledge transferring to farmers (Kidd *et al.*, 2000). The agricultural extension service is the key to improving the

livelihood, well-being and welfare of farmers and other rural people (Kassa *et al.*, 2014). The extension officer has to communicate farming information from the Department of Agriculture to smallholder farmers. This will speed the development and technology enhancement for farmers. Due to the disconnection between research and extension services, the adoption of new technologies in the developing the world is very slow and the research is not focusing on farmer's needs (Kassa *et al.*, 2014).

The extension services in this changing technological environment should go beyond technology transfer to facilitation, and beyond training to learning (Tshilowa, 2015: 28). Its focus should be assisting farmers with group formation and tackling marketing issues. Most agricultural extension officers normally work for the Government in the Department of Agriculture or for the Agricultural Research Council (Tshilowa, 2015: 28). The extension support in the commercial sector (large-scale farming) is reactive in nature, while for the emerging farmer and food security sector, it is more proactive (Tshilowa, 2015: 28). However, the Gauteng growth and development strategy identified key strategic focus areas as support for farmer development, enhancement of the competitiveness of the sector, agricultural planning and marketing analysis and, focusing on vulnerable groups within agriculture. The strategy proposed by the Gauteng Department of Agriculture and Rural Development was to enhance small enterprise agribusiness competitiveness in such a way that it contributes to the total national goals and objectives for sustainable development (Abera, 2009: 48). The main reason for extension services is to provide technical advice on farming, which includes how to produce and when to produce, facilitate credit availability and input suppliers as well as the provision of market information and capacity building training to farmers

(Abera, 2009: 48). However, these services are voluntary to farmers, meaning they decide whether to be a member in order to benefit from such programmes.

Marketing of agricultural products is inter-linked to economic development and poverty reduction for rural communities of many African countries (Mmbando *et al.*, 2013: 255). This led to liberalisation of agricultural markets of many African countries in the 1990s, where commercial Black farmers have more alternative market channels for selling their agricultural produce. These market channels include informal and formal channels that offer different prices and sales services, and determine farmers' choice about which channel to use for marketing of their produce. Informal markets include an unofficial transaction between farmers and relatives or neighbours (Mmbando *et al.*, 2013: 255), whereas formal markets tend to have strict rules in terms of quality standards and safety regulations, which makes it difficult for commercial Black crop producing farmers to enter these formal markets. However, the formal market experiences relatively high transaction costs, high risks, missing markets and a lack of collective action (Mmbando *et al.*, 2013: 255). Most farmers in sub-Saharan Africa have unusual farming sites, geographically isolated and outside the reach of formal market institutions, which is the case for rural farmers for many countries. These farmers lack reliable market information and information on potential exchange partners (Ouma *et al.*, 2010: 1). The study conducted by Sartorius and Kirsten (2006: 3) revealed there are few commercial Black farmers who are engaged in the formal agribusiness value chain, such as supermarkets or agro-processors. In most cases, they experience high transaction costs, which hinders them from engaging in formal market value chains. These farmers prefer supplying traditional markets, such as

hawkers and wet/open markets (Louw *et al.*, 2008: 289). In general, there are number of factors regarded as being a hinder to market participation (Ncube, 2010: 14), such as quality levels, safety, quantity and consistency supply to the market. However, limited time and capacity to table and monitor commercial Black farmers on the part of retailers, wholesalers, market chains and other potential buyers avert the creation of contracts. Therefore, the focal point should be monitoring commercial Black farmers and market chains to achieve contract creations with the markets. Furthermore, the transformation of the global retail food system has strict statutory quality assurance requirements, which further marginalise commercial Black farmers. The agricultural sector in South Africa seeks a system that will take the needs of commercial Black farmers at heart in order for the transformation to be a success (Ncube, 2010: 14-16). The system includes access to markets, market information, market intelligence and effective farmer cooperatives. The study that was conducted by Ncube (2010: 15) identified specific factors that limit commercial Black farmers' market participation. The globalisation and vertical integration, historical legacies, and lack of adequate support service are some of the factors that were identified.

2.4.1 Globalisation and vertical integration

The globalisation of the agri-food system goes beyond a mere increase in agricultural trade (Qaim, 2017:16), it involves the international exchange of knowledge with spill-overs of agricultural technological patterns across countries. However, consumer's preferences and lifestyles are changing and becoming more comparable internationally. As technology increases, the foreign unswerving investment of agribusiness companies including multinational retailers also rise. This is observed in

many developing countries, where modern supermarkets replace traditional grocery outlets at a swift pace (Qaim, 2017: 16-17). Furthermore, the changing in consumer preferences and retail structures affects the organisation and complexity of food value chains. This calls for new standards of food quality and safety as well as closer vertical coordination and integration through contracts and certification. Moreover, a swift labelling will differentiate foods produced according to a certain environment. The social criteria, such as organic or fair-trade, is becoming more popular with food companies, retailers, and upper-income consumers, which also changes how food is produced, processed, distributed and consumed. The benefits of labelling will assist in indicating the positive or negative effect of the nutrition. Adjustment programmes are a result of the trend market-orientated reforms in developing countries (Ncube, 2010: 15), which has led to an increased integration of world markets. However, globalisation has opened world markets and marked the increased trade between countries. As a result, this trend has a negative impact on commercial Black farmers who are often at a disadvantage relative to the more established and economically viable large-scale farmers. The latter has superior access to information, agro-services and financial capital and thus can offer high volumes of quality products to potential markets, while commercial Black farmers struggle and continue as insignificant players in the market. Improved level of managed coordination influences the changes in food and agricultural markets as a whole. Different forms of vertical associations have emerged and consequently are now the dominant feature of agricultural supply chains. The industry is predominantly large vertically integrated commercial White farmers (large-scale farmers) who have integrated across the entire supply chain. Other farmers embark on a process of vertical integration whereby they would be involved at all stages of a product's processing (Ncube, 2010:15).

2.4.2 Historical legacies

South Africa is a country known to have apartheid legacies (Mthembu, 2008: 22). These apartheid policies and legislation can not be ignored as they have influence on the segregation of farmers (Mthembu, 2008: 22). This wide difference in land size and high technology utilisation was observed. Furthermore, the large-scale farming sector is capital intensive, commercial, engaged in the large-scale production and linked to global markets by pre-apartheid governance. Whereas, the commercial Black farmers were located in the former homelands, indigent and conquered by low input and high labour-intensive forms of production. After the democratic governance, there were many policy changes aimed at supporting commercial Black farmers (Okunlola, 2016: 3). These changes were mainly targeting previously disadvantaged farmers who were segregated from their own land. The land dispossession/forced removals and the Bantustan policy meant that by 1994, agriculture in South Africa was sharply divided between technologically advanced and capital-intensive forms of large-scale agriculture formerly in White areas with 84.8% of South African agricultural land (DAFF, 2014: 6). The commercial Black farming sector that was marginalised and carried out 2 million small-scale farming household concentrated in the former homelands. At that time, very few medium scale Black farmers occupied middle space between these two extremes. In the 20 years since 1994 and the transition to democracy, this glaring separation has largely persisted. Despite that 8% of large-scale farm land was transferred to black farmers through land reform there was still an unknown amount of privately owned land purchases on the open market. However, the historical division resulted in a racial separation between Black farmers. Therefore, commercial Black farmers are commonly known as small-scale, subsistence farmers or smallholder farmers, while large-scale is perceived to be white farmers who are capital-

intensive (DAFF, 2014: 6).

2.4.3 Lack of adequate support service

The study done by Nwaru (2004), noted that one of the factors that attributed to declining productivity in the agricultural sector was caused by limited access to credit. According to IFAD (2003), access to credit information, market information and other skills needed for farm business can be acquired through extension support services. The study done by Kidd *et al.*(2000: 95), revealed the importance of agricultural extension in improving agricultural markets worldwide. However, agricultural extension has been a principal responsibility of the Government for many years. Their responsibility is to offer services to farmers by adequately addressing their needs. These administrations are too inflexible and unresponsive with high costs, bringing insufficient benefits. In general, the extension is compounded with a misconception about what agricultural extension actually is. Therefore, the extension service is adversely associated with the notion of transfer of technology of top-down approach. The agricultural extension should be an open communication aimed at helping people to solve their problems as partners, but both contributing their own knowledge and capabilities (Kidd *et al.*, 2000: 95). The study done by Maponya *et al.* (2015), and Alene *et al.* (2008), found that farmers with access to extension services were more likely to participate in the market due to enhanced production capacity.

CHAPTER 3: RESEARCH MATERIALS AND METHODOLOGY

3.1 Introduction

This chapter delineates the research methodology used to collect data and analyse variables considered to influence market participation of commercial Black farmers in Gauteng Province. The chapter provides a brief description of the study area where data was collected. It also provides a brief description of sources of information used, the determination of the farmer's population, sampling technique, and data collection method, and lastly, gives a brief on how data was analysed.

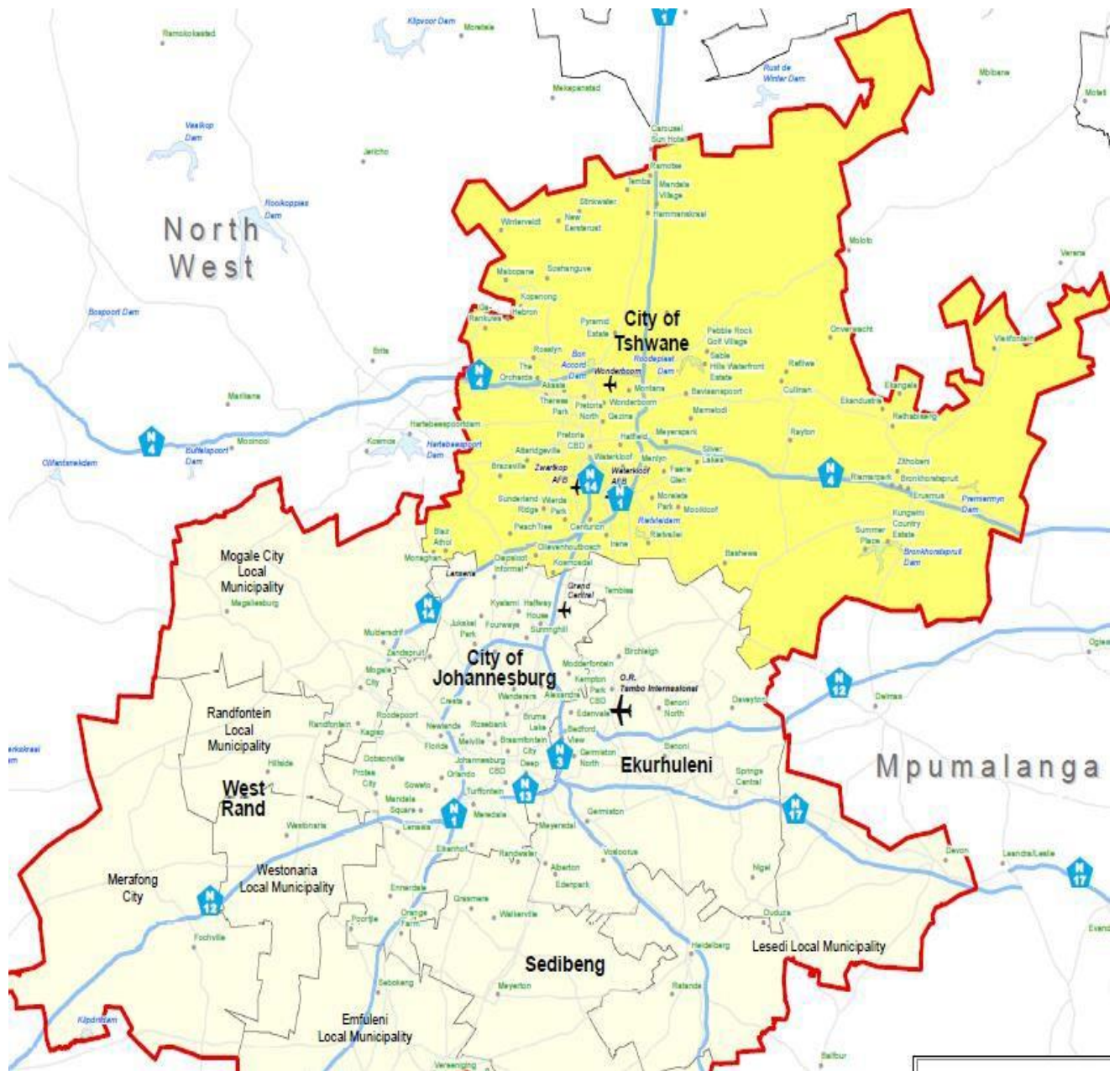
3.2 Description of the study area

This study was conducted in the Gauteng Province, which is the smallest province in South Africa, with only 1.5% of the land area, and the home of the capital, Pretoria. The province has a population of about 12.3 million, which is almost 25% of the total South African population, and it is highly urbanised in Johannesburg (Census, 2011: 3); this makes Gauteng the most overcrowded province in South Africa. The province has a well-developed road, air and rail systems, as well as information and telecommunications (Gauteng Strategic Plan, 2010-2014). Gauteng Province occupies 14% of land area and contributes 33% to the national economy (Ncube, 2014: 5) and yields 10% of the gross domestic product (GDP) of the entire African continent (Department of Agriculture, Forestry and Fisheries [DAFF], 2010: 1). Agriculture contributes 2.16% towards South Africa's GDP, and is seen as an important sector for

South Africa and Gauteng's economy. If this sector is managed correctly, it can serve a significant role in employment and rural development especially in rural areas. Agriculture is a major earner of foreign exchange. South Africa's GDP for South Africa accounts for 2.7%, of which 6% originates in Gauteng (Agriseta, 2010: 12). Furthermore, the forward and backward bond of agriculture associated with the manufacturing sector significantly enhances the economic contribution of the sector to both South Africa and Gauteng (Agriseta, 2010: 13). Gauteng has a well-developed commercial sector with many processing factories that rely on the supply of raw materials, such as livestock and horticultural products, in order to function (Ncube, 2014: 6).

The total farming income for Gauteng was R4398 million in 2010 (Ncube, 2010: 7), most of which was derived from animal sales (Statistics South Africa, 2010). The maize triangle revitalisation programme of the Gauteng Department of Agriculture and Rural Development forms a major part of the plan to assist rural people in Gauteng to provide their own food. This, in turn, forms part of a broader strategy known as Comprehensive Rural Development Strategy (CRDS). In 2011, this programme rolled out in Devon, Hekpoort, Sokhulum and Bantu-Bonke, in Gauteng. The percentage of farming output produced in Gauteng is 6% (Statistic South Africa, 2010: 5), which indicates the size of the agricultural output of this province in relation to other provinces. The agricultural sector of Gauteng is dominated by vegetable production, which is supplied to the densely populated cities that dominate the region. There is commercial farming in the southern sector of the province with the farming of cotton and groundnut, and sorghum is undertaken in areas near Bronkhorstspuit and

Heidelberg. Food processing and beverages account for nearly R13 billion of the Gauteng economy, with half of South Africa's agro-processing companies operating in the province (Statistic South Africa, 2010: 6). Fruit, dairy products, poultry and eggs are other foods produced in large volumes in the Province.



Gauteng Province where the study was conducted

Source: Google Maps

3.3 Research design, source of data and data collection methods

In this study, both quantitative and qualitative research strategies were employed. The qualitative methods accentuate the studying of things in their natural settings, and making sense of it, or interpreting phenomena in terms of meanings people bring to them. The aim of the qualitative approach was to comprehend human and social problems from any perspective. Furthermore, quantitative analysis involves descriptive analysis for the status of market participation of commercial Black farmers. Both methods were used to collect primary data using semi-structured questionnaires. Primary data refers to the data that is originally collected for the specific purpose of the investigation (Lowry, 2015). In the typology development, the study used both qualitative and quantitative methods, but only the quantitative method was used in the economic analysis.

3.3.1 Sampling approach

The target population for this study was commercial Black crop producing farmers in Gauteng Province, South Africa. A sample of 50 farmers was drawn non-randomly using a multi-stage sampling technique. The first step involved purposive selection and the second convenient sampling. The representative sample was selected through the availability of farmers and willingness to participate. The purposive selection was done in consultation with the various selected regional offices of Gauteng Province and TUT farm.

3.3.2 Sources of data

The data was collected in the form of primary data, which refers to the data that is originally collected for the specific purpose of the investigation (Lowry, 2015). The data was gathered through a household survey using semi-structured questionnaires aided by a face-to-face interview. Two research assistants were trained and used as enumerators. The questionnaire was pre-tested to evaluate the appropriateness of the design, clarity, and relevance of the questions before the data was collected on selected farmers. The appropriate adjustments were made on the pre-tested questionnaire in order to capture the relevant information related to the study objectives.

3.4 Method used in data analysis

Both Excel and Statistical Package for Social Sciences (SPSS) computer programmes were used to process the data. Descriptive analysis includes means, frequencies and standard deviation (Std. Dev).

3.4.1 Logistic regression model

In order to determine factors influencing market participation the Heckman two-stage model was used, being identified as the suitable model for such identified independent estimation. This model estimates whether or not the household participated in the market. The primary objective of using this model was to determine the relationship

between socioeconomic characteristics of commercial Black farmers and their decision to participate in the market. This will be achieved by estimating logistic models to identify characteristics that influence farmer's decision to participate in the market (Hlomendlini, 2012). The response will be used as the basis of the dependent variable in the logistic regression model.

The nature of the independent variable such as gender, level of education of the farmer, farm household size could have been classified into categories. However, such classification results in multicollinearity. The multicollinearity occurs when two or more predictors in the model are correlated and provide redundancy information about the response.

The logistic regression model, also called the Logit Model, was used for dichotomous outcome variables. The dependent variable was dichotomous where farmers either participated in the market or not. The log-odds of the outcome were modelled as a linear combination of the predictor variable.

The logit function is specified as the inverse of the "logistic" function or logistic transformed into mathematics, mostly in statistics. When the function's parameter represents a probability p , the logit function gives the log-odds or the logarithm of the odds $p/(1-p)$. The model in this study was used to estimate the factors influencing the decision to participate in the market.

The logit of number p between 1 and 0 is given by the formula:

$$P(0, 1) = P(y=1|x) = P(Z_i^* \leq \beta_1 + \beta_{2xi}) + F(\beta_1 + \beta_{2xi})$$

Where,

$P(0, 1)$ or $P(y=1|x)$ is the probability that the individual household participates in the market given the explanatory variables X_i hypothesised to affect the farmer's decision to participate in the market, and Y is the dependent variable that takes on the value of 1 if the farmer participates in the market and 0 if otherwise. Thus the model specification on the decision of whether or not to participate can be estimated as follows:

$$P(0, 1) = MRKP = \beta_0 + \beta_{GNDR} + \beta_{EdC} + \beta_{HHSZ} + \beta_{FRMRSNS} + \beta_{FRMLBR} + \beta_{FRMSZ} + \beta_{LNDWNRSH} + \beta_{FRMEXP} + \beta_{EXTNSRVCS} + \beta_{CRPPRDC} + \beta_{CRDT} + \beta_{MRKTCNTRCT}$$

Where,

$MRKP$ = is the market participation decision, which can take the value of 1 if the household participates in the market, or 0 if otherwise.

Table 3.1: Hypothetical variables: description, measurements and expected signs of variables in the participation

Variable Name	Variable Type	Variable definition and measurement	Hypothesised effect on market participation
Dependent Variable			
MRKP	Dummy	1 if the farmer participates in market, 0 if otherwise	+
Independent Variable			
GNDR	Dummy	1 if male, 0 if otherwise	+
EDC	Continuous	1 if the household has no schooling, 2= Grade 1-5, 3=Grade6-12,	+
HHSZ	Continuous	Number of people in the household	+
FRMRSNS	Dummy	1 if farming for main or additional source of income, 0 if otherwise	+
FRMLBR	Dummy	Number of hired labour working on the farm	+
FRMSZ	Continuous	Amount of land under cultivation of farm household (Ha)	+
FRMEXP	Dummy	Number of years engaged in farming	+
CRPPRDC	Dummy	1 if household produced crops, 0 if otherwise	+
CRDT	Dummy	1 if a farmer has access to credit, 0 if otherwise	+
EXTNSRVCS	Dummy	1 if a farmer has access to extension services, 0 if otherwise	+
MRKTCNTR	Dummy	1 the household has marketing contract, 0 if otherwise	+
LNDWNRSH	Dummy	1 if the household owns the land, 0 if otherwise	+

3.5 Justification for inclusion of hypothesised variables

3.5.1 Gender of the household head

The gender of the household variable was captured as a dummy variable indicating whether the farmer was a male or female. According to Mdlalose (2016: 39), women are involved in crop production whereas males are involved in livestock. Women produce crops to supplement purchased food and ensure food security for the household. Although the previous author found females produce crops for household consumption, the study done by Mmbando *et al.* (2015), found that male-headed households produce crops. The gender variable was expected to have a positive effect on market participation where the farmer will either be male or female. The study done by Musah *et al.* (2014), revealed that male-headed households would likely participate in the market.

3.5.2 Level of education of household head

The level of education was measured as a continuous variable denoting number of years spent in formal education. Education is critical for rural development, as a farmer's level of education is thought to have an effect on market participation. The household head's level education has been found to influence market participation because those with relatively more education may have better abilities to negotiate and have more information than those with relatively less education (Lubungu *et al.*, 2012: 15). The study done by Mmbando *et al.* (2015) found that market participants were more educated than non-participants. Therefore, farmers who had formal education, as

opposed to those without, were expected to participate in the market (Mdlalose, 2016: 40; Boughton *et al.*, 2007).

3.5.3 Household size

The household size variable was captured as a continuous variable, indicating the number of members who were directly dependent on the household. A larger household may have more family labour for production compared to a smaller one (Moono, 2015: 32), however a large household could reduce the marketable surplus to meet household consumption needs (Martey *et al.*, 2012: 2136). The study conducted by Siziba *et al.* (2011: 189), found that household size influences the decision of a farmer to participate in the market.

3.5.4 Farm size

The farm size was measured in hectares indicating the total land allocated for farming. It was captured as a continuous variable. Land is an important factor in production, and ownership of land is crucial for households to engage in production. Jagwe (2011: 67), found that the size of land owned by a household influenced the farmer's decision to participate in the market. The study conducted by Komarek (2009), Osmani and Hossain (2015), has found that larger size of land holding, the more likely the participation in the market.

3.5.5 Farm labour

The farm labour variable was captured as a dummy variable indicating whether a farmer used a farm labour or not. The farm labour is expected to have effect on market participation. This means that farmers who have access to farm labour are more likely to participate in the market.

3.5.6 Farming reasons

The farming reasons variable was captured as a dummy variable indicating whether or not the farmer was farming to generate main or additional source of income. This variable was expected to influence market participation, as generating monetary income increased the likelihood of the household to participate in the market. This variable is captured for the first time. According to Koech *et al.* (2015: 81), farming reasons influence the farmer's decision to participate in the market.

3.5.7 Farming Experience

Farming experience was measured in years, indicating the number of years the farmer had been involved with farming. Farmers who have more farming experience are said to have more experience in marketing agricultural products (Mdlalose, 2016: 40). The experience enables the farmer's to communicate better with the buyers and have a better understanding of market needs.

3.5.8 Crop production

The crop production variable was captured as a dummy, indicating whether the farmer produced crops or not. This variable was reported for the first time. The increase in the production of crops increases the likelihood of the household to participate in the market.

3.5.9 Credit

Access to credit was captured as a dummy variable, indicating whether the farmer had access to credit or not. Access to credit can assist farmers to improve their farm business (Mdlalose, 2016: 41). However, credit accessibility is scarce in rural areas. This variable was measured by determining the farmer's access to credit or not. The study conducted by Olwande and Mathenge (2011: 26) found households that had access to credit had effect on market participation compared to those who did not.

3.5.10 Land ownership

Land ownership variable was captured as a dummy, indicating whether or not the farmer owned the land. Land ownership could improve the probability of a farmer's market participation (Siziba *et al.*, 2010: 190). The farms that have title deeds are more likely to be improved by owners and by so doing, increase the chance to participate in the market.

3.5.11 Extension

The extension service variable was measured as a dummy variable, indicating whether a farmer had access to extension services or not. Farmers who have access to extension services have a better understanding of new technologies, such as better seed varieties and other better production practices, which increases their likelihood to produce more and participate in the market (Mdlalose, 2016: 40). Furthermore, they may also have increased access to market information on the output price and available markets. The studies conducted by Siziba *et al.* (2010: 190) and Maponya *et al.* (2015: 7) found that access to extension influenced market participation.

3.5.12 Marketing contracts

The marketing contract variable was measured as a dummy variable, indicating whether the farmer had marketing contracts or not. Farmers that have marketing contracts are more likely to participate in the market.

3.6 Summary

The model specification will make it possible to determine factors that influence market participation decision to farmers. Furthermore, the hypothesis proposed in Chapter 1 will be tested with the results of the analyses presented in the next chapters.

CHAPTER4: CHARACTERISTICS OF COMMERCIAL BLACK FARMERS IN GAUTENG PROVINCE

4.1 Introduction

This chapter aims to provide some insight into the characteristics of commercial Black farmers in Gauteng Province. The result in this chapter is derived from descriptive analysis of the data collected, as explained in Chapter 3. This chapter will cover the demographic characteristic, which are indicated in section 4.2, farm characteristics are indicated in 4.3, institutional support service characteristics will be indicated in 4.4, and market information characteristics will be indicated in 4.5. The results are in a tabular form and charts and all are interpreted. The total sample size was 50 commercial Black farmers.

4.2 Demographic and socio-economic characteristics

This sub-section presents the demographic and socio-economic features of 50 sampled farmers. This feature clearly portrays the diverse background of the surveyed farmers and their impact on the descriptive, statistical as well as economic results. The household characteristics influence the household's economic behavior and also affect market participation decision. The demographic characteristic of households is necessary when analysing economic data because such factors influence the economic behaviour of the household. Therefore, it is relevant to include household demographic traits in analysing factors influencing farmers' decisions in market participation.

4.2.1 Gender of the household's head

Figure 4.1 indicates that the majority of the participants were mostly females, with 59%, and males 41%. Most female respondents stated they had ventured into crop production farming because they were unemployed and a few were retired.

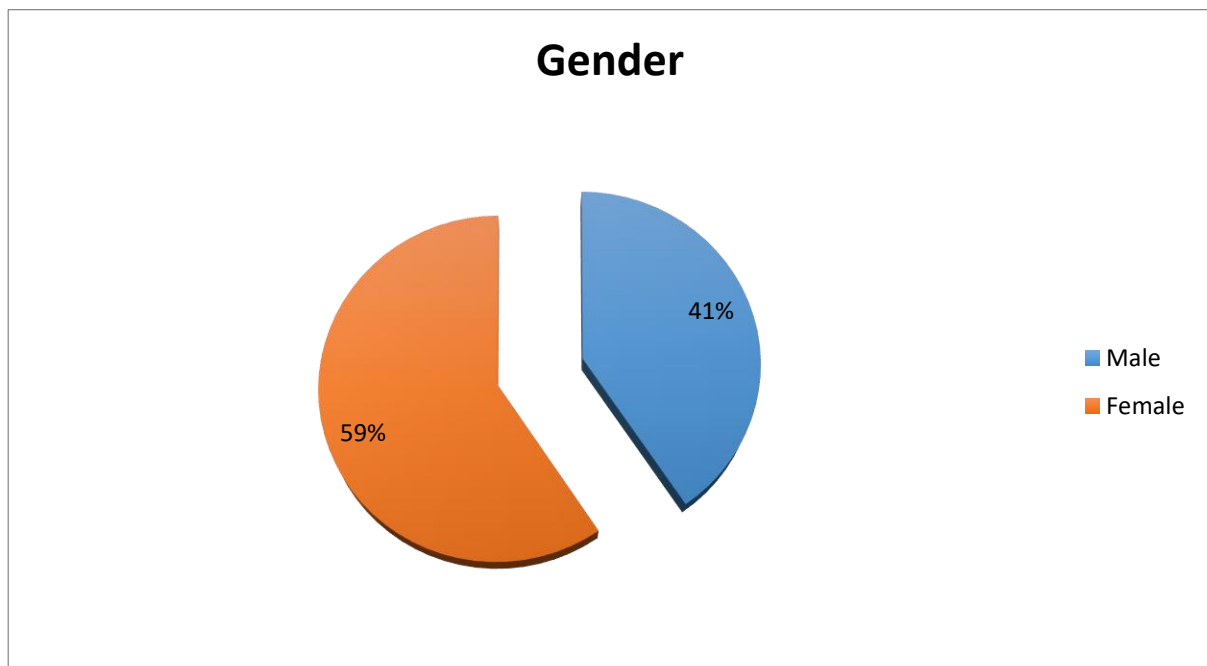


Figure 4.1: Gender of the household's head

4.3 Level of education

Figure 4.2 represents the level of education in seven categories, which were no schooling, has grade 1 to 5, grade 6 to 12, 3-year diploma, 4-year degree, Master's degree and PhD degree. The results show that 4% of the participants had no schooling, 10% had education between grade 1 to 5, 40% had a three year diploma,

6% had a 3 year degree, 8% had a four year degree, 4% had a Master's degree and 2% had a PhD.

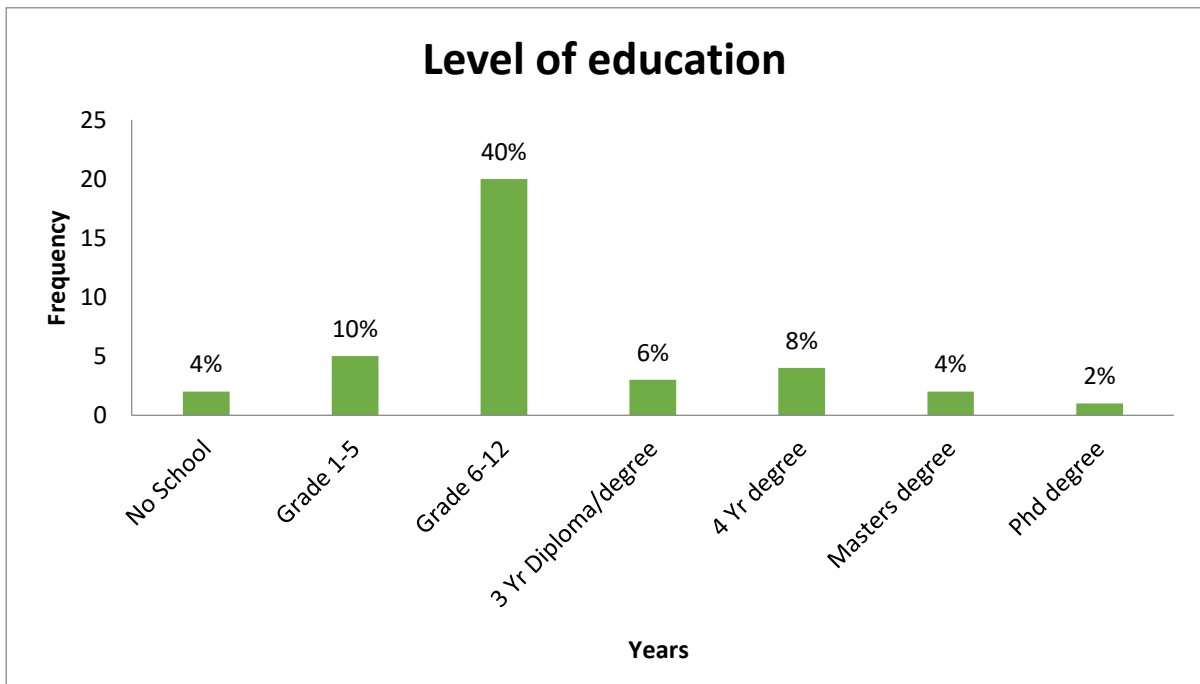


Figure 4.2: Household's head level of education

4.4 Household size, farming experience and farm size continuous variables

Table 4.1 indicates that household size variable has a mean value of 4.5 and standard deviation of 5.6 of the surveyed farmers. Farming experience variable has a mean value of 10 and standard deviation of 11.5. Farm size has a mean value of 8.3 and standard deviation of 5.7 of the surveyed farmers.

Table 4.1: Household size, farming experience and farm size presented as mean variable

Variable	N	Min	Max	Mean	Std. Dev
Household size	50	1	6	4.5	5.6
Farming Experience	50	1	22	10	11.5
Farm size	50	0.05	100	8.3	5.7

4.5 Farming reasons

The results in Table 4.2 indicate that 100% of the sampled farmers are engaged in farming just to generate income.

Table 4.2: Farming reasons for the farm household

Farming reasons	Frequency	Percent (%)
To generate main or additional monetary income	50	100
To farm for household main or additional source of food	0	0
Total	50	100

4.6 Farm labour

Figure 4.3 shows that 70% of the participants use farm labour, whereas 30% do not.

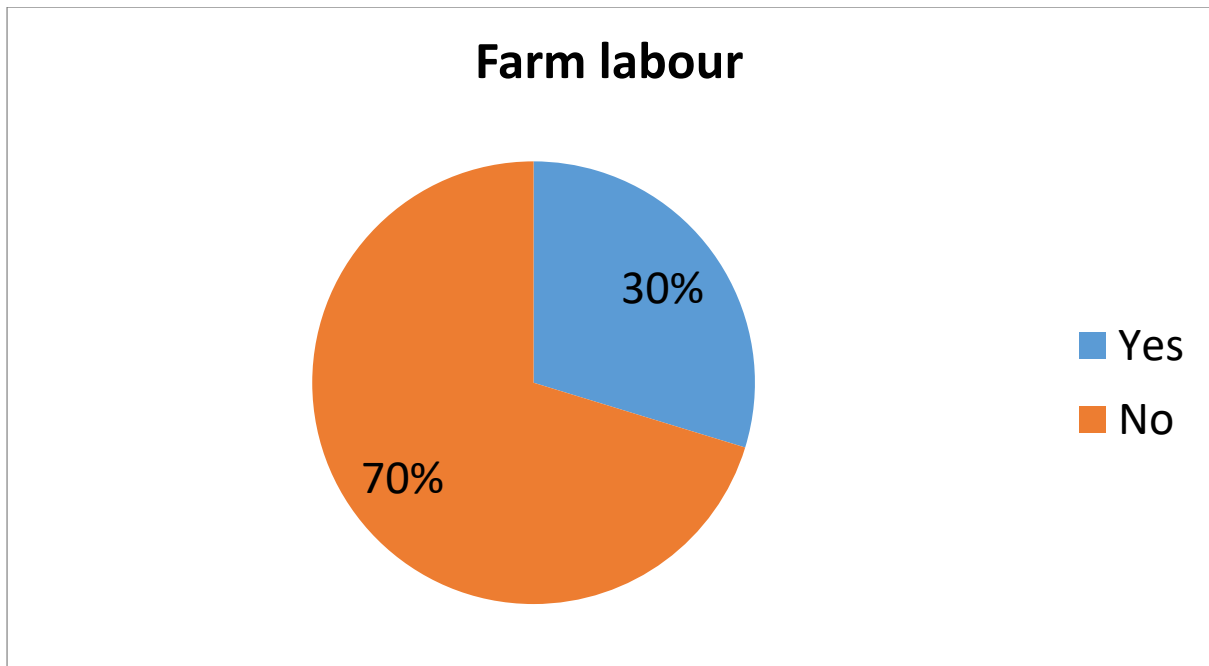


Figure 4.3: Farm labour of the farm household

4.7 Crop production

The results in Table 4.3, indicate that spinach was the major crop produced with 50% of the participants interviewed, followed by beetroot with 34%, cabbage 24%, tomato 22% and green pepper 18%.

Table 4.3: Crops planted by farm household

Crop planted	Frequency	Percentage of farmers (%)
Spinach	25	50
Beetroot	17	34
Onions	12	24
Cabbage	12	24
Tomato	11	22
Green peppers	9	18
Carrots	8	16
Chinese spinach	6	12
Green beans	5	10
Chillies	4	8
Oranges	4	8
Butternut	4	8
Lettuce	4	8
Cucumber	3	6
Maize	3	6
Pumpkin	3	6
Collard green	3	6
Baby marrow	2	4
Potato	2	4
Watermelon	1	2
Turnip	1	2
Rubber	1	2
Spring onions	1	2
Yellow peppers	1	2
Broccoli	1	2
Basil	1	2
Rocket	1	2
Coriander	1	2
Fenugreek	1	2
Brinjals	1	2
Herb squash	1	2
Sweet potatoes	1	2
Lucerne	1	2
Grass	1	2

Ranked according to most popular crop

4.8 Land ownership

Figure 4.4 shows that 59% of the participants were the legal owners of the land and 41% were not, being given permission to occupy (PTO).

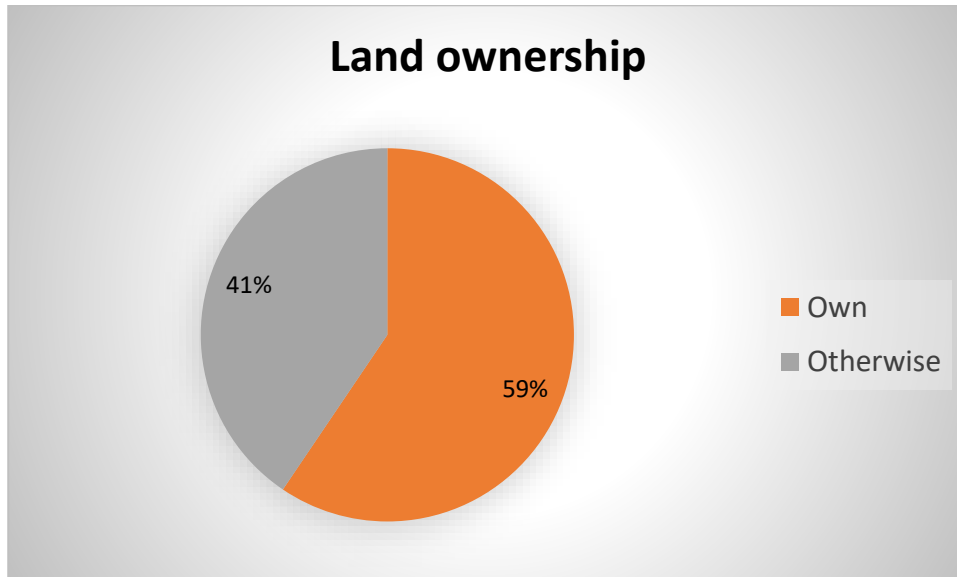


Figure 4.4: Land Ownership

4.9 Credit access

Figure 4.5 indicates that 5% of the participants receive credit as loans through loan institutions and 95% of the participants had no credit.

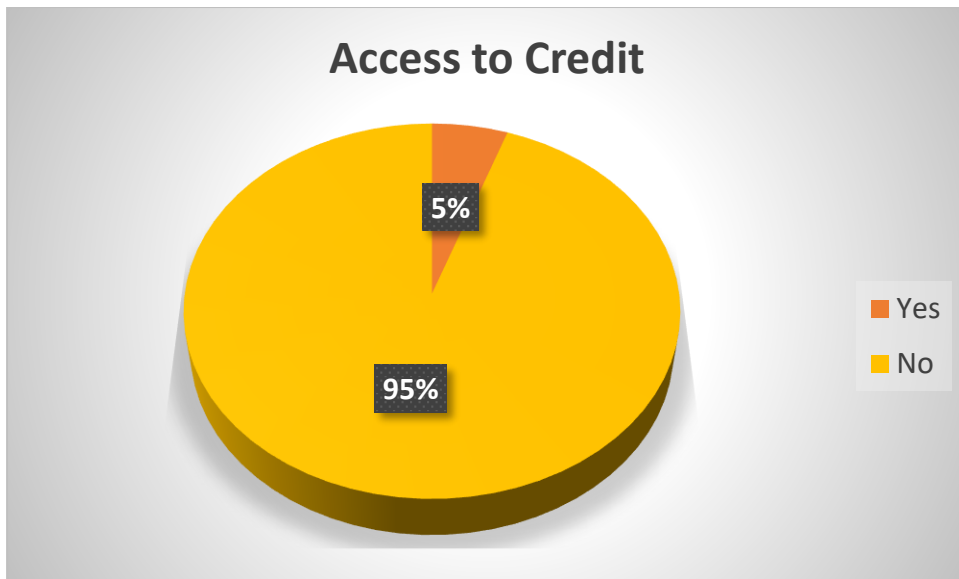


Figure 4.5: Access to credit

4.10 Access to extension service

The results shown in Figure 4.6 indicate that 95% of the participants had access to extension support services, while 5% had no access.

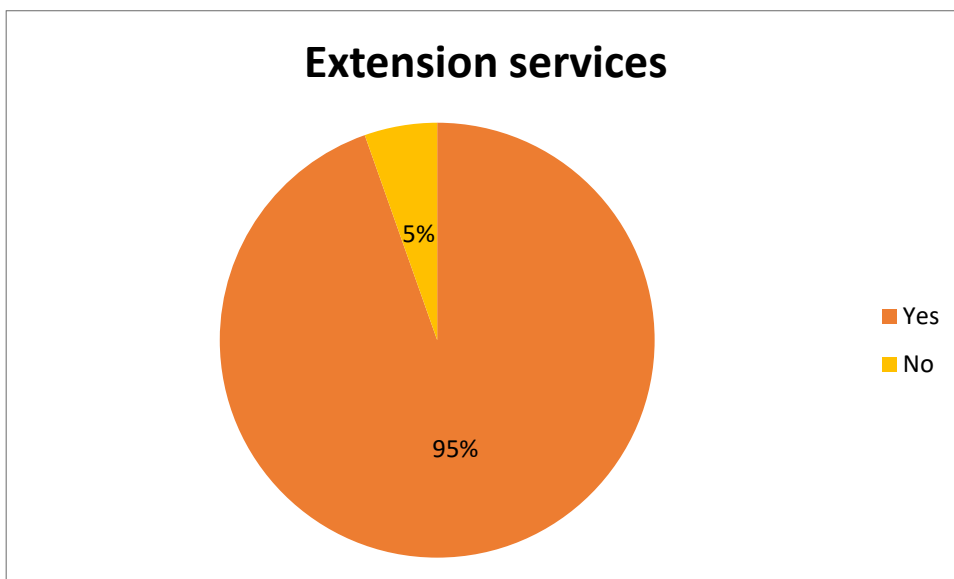


Figure 4.6: Extension services

4.11 Marketing contract

Figure 4.7 indicates that 51% of the participants had market contracts with the market they supplied with their products, and 49% had no contracts.

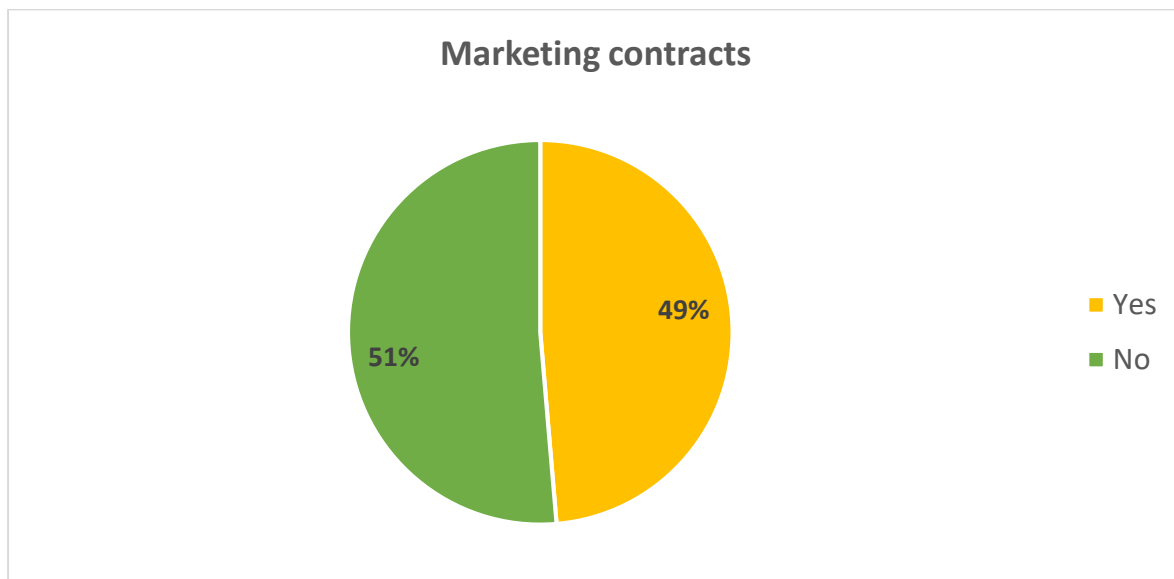


Figure 4.7: marketing contracts

4.12 Summary

This chapter has given a general overview of the demographic characteristics of commercial Black farmers in Gauteng and highlighted the environment in which they operate. This information has been presented in categories. Understanding socio-economic variables that matter in determining factors that influence market participation can be more informed and better targeted towards tailor-made farm support programmes. The next chapter presents a more detailed analysis of the data

in the study. Furthermore, the chapter limited the participants for inclusion in the data analysis.

CHAPTER 5: MARKET PARTICIPATION MEASUREMENT

5.1 Introduction

This chapter presents the results from the analytical procedure which is probit regression. The previous chapter laid a foundation for the analysis chapter by outlining the basic farmer and farm characteristics that were hypothesised to affect market participation. The decision of a farmer to participate in a market was the binary choice because of its dichotomous nature of the dependent variable whether to participate or not to participate. In this study, the decision not to participate was not directly observed, but the actions were observed through the choices the farmers made. The probit estimation provides each explanatory variable with a coefficient value, which measures its contribution to the variation in the dependent variable. The dependent variables were derived from farmer demographics, farm characteristics, marketing and institutional aspects and were analysed to estimate their effects on the independent variable, market choice to participate.

5.2 Factor affecting the market participation of commercial black farmers

This chapter empirically tests the significance of farmer and farm characteristics that are hypothesised to have the largest potential to influence commercial Black farmer's decision to participate in the markets. To analyse the problem probit regression, the double-hurdle method was employed to estimate the determinants of the probability to participate in the market. There were 12 explanatory variables identified. The

explanatory variables hypothesised to influence the probability decision were gender, education level, farming reasons, farm labour, farm size, land ownership, farming experience, extension services, crop production, access to credit, and marketing contract of which three were continuous and 10 were discrete variables.

However, prior final probit regression, both continuous and discrete explanatory variables needed to be checked for the existence of multicollinearity using the Variance Inflation Factor (VIF) and the contingency coefficient (CC) methods respectively. According to the results presented in Tables 5.1 and 5.2, the test results suggested that there was no serious multicollinearity problem in the model, hence, there was no strong association among the hypothesised explanatory variables (VIF values were less than 10 and CC values were less than 0.75). Therefore, all the proposed potential explanatory variables were included in the final probit regression.

According to Akinwande *et al.* (2015: 756), a VIF value greater than 10 indicates a severe collinearity among regressors. Similarly, the Contingency Coefficient (CC) test uses a correlation coefficient of 0.75 as its tolerable critical value in which a CC value more than 0.75 indicates a collinearity problem. The test estimates showed there was no serious correlation among the proposed explanatory variables, thus, all of the proposed explanatory variables were included in the final model estimation.

Table 5.1 Variance inflation factor (VIF) test result for continuous regressors

Variable	VIF	1/VIF
FRMSZ	1,03	0,975044
HHSZ	1,02	0,976755
FRMREXP	1,01	0,989768
Mean VIF	1,02	

Table 5.2: Contingency coefficient test for discrete regressor variables

	GNDR	EDC	FRMRSNS	FRMTYP	FMLLBR	LNDWNRSH	EXTSRVCS	CRPPRDC	CRDT	MRKTCNTRCT
GNDR	1									
EDC	-0,0183	1								
FRMRSNS	0,0764	0,0178	1							
FRMTYP	-0,0217	-0,2766	0,0764	1						
FMLLBR	-0,1296	0,0512	-0,2133	-0,1296	1					
LNDWNRSH	-0,0619	0,0055	0,1713	0,0237	-0,114	1				
EXTNSRVCS	0,3525	0,0178	-0,119	0,0764	-0,0591	-0,1063	1			
CRPPRDC	-0,1101	-0,0105	0,0438	-0,0125	0,0348	0,0626	-0,2727	1		
CRDT	-0,0096	0,0682	0,1563	-0,0096	0,0269	0,0485	0,1563	-0,1354	1	
MRKTCNTRCT	0,0139	-0,1922	0,0771	0,1069	-0,1947	0,3046	-0,2247	0,3814	-0,2002	1

This section presents economic analysis results performed to identify the household-level socio-economic factors that determine the decision of commercial Black farmers to participate or not to participate in the market. The probit regression model was run to find out why some farm households participated in the market and others did not. In probit regression the dependent variable is binary, which means it assumes only two values: 1 if the household participate in the market and 0 if not. Households were considered to be market participants if they sold crops worth any value above zero and non-participants if otherwise.

Several demographic and socio-economic variables believed to have an influence on the decision to participate in the market are included in this analysis based on the findings in the literature. The explanatory variables that are expected to cause variation in the dependent variable were age, gender, household size, farming experience, farm labour, farm size, land ownership, crop production, credit, and market contract. The Wald test indicates correlation is significant ($p=0.0005$). The estimated probability was greater than the Chi-square value (Probability > Chi-square = 0.0000). This denotes that all model parameters were jointly significant in explaining the dependent variables at less than a 1% significance level, indicating the goodness-of-fit of the model. The binary results on participating in the market are shown in Table 5.3.

The probit regression analysis in Table 5.3 disclosed that the crop production and access to credit positively and significantly influenced farmer's decision to participate in the market with selling of crops. Conversely, farm labour, access to extension services

and marketing contracts had a negative impact on the farmer's decision to participate in the market.

The probit estimation result in Table 5.3 revealed that the crop production was statistically significant at 1% level, and had a positive influence on the decision for market participation of the farm household. This meant that households with a high level of crop production tended to participate in the market compared to those with a lower production level. The marginal effect indicated that commercial Black farmers will participate in the market if the total value of crop production was given at 1.216%; this means that if crop production of a farmer increased by 1000 at the mean value, then the likelihood of participation in the market increased by 12.16%.

The probit estimation result showed that access to credit had a positive effect, at a significant level of 1%, on the decision to participate in the market. The sign of the coefficient was positive and meant that a farmer had access to credit; it increased the likelihood that the farmer would participate in the market. This indicates that households that have access to credit have the ability to participate in the market compared to those who do not. This result concurs with that of Mbitsemunda and Karangwa (2017: 107), and Momayi *et al.* (2016: 76), who found positive significance in this variable. The marginal effect indicated that access to credit increased the likelihood by 52.4% that the farmer would participate in the market.

The farm labour variable was found to be negative, with a significant level of 1%. This implies that farmers who do not have farm labours are less likely to participate in the market. This result differs from the result of Osmani and Hossain (2015: 173), who found a positive significant. The marginal effect report of the probit regression indicated 10.91%, which meant that the likelihood to participate in the market would decrease by 1.091% in the absence of farm labour.

The extension service was found to have a negative influence on market participation at a level of 5%. This implied farmers do not have access to information, which inversely influences participation in the market. This result concurred with that of Moloji (2008:59) who found similar results. However, the study conducted by Mussema (2012: 105) had different results, as they found a positive sign towards market participation. The marginal effect report was 0.314, which meant that the likelihood of the household participating in the market would decrease by 31.4% in the absence of extension services.

The marketing contract variable was found to have a negative influence with a significant level of 1%. This implied that farmers who did not have marketing contracts participated less in the market because they did not have stable markets, and those that had marketing contracts tended to increase their production in order to keep the market supply requirements. This result differs with the result of the study conducted by Momayi *et al.* (2016: 43), who found marketing had a positive influence in market

participation. The marginal effect report of the probit regression indicated there was a probability of 14.68% that a farmer would participate in the market if they had secure marketing contracts.

Contrary to earlier expectations, the variable gender, education level of a farmer, household size, and land ownership were found to have no significant impact on the decision to participate in the market. A possible explanation to this might be that young educated households were motivated by occupation rather than the farming business.

Table 5.3: Probit estimates for determinants and marginal effects on market participation

Variable	Coef.	Std. Err.	Z	P>z	Marginal Effects
GNDR	-0.011	0.811	-0.01	0.989	-0.001
EDC	-0.603	0.682	-0.89	0.376	-0.067
HHSZ	-0.793	0.745	-1.07	0.287	-0.089
FRMRSN	0.885	0.934	0.95	0.344	0.099
FRMLBR	-9.759	2.108	-4.63	0.000***	-1.091
FRMSZ	0.216	0.327	0.66	0.508	0.024
LNDOWNRSH	-0.801	0.699	-1.15	0.252	-0.090
FRMEXP	-0.003	0.045	-0.06	0.955	0.000
EXTSRVS	-2.807	0.991	-2.83	0.005***	-0.314
CRPPRDC	10.877	2.608	4.17	0.000***	1.216
CRDT	4.692	0.845	5.55	0.000***	0.524
MRKTCNTRCT	-13.137	2.82	-4.66	0.000***	-1.468
CONSTANT	-0.156	3.405	-0.05	0.964	
Log pseudo likelihood	-9.676367				
	2099.97				
Wald chi ² (13)	0.000				

5.3 Summary

This chapter focused on the empirical analysis of socio-economic factors influencing market participation of commercial Black farmers. The probit regression model (double-hurdle model) was used. There was a probability to participate in the market for the variable crop production, access to credit, farm labour, extension support services, and marketing contract.

Chapter 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter reviews key findings for this study and draws some of the policy recommendations from the empirical results and also puts forward recommendations for further research. This chapter has five sections. The summary of the study is in Section 6.2, section 6.3 presents key findings of the study, section 6.4 presents the conclusions drawn from the key findings, section 6.5 presents the recommendations, and lastly, section 6.6 recommends future studies.

6.2 Summary

Market participation is important in improving production systems and increasing incomes for commercial Black farmers (Jagwe *et al.*, 2010: 305). The study findings are important in setting up appropriate interventions to enable rural commercial Black farmers in the province to actively participate in the market. The findings will give policymakers an idea of which factors can have the greatest impact on market participation in the Gauteng Province for the purpose of intervention prioritisation.

This research anticipated answering the following questions:

- What are the socio-economic factors that influence market participation?
- What are the socio-economic factors that describe the characteristics of commercial Black farmers in Gauteng Province of South Africa?

Chapter 1 laid a brief background of the market participation and discussed the problem statement and the objectives of the study. The hypothesis for the study was derived. The general objective of the study was to identify and compare the socioeconomic characteristics that determine factors influencing market participation of commercial Black farmers in Gauteng Province of South Africa. The first specific objective was to describe the socio-economic characteristics of commercial Black farmers in Gauteng. The second specific objective was to determine factors that influenced market participation. The research hypothesis of this study was that the socio-economic factors influenced market participation of Black farmers in Gauteng Province.

Chapter 2 reviewed the theoretical and empirical literature on market participation, both in South Africa and internationally. Factors such as the household head's level of education, gender, household size, farm size, family labour, farming reasons, farm type, access to credit, access to extension support services, market contracts and farmers experience have an impact on the market participation of commercial Black farmers. The general hypothesis was that the socio-economic factors influenced market participation. This hypothesis was tested using the logistic regression model in Chapter 5.

Chapter 3 reviewed the methodologies used in the study for analysis. Descriptive statistics were used to differentiate the socio-economic factors that influenced

market participation of commercial Black farmers in Gauteng Province, South Africa. Then the results of the descriptive analysis were reported in Chapter 4. Chapter 5 reported the findings of the determinants analysis of socio-economic factors influencing market participation.

6.3 Key findings

The explanatory variables that were expected to cause variation in the dependent variable were age, gender, household size, farming experience, family labour, farm size, farm type, land ownership, crop production, credit, and market contract.

Results showed that the production of crops was the dominant activity and was carried out mainly by middle-aged farmers. The findings by Sumari *et al.* (2018:377), tend to differ from results in this study, as the authors found that crop farming was dominated by male farmers. In this study, the majority of commercial Black farmers preferred informal market outlets. For example, Farm Gate was the most common outlet because of regular and timely payments from buyers. It was predominant because it saved time and cost as buyers collected vegetables from the farm. The high-value market had very few participants because of their strict quality requirements, and consistency in supply.

The results of the logistic regression model indicated that some of the variables were found to be positively significant, while others were negatively significant and some non-significant, but they still contributed to market participation. The production factors that were considered by the study were farming reasons, farm size, farm type, crop production and access to credit. Some of these variables showed a positive influence towards market participation in Gauteng Province. The factors that were positively significant were crop production and credit access among commercial Black farmers in Gauteng Province. The major variables that affected a farmer's decision to participate in the market were farm labour, access to extension services, and marketing contract.

The farm labour variable was found to negatively affect the decision of farmers to participate in the market. This could have been because farmers preferred to use family labour than hired labour. The hiring of farm employees decreases the profit that can be saved if family labour was used. Again, the money that could be saved on labour cost could be utilised to develop the farms and increase productivity so as to increase chances to participate in the market. The study however suggested that farm households would rather use hired labour because they are motivated by incentives that they will receive in providing work services to the farm.

Access to extension services were found to negatively affect the decision to participate in the market. The extension support services should be central to

commercial Black farmers. The insufficient provision of support hinders the growth of commercial Black farmers in terms of market participation.

Marketing contracts were found to affect the participation decision of farmers negatively, probably because farmers were having difficulty in meeting the pool of supply to the market. Therefore, it is important to introduce cooperative selling methods, so that farmers can secure market contracts with markets. This can be done by farmers with the same or similar enterprises. The farmers must be encouraged to organise themselves to form cooperatives for selling purposes. To cut conflicts amongst members of the group, the individual would self-manage his/her daily farm activities and only combine the produce to the market to increase the pool of supply for the markets. The role of extension staff should be to advise farmers on how to form cooperatives and to provide more strategies securing market contracts.

The results of this study showed that socio-economic characteristics influenced market participation for commercial Black farmers. On that basis, this study accepts the hypothesis that is made in Chapter 1, which hypothesised that socioeconomic factors influenced market participation by commercial Black farmers in Gauteng Province.

6.4 Recommendations

Based on the empirical results of this study, recommendations relating to farm labour, access to extension support services, marketing contracts are made for improving market participation of commercial Black farmers.

6.4.1 Farm labour

Farm labour can be improved by utilising family labour, which will assist in saving costs of labour and the profit saved can be used in developing the farm production and increase market participation. This strategy does not limit the hiring of labour if the farm business operation is healthy in terms of profit.

6.4.2 Extension services

The extension support services should be central to commercial Black farmers, as insufficient provision of support will hinder their growth. Furthermore, the extension officers should specialise in certain fields within the agricultural industry, i.e., livestock extension officer, crop production extension officer, marketing extension officer, etc. The current system, whereby the extension officers are expected to be 'jack of all trades' and to serve a large number of farmers, does not do justice to the agricultural industry, especially to commercial Black farmers. Therefore, there is a

need for a comprehensive approach to providing support services to such farmers. The support must be provided collectively in relation to production facilities, technical skills, credit access, marketing and marketing information, infrastructural support and so on. Furthermore, provision of agricultural marketing extensions can enhance the formation of marketing structures, which will assist in cutting down the transaction costs incurred by the farmers. This kind of support should be given with the aim of empowering the farmers and making them independent entrepreneurs.

6.4.3 Marketing contracts

Marketing contracts were found to negatively affect the participation decisions of farmers because they had difficulty in meeting the pool of supply to the market or lacked negotiation skills to negotiate the price with the markets. To maximise chances for farmers to participate in the market, farmers needed to be introduced in technologies that would provide high and quality yields.

6.5 Conclusion

In conclusion, the study revealed that factors such as crop production and access to credit positively influenced market participation of commercial Black farming enterprises in Gauteng Province. The study further revealed a negative relationship between farm labour, extension services, marketing contracts and market

participation, implying that the use of such does influence farmers and their participation in the market. Therefore, the results showed there was a possible relationship indicator between the aforementioned.

6.6 Recommendations for further research

The main objective of this study was to identify the socio-economic factors that influenced the market participation of commercial Black farmers. Based on the fact that this study was focused on a small sample size, there is a need for a similar study to focus on a larger sample and include a number of provinces.

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APPENDICES

Appendix A: Questionnaire

Research on market participation of commercial Black farmers in Gauteng Province, South Africa. Researcher: Cecelia Mabonga Shandu. Tshwane University of Technology, Pretoria campus: Department of Crop Science

Name of respondent

Name of the farm.....

Address of respondent.....

Tel.....

Cell.....

City/Town.....

Municipality.....

Language spoken during interview.....

Date of interview.....

SECTION A: Demographic information

1.1 Gender: Male Female

1.2 Marital Status: Single Married Divorced Widowed

1.3 What is your Age? (Years).....

1.4 Please tick your Ethnic Group below

African Coloured Indian Other

1.5 What is your level of education?.....

1.6 How many people are staying in this household (number).....

1.7 What are your main reasons for your participation in farming activities?

Main source of income Additional source of income

Main source of household food Additional source of household food

1.8 What type of other income does your household receives?

Salary Grants Non-farm business

Remittances Other

1.9 What is your home language.....

SECTION B: Farm characteristics

2.1 What is the size of your farm? (ha).....

2.2 Please on appropriate box on land ownership

Own Rent Commonage

Project Family owned other

2.3 Please indicate the business type of ownership of the farm. Is this farm owned by: (Please tick below)?

Individual project Coop

Family owned Other

2.3.1 If this is a project or coop, how many beneficiaries.....

2.4 How many years is your farm business has been running(in years)?

.....

2.5 Please tick. What is your primary enterprise?

Crop farming Livestock farming

2.7 Indicate your secondary enterprise by ticking relevant box.

Crop farming Livestock farming

2.8 List all farm assets you owned in your farm.....

2.9 Are there any family members who are providing labour in the farm? Yes No

2.9.1 If yes, how many family members are providing labour in your farm?.....

2.10 Do you use hired labour in your farm? Yes No

2.10.1 If yes, how many were hired? (Number).....

SECTION C: Production and marketing

3.1 Did you produce any crops in various seasons on the farm during the financial year May 2015 to June 2016? Yes No

3.2 What crops did you produced?.....

3.2.1 How much did you spend on inputs? (R).....

3.2.2 How much was harvested? (KG/Ha).....

3.2.3 For how much did you sell it? (R/KG).....

3.2.4 Where did you sell your crop or produce?.....

3.2.5 How much is the distance from the farm to the market? (KM).....

3.2.6 Do you have contractual arrangements with your market? Yes No

3.3 Did you produce any livestock for various seasons not later than June 2016?

Tick appropriate answer. Yes No

3.2.1 How much did you produce?.....

3.2.2 Where did you sell your livestock or product?.....

3.2.3 How much did you sell it for?.....

3.2.4 Do you have contractual agreement with the market you used? Yes No

3.3 Do you keep records for all your farming activities? Yes No

3.3.1 If yes, what types of records do you keep.....

SECTION D: Support services

4.1 Do you have access to credit? Yes No

4.1.2 If yes, from where did you get it?.....

4.2 How much did you get? (R).....

4.3 Do you have access to agricultural extension?.....

4.2 Please list your five biggest challenges on your farm.....

4.3 Does your farm belong to any association? Yes No

SECTION E: Goals and aspiration

5.1 Considering your farming enterprise as it was during May 2015 to June 2016, which of the following statements best reflects your aspiration for your farming enterprise? **Note to enumerator:** Place cross in option that was selected

Option	Selection
I want to quit farming	
I want to scale down my farming enterprise	
I want to keep my farming enterprise the way it is now	
I want to grow my farming enterprise	