PROSPECTS OF COMMERCIALIZATION AMONG SMALL SCALE POTATO FARMERS IN BIZANA

by

CHRISTOPHER UGOCHUKWU NWAFOR

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Central University of Technology (CUT),

Bloemfontein, Free State

South Africa

Supervisor: Professor C. van der Westhuizen

Co-Supervisor: Professor P.J. Fourie

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DECLARATION

I, Christopher Ugochukwu Nwafor (Student Number 213000881) declare that this dissertation hereby submitted for the M.Tech. Degree in Agricultural Management, at the Central University of Technology is my independent work, and has not previously been submitted, either wholly or part thereof, to any other academic institution for the award of any qualification.

……. …….../……/……

Student's signature Date

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We always save the best for last. While acknowledging God's providence, my dearest wife Ifeoma Chinyelu, whose support, encouragement and loving effort in caring for our kids, allowed me the opportunity to attempt completion.

DEDICATION

To my kids, Nneka and Chibuikem

and

Capt. Mrs. I.F. Nwafor (Rtd), our golden mother.

ABSTRACT

The study examined the potential for commercialization among selected small-scale potato farmers. Fifty eight farmers in Mbizana were purposively sampled for the study, which reviewed production challenges, investigated the potato supply market in the area and also estimated the farmer's level of commercialization.

Structured questionnaires were used to obtain information from the farmers and potato sellers, key agricultural stakeholders in the area were interviewed, and reports from published materials consulted. The study utilized the household commercialization index (HCI) and an ordinary least square (OLS) regression model as its main analytical tool, while using descriptive statistics produced from the SPSS (Version 15.0) statistical software to characterize the respondents and their production and marketing features.

The study's finding show that the farmers are producing on small sized farms allocated by community leaders, rely on rain-fed cropping systems and do not have access to formal credit for farming. While few of the farmers are still subsistent producers, most of the respondents sold surpluses through informal market channels, as bottlenecks existed in accessing formal markets.

Average commercialization level among the respondents was estimated to be 0.48, indicating that most of the farmers were below the half-way point to a fully commercialized status. Access to credit, farm size and years of farming experience were determined to be significant factors affecting commercialization among the respondents.

Though there is some support from a number of stakeholders, the study recommends increased targeted support, through interventions that improve production practices, access to credit and markets.

Keywords: small-scale farmer, commercialization, constraints, credit, informal markets

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ACRONYMS AND ABBREVIATIONS

ADB	Agricultural Development Bank
ANC	African National Congress
ANDM	Alfred Nzo District Municipality
AP	Anchor Project
ARC	Agricultural Research Council
AgriBEE	Black Economic Empowerment in Agriculture
AgriSA	South African Agriculture Chamber
BBBEE	Broad Based Black Economic Empowerment
CCI	Crop Commercialization Index
CUT	Central University of Technology
CSR	Corporate Social Responsibility
DAFF	Department of Agriculture, Forestry and Fisheries
DBSA	Development Bank of Southern Africa
DfID	Department for International Development, UK
DRDAR	Department of Rural Development and Agrarian Reform
ECRDA	Eastern Cape Rural Development Agency
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
HCI	Household Commercialization Index
IFAD	International Fund for Agricultural Development
LAN	Limestone Ammonium Nitrate
LED	Local Economic Development
MAFISA	Micro Agricultural Finance Institution of South Africa
MDG	Millennium Development Goals
MLM	Mbizana Local Municipality
NAMC	National Agricultural Marketing Council
NDA	National Department of Agriculture
NDP	National Development Plan

NGO	Non-governmental organization
NPC	National Planning Commission
NRF	National Research Foundation
OLS	Ordinary Least Square
ORTDM	Oliver Reginald Tambo District Municipality
PRA	Participatory Rural Appraisal
PROKON	Product Control for Agriculture
PSA	Potatoes South Africa
RDC	Regional Distribution Centre
SACU	South African Customs Union
SADC	Southern Africa Development Community
SEDA	Small Enterprise Development Agency
SGDP	Small Grower Development Programme
SPSS	Strategic Plan for Smallholder Support
UNDESA	United Nations Department for Economic and Social Affairs
VIF	Variance Inflating Factor

Chapter 1

INTRODUCTION

This chapter offers information about the reasons that informed this study, and facilitates an understanding of the issues around small scale farmers in South Africa, the commercialization of agriculture, potato as an economic crop and the potato industry in general. It outlines the problem statement, study objectives, rationale of the study and its significance, while providing a description of the study area.

1.1 Background

The various challenges faced by smallholder farmers in South Africa and the importance of the sector in agricultural production is well documented. Reports by a number of authors including Delgado (1999), Matungul *et al.*(2001), Abdulai & Birachi (2008) and Ferris *et al.* (2014) have highlighted the issues, and concluded that small scale farmers in South Africa face challenges and are limited by access to factors of production, credit, information and markets, including inadequate property rights and high cost of transaction; among others.

Different authors, scholars and commentators such as Ferris *et al.* (2014), Zhou *et al.* (2013), Kirsten *et al.* (2012), Pingali (2010), Jaleta *et al.* (2009), Vorley *et al.* (2008) and Delgado (1999) reaffirm the importance of the small-holder sector in terms of providing employment, human welfare and political stability, and emphasized that the critical issue was how these small-holders can improve their competitiveness through participating in a profitable and sustainableway, in the agricultural food supply chain. Ortmann & King (2010) noted that the successful integration of small-holder farmers into the agricultural food supply chain has been the subject of numerous research efforts.

Ortmann & King (2010) also pointed out that the research on how small scale farmers in Southern Africa can successfully participate in food supply chains has 'gained momentum in recent years', this assertion is supported by the myriad of articles and reviews pertaining to small-holder agriculture. It is however important to note that, the successful participation of small scale farmers in the food supply chain depends to a large degree, on the commercialization of their agricultural production (ADB, 2013; Okezie *et al.*, 2012; Mudhara, 2010; Madhin, 2009; World Bank, 2008; Toenniessen *et al.*, 2008; Hazell *et al.*, 2007). This is agreed on by authors in the literature reviewed.

Commercialization is viewed as a categorical concept used to classify farmers according to the portion of their produce destined for the market (Pradhan *et al*., 2010; Poulton *et al*., 2008), and is sometimes also used to reflect the farmer's stage of development. Latt & Nieuwoadt (1998) ascribed commercialization to 'any market related activity associated directly with the household agricultural production'. Burger (1992) defined a commercial farmer as one who produces sufficient agricultural products for the market, so as to earn a wage from the farm sufficient to ensure an acceptable standard of living; and categorized commercial farmers into intensive, extensive and semi-extensive based on type of produce, specialization and potential to tap into the competitive export market.

Viewed broadly, commercialization refers to the degree of engagement with markets, either for inputs, outputs or both (Okezie *et al*., 2012; Panashat, 2011; Yoon-Donn & Yoon, 2009; Pingali & Rosegrant, 1995). Therefore for subsistent agricultural producers, commercialization implies 'an increased participation or improved ability to participate' in both input and output markets (Chirwa & Matita, 2012). The importance of markets in commercialization is highlighted in most of the definition provided, and Von Braun (1995) introduced the "exchange economy" through linking commercialization to the volume of agricultural produce and household resources entering the market. This volume is classified according to three variables that include; the ratio of value of un-marketed produce to total value of production, ratio of value of un-marketed production to total income, and the ratio of total value of home produced goods consumed to total household consumption.

Some scholars such as Lockheed *et al*, (1980) and Steward (1985) viewed innovation by farmers as commercialization, suggesting that the adoption of technology is equivalent to commercialization (Pingali & Rosegrant, 1995). This view according to Pingali & Rosegrant (1995), is however not shared by Rauniyar (1990), who classified commercialization and innovation as two distinct concepts. However, Von Braun (1995) assumed that the adoption of technology and commercialization complements one another; since the transformation process at the farm household level would lead to the replacement of mixed farming systems with 'specialized commercial units'.

The process of commercialization as described by Pingali & Rosegrant (1995), leads to a substitution of non-traded for traded inputs, resulting from the increasing opportunity cost of family labor. It increases the use of mechanical technologies and chemical fertilizers, facilitating the emergence of markets; and increased availability of commercially produced food, thereby making

subsistent food production unviable except in very remote areas (Von Braun, 1995). Commercialization invariably results in a diversity of marketed products and increased regional and farm level specialization.

The role of commercialization in strengthening the linkages between agriculture and other sectors of the economy is worthy of note (Odurukwe *et al*., 2003). These upstream and downstream linkages, according to Toennissen *et al*. (2008), contribute significantly to the enhancement of employment opportunities in a commercial environment. Nicholson (1989) described a clearly glowing picture of commercial farmers, showing 'a high degree of success and confidence' (Kirsten & Van Zyl, 1998). Commercial farmers have larger holdings, own more capital assets, display more activity and persistence in farming, are more advanced in record keeping, planning and budgeting, and characterized by access to credit and risk diffusion.

Odurukwe *et al*. (2003) noted that Makhura *et al.* (1998) recognized the distinction between commercially oriented farmers, and the less commercially oriented farmers. The gap between the two groups in their view, implies that a comprehensive support approach is required for the less commercially oriented group. This approach includes credit and marketing facilities, input and technology transfer, training, price guarantees and crop insurance.

Commercialization unfortunately does not exist without hindrances for small holder farmers, as they face numerous difficulties participating in markets, as a result of a range of constraints and barriers reported by Abdulai & Birachi (2008). Van Zyl (1995) and Mayson (2003) also identified various barriers to the commercialization of small scale agriculture, and these barriers include access to markets, access to credit, lack of institutional support, high transaction costs and lack of training (Abdulai & Birachi 2008).

There are various issues related to the commercialization of small scale agriculture, and a number of studies and reviews have been conducted aimed at addressing pertinent questions regarding its benefits to small scale farmers, connection to infrastructure and its consequences, effect on household food security, land tenure, market risks, environmental degradation and other linkages in the rural economy (Chirwa & Matita, 2012).

Most of the reviews according to Chirwa & Matita (2012) are however cautiously optimistic about the feasibility and desirability of commercialization, as 'there are enough cases of positive change to argue that encouraging commercialization of small scale agriculture can be effective in bringing about improvements for small scale farmers and the rural economy'.

Furthermore, suggestions have also been put forward to facilitate commercialization of small scale agriculture. Some of the suggestions from Pingali & Rosegrant (1995) and Von Braun (1995) are for improved research and extension services, favorable economic policies, capital markets for risk spreading, property rights and improved rural infrastructure. The existence of a well functioning product and factor market is important, while government is expected to play a strong role in facilitating the transformation process.

1.2 Potato production in South Africa: A contextual overview

1.2.1 Potato sector contribution to the South African economy

In the South African agricultural setting, potatoes are produced all over the country in different climatic regions, thereby ensuring a continuous supply throughout the year. The major potato producing provinces include the Free State (30%), Western Cape (19%), Limpopo (18%) and Mpumalanga (10%); these four provinces accounted for 77% of total output in 2005 (PSA, 2005).

The potato industry according to the National Department of Agriculture, comprise approximately 1,700 potato farmers, with 400 seed growers and emerging farms and around 66,000 farm workers (NDA, 2003). Domestic potato farmers harvest on average about R2.8 billion worth of potatoes per year (NDA, 2006).

The National Agricultural Marketing Council (NAMC) recognized the important role of the potato sub-sector, and its potential to contribute significantly to the rural development initiative of the South African government. This is especially true considering its notable multiplier effects in various sectors of the economy, ranging from production, processing, transportation, packaging, fast food and other related services in the value chain. Its impact in the area of job creation, poverty alleviation and foreign exchange income is worthy of mention (NAMC & Commark Trust, 2006).

1.2.2 Emerging trends, challenges and constraints in the potato sub-sector

In terms of production, the number of hectares planted has declined steadily while yield per hectare is on the rise, according to a diagnostic study of the potato sector. This rise in yield is attributed to an increased contribution of research and a shift away from dry-land to irrigated potato production (NAMC & Commark Trust, 2006), though real producer prices have been stagnant.

The overall trade of potatoes through formal markets is declining while the informal sector for potatoes is growing significantly. The formal sector channels 21% of the fresh potato produce, and made up primarily of large retailers like Fruit ‘n’ Veg. City, Pick’n Pay, Shoprite-Checkers, Spar

and Woolworths. Also included in the formal channel are smaller retailers (greengrocers) and independent stores. Informal traders are responsible for distribution of 50% of all potatoes sold, and this includes sellers of 'loose' potatoes in both urban and rural areas (NAMC& Commark Trust, 2006).

In world terms, South Africa is not considered a major exporter of potatoes, as it contributes less than 1% to the potato market of countries outside the South African Customs Union (SACU). It is however the only exporting country in Southern Africa, and one of two exporters in Africa (NAMC & Comark Trust, 2006). From its diagnostic study of the potato sub-sector, the NAMC concluded that the potato industry faces considerable constraints. These include among others, unresolved land claims, labor legislation, disease burden, infrastructure deficit, deterioration of extension services, low level of research and an ever increasing pressure on the availability of water for irrigated production. The industry also suffers from a relatively high and ever increasing input costs, which make the production of potatoes relatively risky (NAMC & Commark Trust, 2006). However, increasing urbanization as well as population growth is expected to increase the aggregate demand for potatoes, as well as anticipated greater price stability within the sector, and an increased export potential to other African countries.

1.2.3 Government policies and empowerment schemes in the sub-sector

Though the government currently does not provide any direct support to the potato industry, a number of policies such as the general and monetary fiscal policy, AgriBEE framework, land restitution and redistribution, and agricultural credit all have impact on the potato industry.

The government has created an environment within which the South African potato industry can organize, manage and maintain itself. Such support measures include sanitary and phytosanitary measures to protect the industry from associated risks, the maintenance of fresh produce markets as outlets for potatoes, institution of tariff to protect against dumping, including a marketing council to oversee marketing of agricultural produce (PSA 2005, NAMC & Commark Trust, 2006). The government also facilitates the levy applicable to potatoes, which make it possible to put relevant structures like Potatoes South Africa (PSA) in place to serve the whole industry.

Empowerment process for previously disadvantaged small scale producers is still in its infancy, though a structure and strategy to initiate and implement the necessary programmes to bring about empowerment and transformation have been adopted. Also marketing incentive schemes are in

place for the development of institutional markets for small scale producers, and a greater focus on the export market in Southern Africa (PSA, 2005).

1.2.4 Potato industry support structures

The potato industry in South Africa is properly organized, with a number of organizational structures providing support (NAMC & Commark Trust, 2006), as shown in Figure 1. This is hardly surprising, considering that commercial agriculture has for decades enjoyed heavy government patronage. This support is provided by a number of ways including an annual stakeholder meeting of Congress, independent quality assurance, food safety and traceability inspections by the Product Control for Agriculture (PROKON), levy collection for research and development through Potato Industry Development Trust, other industry bodies and forums for certification and export. However, the most visible structure is Potatoes South Africa , which is the face of the industry.

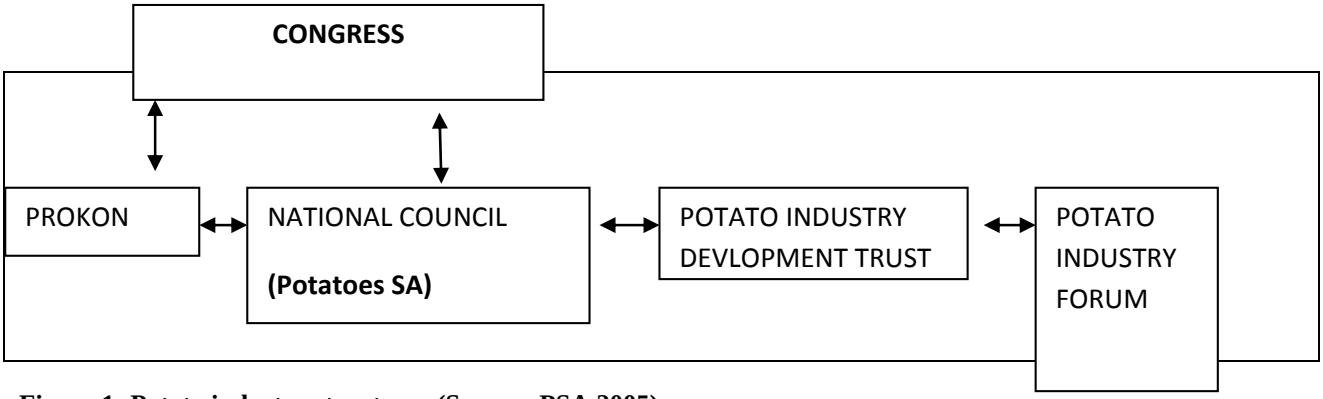

Figure 1: Potato industry structures (Source: PSA 2005).

1.2.4.1 Potatoes South Africa

Potatoes South Africa is an industry related organization that through its affiliates and linkages with other organizations, supports the potato industry to perform optimally. It does this by rendering such services as market and product development, communication, advertising, organizational functions, product promotion, research and information. These services are financed by means of statutory and voluntary levies, as well as from income derived from management services to several organizations, including interests earned on investment (NAMC & Commark Trust, 2006).

The organization is promoting a strategy for the socio-economic development of small scale farmers. The strategic intent of this according to PSA (2005) includes the growth of the emerging

farming sector, and support to break down the barriers faced by small scale farmers in the potato industry. In the Eastern Cape Province, it has outlined a business plan in conjunction with key role-players that include the provision of input loans, training and other support services to over 200 farmers spread out in various locations, and cultivating an area of about 700 hectares of potatoes (PSA 2005).

1.3 The Potato Crop

1.3.1 Description of the crop

The Potato (*Solanum tuberosum*) is a temperate climate crop, though it grows under a diverse range of weather conditions. In South Africa, the commonly grown cultivars include the BP1, Up-to-Date, Buffelspoort and Vandeplank (DAFF, 2013). The seed potatoes of these cultivars are readily available, and the selection of these cultivars depends on the specific purpose and production area. Potatoes are planted at different times in the producing areas due to climatic differences; hence fresh potatoes are available all year round.The vegetative growth of the plant is normally optimal at a temperature of around 24^0C, while tuber development is favoured at 20^0C. Loamy and sandy loam soils rich in organic matter with good drainage and aeration, are the most suitable soil types for the cultivation of the crop. Soils with a pH range of 5.2 – 6.4 are considered ideal (DAFF, 2013).

1.3.2 Cultural practices in potato production

1.3.2.1 Planting requirements

Planting dates depend on the climatic condition prevalent in the area. Where frost occurs, it is best to plant from August to January; for frost free areas they are planted from February to early June. In the Bizana area, the crop is planted at the onset of winter in July after the maize harvest. Tubers can be planted 30cm apart in furrows 90cm apart and about 20cm deep. The tubers are covered with enough soil to form a small ridge on top of the row, roughly about 20-25cm high (NDA, 2001).

1.3.2.2 Fertilizer requirements and soil fertility

Potatoes require a high level of soil fertility, from organic to inorganic nutrients. Soil testing is considered necessary before planting to determine the fertility status of the soil. In most cases, organic manure is essential in order to obtain high economic yields. Potatoes have a poor root system, and it is recommended that fertilizers are applied at the same level as that of seed tubers in the furrow during planting (DAFF, 2013). Fertilizer application at planting time, and limestone ammonium nitrate (LAN) at 6 to 8 weeks after planting is recommended (DAFF, 2013).

1.3.2.3 Irrigated production.

Water management is identified as among the important management practices that determine the yield and quality of potatoes (DAFF, 2013) . Overhead irrigation systems like centre pivots are used in large scale production, and the crop may be irrigated twice weekly from planting until the shoots appear. Irrigation along the furrows without wetting the leaves is considered best; and watering should be discontinued when the plants start to die (NDA, 2001). In the Bizana area, farmers depend on rain-fed production systems.

1.3.2.4 Crop diseases and pests.

The late blight (*Phytophthora infestans*) is a disease that assumes serious proportions especially during winter, appearing after a few consecutive days of cool and moist weather. Other diseases include the early blight (*Alternaria solani*) which occur during late summer, the black scurf (*Rhizoctonia solani*) is a major tuber disease causing cankers and resulting in poor stands. The common scab (*Streptomyces scabies*) is the most common disease which affects tubers.

Potatoes are susceptible to nematode infestation; root-knot nematodes occur in many South African soils and are very active, particularly in summer. Potato moth can also cause severe damage, particularly in dry seasons. Cutworms damage newly emerged plants, resulting in very poor crop stands, hence the Department of Agriculture (DAFF, 2013) reommends regular field scouting for effective insect control in the potato field.

Though there are registered chemicals used to control potato pests and diseases, the use of disease-free seeds and crop rotation are beneficial in controlling these pests and diseases (NDA, 2001; DAFF, 2013).

1.4 Problem Statement

Small scale and emerging farmers in rural areas of the former Transkei are engaging in the cultivation of potatoes as a means of increasing their farm incomes and diversifying agricultural production. Potatoes have been identified in the area as an essential crop, with the potential of providing small scale farmers with increased farm incomes, enabling them to make reasonable returns from farming.

A comprehensive agricultural profile that was carried out by the Agricultural Research Council (ARC) in the OR Tambo District Municipality (ORTDM), where the study area formerly belonged, observed that the areas in Mbizana local municipality was suitable for potato production (MLM,

2009). The research finding among others, averred that the study area had the potential to produce between 60 to 80 tons per hectare in an area covering 47,565 hectares.

As part of its drive to increase the supply of the crop, PSA is also promoting a strategy for the socio-economic development of small scale farmers involved in potato production. The strategic intent of this drive includes the development of the emerging farmer sector and provision of support aimed at breaking down existing barriers in the potato industry. Potatoes South Africa has outlined a business plan in conjunction with key role players in the Eastern Cape Province, which involves the provision of input loans, training and other support services to over 200 small scale farmers cultivating an area of approximately 700 hectares with the potato crop (PSA, 2005).

It is worth noting that there are moves within the policy environment towards the revitalization of small scale agricultural production, to enhance the creation of income and job opportunities and promote rural development. These moves are inherently linked to increasing access to land for small scale farmers, especially those classified as previously disadvantaged. With an envisaged increase in the area of land to be put under cultivation by small scale farmers, it is expected that opportunities for increasing the supply of essential crops will become extant.

Small-holder farmers producing traditional crops such as maize and coco-yams are faced with low farm gate prices, due to surplus supply in the local market. The need therefore for the production of other essential crops have become more compelling. Given the low farm-gate price received for traditional crops grown by most farmers in the area, a decisive point is whether the addition of the potato crop to the production enterprise of small scale farmers in the area, may be considered worthwhile and facilitate their involvement in commercial agricultural production.

However in its diagnostic survey of the potato sub-sector, the NAMC highlighted the considerable constraints facing the potato industry including unresolved land claims, labor legislation, disease burden, infrastructure and deterioration of extension services, low level of research and an increasing pressure on the availability of water for irrigated production. In terms of production, the number of hectares planted has shown steady decline while the yield per hectare is on the rise. This rise is attributed to the increased contribution of research and a shift away from dry-land to irrigated potato production (NAMC & Commark Trust, 2006). Results from the NAMC study show that the industry suffers from relatively high and ever increasing input costs which make the production of potatoes relatively risky. This has been compounded by stagnant producer prices and escalating input prices.

It is however not all gloomy, as the study also anticipates a greater demand for potatoes, leading to increased and greater price stability within the sector. This projected increase is forecasted on the back of higher population growth, increased urbanization, greater per capita income and per capita consumption of potatoes. Additional to this is the increasing export potential, from demand by neighboring Southern Africa Development Community (SADC) and other African countries (NAMC & Commark Trust, 2006).

In light of the above, investigating the potential for commercialization among small scale potato farmers in Bizana area of the Eastern Cape Province becomes increasingly relevant.

1.5 Research objective

1.5.1 Main objective

The primary objective of the study was to investigate the prospects for commercialization among small scale potato farmers in Bizana.

1.5.2 Specific objectives

To meet the primary objective, the study;

a) Reviewed the problems faced by small scale farmers in the selected study area.
b) Identified production factors that influence the decision of the small scale farmers.
c) Described the farming practices used by small scale potato farmers in the study area.
d) Investigated the potato supply chain, marketing prospects and obstacles faced by small scale farmers in the study area.
e) Highlighted the support services provided to small scale potato growers by key role players.
f) Measured the degree of commercialization among small scale potato farmers in the study area.
g) Made recommendations to facilitate increased commercialization among small scale potato farmers in the area.

1.6 Research questions

i. What are the problems facing small scale farmers in the study area?
ii. What factors influence the decision of small scale farmers in production?
iii. What farming practices do smallholder farmers in the study area employ?
iv. Where do potato outlets in the study area obtain their supplies?

v. Which constraints face smallholders in the study area from participating in the potato supply-chain?
vi. Does the smallholder farmer in the area receive any external support?
vii. At what level of commercialization are the smallholder farmers in the study area?

In the search for answers to these research questions, the literature was reviewed to provide a theoretical guide. The search provided clarity regarding the following;

1. Is the commercialization of small scale agriculture necessary for economic growth?
2. Who is a small scale farmer in the South African context?
3. What are the issues that restrain small scale farmers from commercialization?
4. How is the process or degree of commercialization by small scale farmers measured?

1.7 Significance and rationale for the study

There is a strong move by the South African government through the National Department of Agriculture to provide an enabling environment for small scale farmers to participate actively in food production. Proposals have been put forward seeking to transfer up to fifty percent of farm lands to formerly disadvantaged workers employed in existing farm enterprises (City Press, 2014), as a means of redistributing land and enhancing commercial agriculture among the historically disenfranchised majority.

The commercialization of small scale agriculture, especially in the former homelands of the Transkei and Ciskei, is captured in the Eastern Cape Provincial Growth and Development Plan (PGDP), as a key driver of local economic development, food security and rural job creation. There is however, no known study of the prospect of commercializing small scale agriculture in the area. Also a number of scholars including Aliber *et al*. (2009) and Aliber & Hall (2010) have lamented the paucity of detailed, reliable data on small scale farmers in South Africa.

Of note and worthy of mention, is the current intention of Potato South Africa to significantly improve the production of potatoes by small scale farmers in the study area. The intent is to provide a support platform for formerly marginalized subsistent producers to participate in the potato value chain, hence increasing farm incomes.

This research provides a contribution to the body of knowledge regarding the constraints faced by small scale farmers in the study area, supporting extension and advisory services available, and

offers insights for policy makers and implementing agencies; while making inputs to the strategic plans of the Provincial Department of Agriculture and Potato South Africa.

Most importantly the study highlights the issues faced by small scale farmers in the study area, while advocating the design and implementation of remedial programmes to meet their needs. The position of the researcher is also worthy of mention, as the researcher is working in area as an agricultural professional. There is therefore a level of personal involvement in the study, though the research process, its outcome and findings do not affect nor provide any returns to the researcher.

1.8 Description of the study area

The study area is shown in Figure 2, and the map highlights the various roads that transect the Bizana area. The administrative wards making up the Mbizana municipal area are also shown.

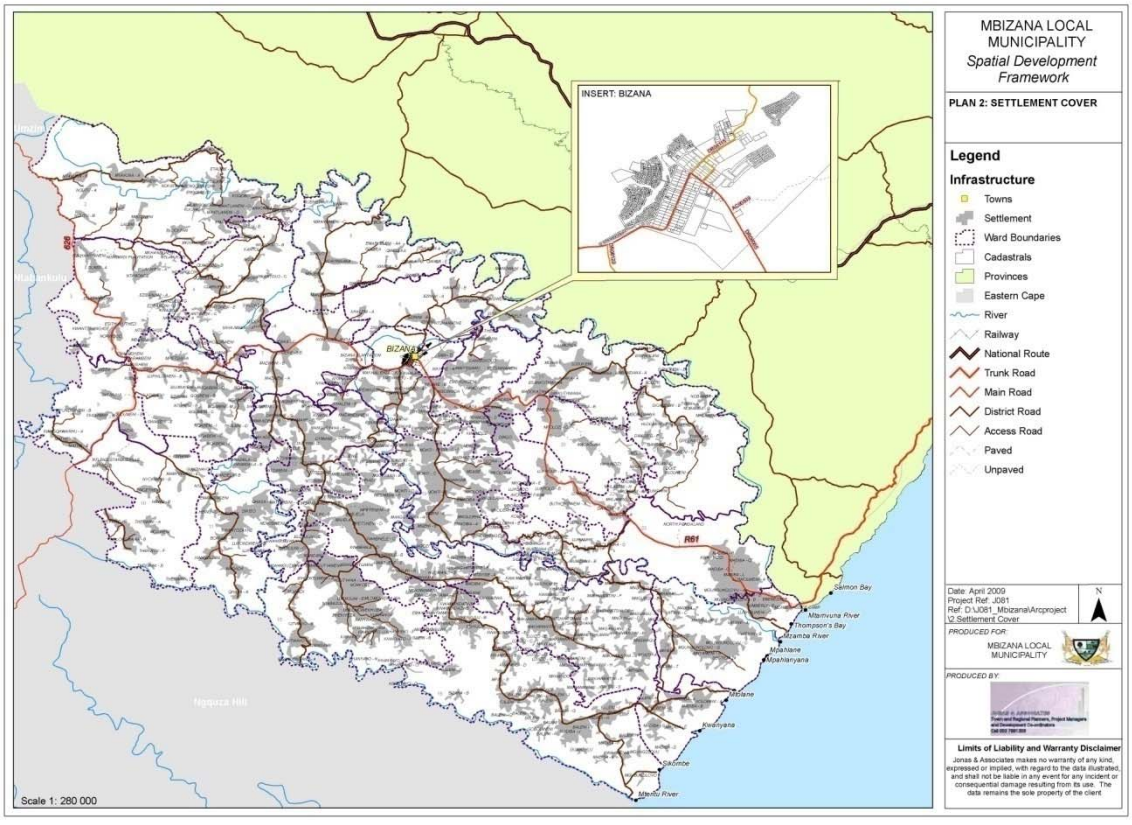

Figure 2: Map of the study area (Courtesy: Mbizana Local Municipality Planning Dept).

Bizana is the political and administrative town of the Mbizana Local Municipality, located on the R61 road connecting the south coast of Kwazulu Natal Province to the N2 road leading to Mthatha

in the Eastern Cape. It is a rural town located in the north eastern part of the Eastern Cape Province, within the Pondoland in the former Transkei homeland. The recent municipal boundary adjustment, locates the Mbizana local municipality within the Alfred Nzo District Municipality (ANDM).

Bizana lies on latitude 31.567 and longitude 29.400 with an estimated area of 2806 km^2, along the coastal belt of the Eastern Pondoland. It has a temperate climate, characterized by fertile soils and frost-free conditions, with an annual rainfall of around 700mm per year mostly in the summer, although there is substantial winter rainfall. With an estimated population of 251,545 and population density of 84 persons per square km, it is one of the highly populated local municipal areas within the district (MLM, 2009).

The Bizana area lies north of Lusikisiki, and is wedged between rivers umTentu to the south and umTamvuna to the north, forming the northern boundaries of the Eastern Cape province with the Kwazulu Natal province. Dominated by grasslands, settlements are loosely scattered throughout the area and are surrounded by arable grazing land, with a unique biodiversity value. Along the coastal strip popularly referred to as the wild coast, there is a narrow belt of tropical vegetation that includes grasses, palms, wild bananas, evergreen forests of indigenous yellowwoods and ironwoods with stream-bank bush (Pieterse, 2007).

A majority of residents depend on subsistence agriculture, seasonal jobs and migrant labor, while others rely on social security grants and pensions for their livelihood. There is a lot of infrastructure deficit in the area, though there has been a recent surge in trading activities resulting from the development of shopping malls. The water supply system to the town is undergoing expansion, while the main health institution, St. Patrick's Hospital, is presently being remodeled to accommodate the increased number of patients it serves.

The Bizana area and other areas that constitute the former Transkei homeland of the Eastern Cape Province, is less developed than the rest of the Province, with fewer businesses, fewer social amenities and job opportunities, few urban linkages and was described by Ashley & Ntshona (2003) as 'largely bypassed by the geographical contours of the economy'.

Chapter 2

LITERATURE REVIEW

The theoretical issues related to this study are explored in details in this chapter, which outlines the commentary in the literature concerning agriculture and its role in economic development, small scale agriculture and the smallholder farmer, including the concept of commercialization and measurement of the process or degree of commercialization among smallholder farmers.

2.1 Agriculture and economic development

The critical role played by agriculture in the socio-economic development and livelihoods improvement for developing countries has been recognized (Zhou *et al*., 2013). There is widespread agreement that agriculture is central to economic growth in sub-Saharan African countries (Pingali, 2010; World Bank, 2008), and is estimated to account for more than half of total employment, about 40% of total exports, and contributes close to 35% of gross domestic product (GDP) according to Jaffer (1992) and DFID (2002). However, not all agree about the role of agriculture in economic development.

2.1.1 Views on the role of agriculture in economic development

The debate over the role of agriculture in the process of economic development has been traced back to the 18th century, when the earliest proponents of agriculture argued that agriculture, among all economic activities, yielded a surplus and was hence seen as the only productive activity. A key idea of physiocracy is that agriculture was the productive sector of an economy (Reynolds, 2000).

With the advent of industrialization and rapid urbanization however, the honor accorded agriculture was eroded and it increasingly became a declining sector. Often referred to in the neoclassical view, as a ‘black box” (Little, 1982) that contributed labor, food and perhaps some capital to the essential modernization in industry; agriculture was described by some theorist as a naturally declining sector. Thus arose what has been referred to in many circles (Timmer, 1988) as the general neglect of the agricultural sector in many parts of the world.

Agriculture has however been playing a significant role in the development of nations for centuries. According to the World Development Report for 2008, agriculture can produce faster growth, contribute to poverty reduction and sustainable environment, ‘if it is made to work in tandem with other economic sectors’ (World Bank, 2007). The report outlines various ways through which

agriculture contributes to development as an economic activity, a livelihood means, and a provider of environmental services.

Agriculture supports the rural poor to achieve food security since a majority of them derive their sustenance from agricultural production (UNDESA, 2012; Salami *et al.*, 2010); providing shelter to many rural dwellers who constitute roughly half of the world's population. Despite the negative environmental outcomes associated with agriculture, such as depletion of underground water resources, soil exhaustion and general degradation; it is recognized that agriculture positively affects the environment through carbon sequestration, biodiversity preservation and watershed management (UNDESA, 2012).

Considering that about half of the world's population are found in rural areas and depend on agriculture, Hazell *et al.* (2007) surmised a view held by many that agriculture is 'likely to be central to rural development and rural poverty alleviation'. This view complements the postulation by Delgado (1999) regarding the effectiveness of agriculture in poverty reduction, and agrees with the earlier suggestion by Van Rooyen & Machetle (1991), of a positive and strong inter-relationship between agricultural development and overall economic growth. Within the South African context, Shackleton *et al.* (2001) presented emerging evidence that natural resources, livestock production and cropping in the communal areas made significant contributions to rural livelihoods in both financial and socio-economic terms.

These view-points are however contrary to that held by a number of sources in the literature of agricultural development, economic growth and poverty reduction. According to Collier & Dercon (2009), the current policy focus ignores the fact that successful migration out of agriculture and the rural areas is a key necessity for economic growth.

Aliber (2005) highlighted that while the role of agriculture in the economies of developing countries is generally acknowledged, there is no consensus on whether it is the most appropriate way to fight rural poverty. In South Africa, though a 'vast majority of residents within the communal areas derive their livelihoods from a variety of agricultural and non-farm sources' (Manona, 2005 citing Cousins, 1999 and Kepe, 1997), there is however an acknowledgement that 'the contribution of agricultural activities to household income has declined steadily, with food increasingly being imported, and poverty becoming more pervasive'(Manona, 2005).

Though there is a tacit recognition of the contribution of agriculture to poverty reduction, more importance needs to be attached to non-agricultural activities such as rural non-farm enterprises and

social services, highlighted by authors including Aliber (2005), Manona (1999) and Hadju (2003) who encourage a strong emphasis on advancing de-agrarianization, arguing that the most important determinant of food security is cash in hand, rather than the ability to produce food (Manona, 2005).

2.1.2 Conflicting fortunes of agriculture in economic development

The fluctuating fortunes of agriculture as a key contributor to economic development, is however not surprising. Agricultural transformation was described by Timmer (1988) as a 'remarkably uniform process when viewed outside the agricultural sector itself', who concluded that 'the declining importance of agriculture is uniform and pervasive'. It fits into 'the documented views of earlier scholars such as Clark (1940), Kuznets (1966), and Chenery & Syrquin (1975), that the share of agriculture in a country's labor force and total output declines as income per capita increases' (seen in Timmer, 1988).

An inherent logic of the classical model of economic growth requires that rapid agricultural growth accompanies or precede a general economic growth, as there is an established association between the growth in agriculture and of the economy as a whole. The parallels between agricultural and economic growth suggests that factors which affect the performance of agriculture may be linked to economy-wide social and economic policies. The expansion of agricultural production through technological change and trade creates important demands for the output of other sectors; and at the same time, agricultural households are often the basic market for a range of consumer goods demanded in the early stages of industrial development (World Bank, 1982).

If agricultural development and contribution to the growth of the economy invariably leads to a decline in agriculture, an apparent paradox therefore exists between the need for rapid agricultural growth and the decline in agricultural sectors share of output and the labor force; giving rise to a widespread 'misconception that agriculture is unimportant'(Timmer, 1988), and hence does not require resources or a favorable policy environment, because of the decline in its relative share of the economy.

Timmer (1988) clarified that upon closer examination, 'it is not paradoxical that agricultural growth leads to agricultural decline'. This contradiction is explained by the process of structural transformation which affects agriculture, accounted for by two relatively well understood and documented mechanisms.

- Firstly, the economic theory of Ernst Engel referred to as 'Engels law' explains a declining share for agriculture no matter how fast the sector grows, in a closed economy with constant

prices. Since growth is led by demand patterns in market economies, less than unitary income elasticity for the products of the agricultural sector guarantees that gross value of sales by farmers will grow less rapidly than gross domestic product.

- Secondly, following rapid growth in agricultural productivity, output and technological change, there is a resultant movement of resources out of agriculture into other rapidly growing sectors of the economy.

2.1.3 Policy environments and contribution of agriculture to economic development

An understanding of the changing environments for agriculture's contribution to economic growth is essential, as various policy settings determine the flow of resources from agriculture, and the related per capita contribution.

Four policy environments provide an understanding of the changing fortunes of agriculture, and are named after Mosher, Johnston Mellor, Schultz-Ryttan and D.G. Johnson. They include:

- The Mosher environment (Getting Agriculture Moving) is characterized by institutional change, new technology, structure of markets and incentives, including significant investments in rural infrastructure.
- Under the Johnston-Mellor environment (Agriculture as a Contributor to Growth), there is establishment of market links with industry, technology and incentives to create a healthy agricultural sector, improvement of factor markets to mobilize rural resources.
- Schultz-Ruttan environment (Integrating Agriculture into the Macro-Economy) is characterized by a declining share of food in urban budgets, a push to make agriculture efficient, shift resources out, including substantial income distribution problems from lagging labor productivity.
- Finally, the D.G. Johnson environment (Agriculture in Industrial Economies) is characterized by a small share of food commodities in consumer budgets, income distribution as a political issue, unemployment in the industrial sector creating pressure to keep labor in agriculture, environmental concerns, and 'way of life' issues (adapted from Timmer, 1988).

Another school of thought however, does not share the view of agriculture as the spark for economic growth. According to Collier & Dercon (2009) 'most of the reasoning underlying the view that growth must start in the agricultural sector, are effectively closed economy models'. In their postulation, growth dynamics in agriculture typically depend on growth in demand, stemming

from other sectors of the economy. The thread of this argument is that, evidence adduced by supporters of agriculture, seems far weaker than often suggested, and methods used typically fail to establish any causality, 'not least in terms of trying to understand where the growth originates' (Collier & Dercon, 2009).

2.1.4 Lessons related to agricultural development for rural agrarian economies

Obviously, the conventional discourse in development economics has long viewed agriculture with respect to its role in industrialization, through promoting forward and backward linkages. Today agricultural development is not merely seen as a vehicle for supporting industrialization, but also as a mode of inclusive growth, pro-poor economic development, food security and environmental sustainability (Sharma *et al*, 2012), especially in developing countries where a significant share of the working populace still reside in rural areas and depend on agriculture for their livelihoods.

Valdes & Foster (2010) highlight the historical relationship between agricultural growth and a subsequent growth in the non-agricultural sector. In their opinion, the importance of poverty reduction by the agricultural sector lies 'largely through its impact on overall economic growth'. They present econometric evidence that strongly suggests that the agricultural sector contributes to growth, more than its share of GDP. Their cross country study also showed that agriculture in the developing world, on the average, tended to impact on both national growth and poverty reduction which was greater than its ordinary share of the national gross domestic product.

African countries especially in the sub-Saharan region seeking to successfully transform their economies, cannot afford to by-pass a broad based agricultural revolution (Diao *et al.,* 2010), as both history and theory suggest a pre-eminent role for agricultural growth in the reduction of poverty in poor agrarian economies (Dorward *et al.*, 2004).

In seeking to understand the role of any sector in growing an economy, Christiaensen *et al.* (2011) asserted that the contribution of a sector in reducing poverty, had been shown to depend on the sector's growth performance, how it impacts indirectly on growth in other sectors, the degree of participation by poor people in the sector, and the overall magnitude in the entire economy of that sector. They concluded that when these different effects are merged, 'cross-country econometric evidence indicated that agriculture is significantly more effective in reducing poverty among the poorest of the poor, especially in low-income and resources rich countries' (Christianesen *et al.*, 2011) typical of sub-Saharan Africa.

Dorward *et al.* (2004) articulated the current constraints to agricultural growth for poverty reduction, especially in poor agrarian economies. In their view, such growth today faces 'new difficulties' which they declared to be endogenous to poor rural areas. Other constraints in their view also result from broader processes of global change, though some are due to changes in the dominant policy environment which places emphasis on withdrawal of state subsidies and liberalization.

2.2 Small scale farmers in South African agriculture

The small scale agricultural sector according to Pienaar (2013) who cited Groenewald & Nieuwoudt (2003), is mostly found in the former homeland areas, with smallholder farmers operating on very small land holdings. In the National Development Plan (NDP) document, agriculture has been identified as the growth engine to drive rural development especially in the former homeland areas (NPC, 2011). However there are crucial questions regarding the ability of an expanded smallholder sector, to significantly contribute to development, employment creation and poverty reduction in the rural areas of South Africa (Cousins, 2013).

2.2.1 Defining a small scale farmer

An agreed upon definition or description of a small scale farmer in the South African agricultural sphere, continues to prove elusive. Though there exists a large amount of literature related to small scale farming, Eiseb (2000) concur that 'there is a great deal of confusion and controversy as far as the characterization of the small scale farmer is concerned'. The sole consensus about small scale farmers may be the lack of a sole definition (Nagayets, 2005; cited in Chamberlin, 2008). As reflected in the rural communities of South Africa, small scale farmers constitute 'a significant proportion of the rural economy and the poor in developing countries' (Chamberlin 2008, citing Narayan & Gulati, 2002).

Kirsten &Van Zyl (1998) depicted a small scale farmer as one whose scale of operation is too small to attract the provision of the services needed to significantly increase productivity. This 'size' view is also supported by a number of commentators including Chamberlin (2008) and Hazel *et al.* (2007), who opined that the simplest and conventional meaning of a smallholder is one who has very limited land available.

Davis (2006) suggests that there is no universally agreed definition of a small scale farmer in developing countries, but agrees about the scale of operation, that the farm size is generally less than five hectares, with the farmers having limited capital and other productive assets. The use of

size in determining a small scale farmer however may not be ‘a good criterion’, as highlighted by Lund & Price (1998) and Lund (1983), rather the level of net farm income or turnover determines the farm size category (cited in Kirsten & van Zyl, 1998).

In the development literature, a broad description of a small scale farmer assumes such farmers derive their livelihood from a land holding of between 2 and 5 hectares (usually less than 2 hectares), practices a mix of commercial and subsistence production in crops or livestock, or both, where the family provides the majority of labor and the farm provides the principal source of income.

The meaning of a small scale farmer however, goes beyond conventional definition and consists of some general characteristics exhibited. Four themes are identified by Chamberlin (2008) which includes the size of the landholding, wealth, market orientation and level of vulnerability to risk. Following these themes accordingly, the small holder is one with limited land availability, poor resource endowments, subsistence-oriented and highly vulnerable to risks.

Mudhara (2010) placed emphasis on their lack of land tenure while other authors have pointed to their productivity levels or to the limited resource levels of the sector. Nevertheless, the small scale farmer may or may not exhibit all these dimensions simultaneously.Aliber *et al.* (2009) defined ‘semi-subsistence’ producers as those engaged in agriculture mainly for own consumption purposes, distinguishing them from small-holder black farmers, defined as small-scale farmers who consistently market a surplus but do not necessarily regard agriculture as a full time activity or only source of income.

The National Department of Agriculture according to Moloi (2008) used the term emerging farmer, identified as a farmer who is a beneficiary of one of the government’s land reform programmes; or a farmer who is mainly dependent on the state and semi-state organization for support and finance, or as a farmer who consumes and sells some portion of the harvest [contributing to the lack of an agreed definition {sic}]. According to Moloi (2008), emerging farmers are those previously disadvantaged that are beginning to participate in the market, and have intentions to produce and sell more.

Using the household as a reference point, a number of authors viewed small holders as those constituted around the household in their management of resources and organization of consumption (Netting, 1993; Hilbebrand, 1986; Ruben *et al.*, 1998). In line with this ‘household’ view, De Koeijer *et al.* (1999) argued that for the small-holder, the farm is also the level at which

'the psycho-sociological, agro-ecological and agro-economic disciplines interact most profoundly', and therefore most development concerned with smallholder farmers focus on the household level.

An accurate and concise definition of the term 'small scale farmer' has always been problematic. In a number of instances, descriptive references have been used and include the reference to small scale farmers as those excluded from the main input and output value chains. However small scale farmers are not simply 'scaled down models of large farms' (Kirsten & Van Zyl, 1998) and the issue about supporting small scale farmers involves their integration into value chains.

Netting (1993) used the following characterization for small holder farmers;

- rural activities, practicing intense, permanent, diversified agriculture on relatively small farms in areas of dense population;
- family household is the major corporate social unit for mobilizing agricultural labor, managing productive resources and organizing consumption;
- the household produces both for consumption and for the market while undertaking cottage industry and other off-farm employment.

In the South African context however, the concept of small scale farmer according to Kirsten &Van Zyl (1998) is usually 'value-laden, creates wrong impressions and is often viewed in a negative light'. Small scale is often equated with a backward, non-productive, non-commercial subsistence agriculture found in parts of the former homeland areas (MALA, 1998), and Lipton *et al.*(1996) concluded that the concept of small scale farmer is attributed to the past policy of racial oppression.

For the purpose of this research, a small scale farmer is one who requires support and targeted interventions to actively partake in the input and output markets.

2.2.2 Class-analytic perspective and sub-categories of small scale farmer

The terms referring to small scale farmers in the South African development literature are undoubtedly numerous. Terms such as resource-poor farmers, previously disadvantaged farmers, subsistence farmers, semi-subsistence farmers, petty commodity producers, emerging farmers, developing farmers, emerging commercial farmers, semi-commercial farmers, smallholders and black farmers are commonly used interchangeably due to historical, political and socio-economic conditions; 'which might be very confusing at times' (Moloi, 2008).

Cousins (2009) from a class-analytic perspective however, concluded that due to wrong usage, small scale farmers or small holders were being cast in the same mould. The term 'small holder' is

problematic because it tends to obscure inequalities and significant class-based differences within the large population of households engaged in relatively small scale agricultural production. According to Cousins (2009), usage wrongly suggests that small holders are a relatively homogenous group, failing to distinguish between those for whom farming constitute only a partial contribution to their social reproduction, those who farm to meet most of their social reproduction needs, and those for whom farming produces a significant surplus allowing profits to be reinvested, and for some, capital accumulation in agriculture to begin.

In view of embedded categories, Cousins (2009) assert that the term smallholder however does have a certain degree of 'descriptive power' when it is qualified with adjectives such as semi-subsistence, semi-commercial, or commercially-oriented. These subcategories indicate at least some key differences in how land, labor and capital are combined within different households and production units, and their associated farming systems.Small holder farmers also have multiple objectives and do not provide a single response to changes in economic stimuli (Hildebrand, 1986). The heterogeneity, autonomy and self-determination of the farmers make their responses to similar stimuli also heterogeneous (Netting, 1993).

This class-analytic perspective provided by Cousins (2009) may shed light on the inconsistencies in the definition or description of a small scale farmer in South Africa. It is also very probable that due to the dynamic nature of human activity, and the fluid economic landscape in South Africa, many small scale agricultural producers may occasionally fall in or out of the characterization and description used by authors, who now admit that their definition of these categories are imprecise (Cousins, 2009).

The Department of Agriculture recognized this controversy, and opined that the smallholder sector is very diverse. In trying to clarify this diversity, the smallholder is claimed to be distinct from the subsistence producer, on the one hand, and also distinct from the commercial producer, on the other hand. The small-holder typology is the result of a complex combination of contextual factors, specific personal circumstances and scale of production (DAFF, 2013).

It becomes obvious that in defining a small scale farmer whether using a numeric size-related, resource endowment perspective, degree or use of technology, application of household labor or subsistence orientation; there is a compelling need for contextualization, as what may obtain in a particular geographic location will be different to another.

2.2.3 Importance of the small scale farming sub-sector

Agriculture is viewed as a small but important buffer against poverty for some households, as well as a strategy for wealth creation by wealthier households (Aliber, 2005). In South Africa, the smallholder sector is considered to be important in terms of providing employment, human welfare and political stability (Ortmann & King 2010, citing Delgado 1999). Employment figures from Aliber *et al.* (2009) and Cousins (2009) show that four million people in South Africa are involved in small holder agriculture. With the current large army of unemployed persons, earlier development models suggest that the rural population could become the engine of growth if harnessed to make meaningful contributions (Hayami &Ruttan, 1971).

Kirsten &Van Zyl (1998) posit that from ample international evidence, small scale agriculture has the potential to generate employment and income opportunities especially in rural areas; arguing that, in contrast to other views of the small scale sector, small scale farmers are potentially competitive in certain activities. The substance of their conjecture being that, with pro-active policy support 'these opportunities could be developed into viable niches for a future smallholder sector' (Kirsten &Van Zyl, 1998).

According to Hazel *et al.* (2007) small scale farming has a high potential for job creation, increasing returns to the assets that the poor posses (land and labor) and to push down the price of food staples. Smallholders constitute the largest population of farmers in developing countries, according to the World Development Report 2008, and about 85% of them farm on less than two hectares of land. In countries such as China, Egypt, Bangladesh and Malawi, smallholder farmers account for 95% of total production (World Bank, 2007).

Within the African context, smallholder agriculture serves as the main engine of rural growth and livelihoods improvement, given the limited resources available for rural industrialization (Govereh *et al*, 1999). The Millenium Development's Project Hunger Task Force concluded in 2005 that the world could meet the MDG of halving hunger by 2015, and that the development of agriculture would be critical to that goal (World Bank, 2005). Majority of Africans live in the rural areas, where small scale agriculture is the mainstay of the rural economy, serving mainly as a source of food income (Hazel *et al.*, 2007; Govereh *et al.*, 1999).

Interestingly, the World Bank suggests that the decline in the poverty rate of developing countries from 28% to 22% in 2002, is mainly attributed to falling poverty in rural areas; while 80% of the decline is related exclusively to better conditions in the rural areas (Abera, 2009). The World Bank

(2007) concluded therefore that the potential of agriculture to contribute to growth and poverty reduction depends, to a large extent, on the productivity of small scale farmers.

Smallholder farmers hold the key to fighting food crisis in the African continent that has always suffered perennial food shortages, in spite of its rich agricultural environment (IREN, 2008). Consequent to increasing food insecurity and poverty, amplified by volatile food prices, Dethier & Effenberger (2012) advocate the need for increasing food productivity and production especially in developing countries, in collaboration with smallholders. A recent report of the African Development Bank (ADB) in its annual African Economic Outlook 2013, confirmed that 'Africa's agriculture and natural resources could boost the continent's economic growth and pave the way for a breakthrough in human development' (ADB, 2013).

However, the contribution of smallholder farms as the engine of rural growth and livelihoods improvement depends, to a large extent, on their level of transformation from subsistence oriented to market-oriented production systems. Accordingly, a number of commentators in the literature including Kirsten *et al*., (2003) and Hendricks & Fraser (2003) have expressed the view that unless small-holder agriculture reaches some degree of commercialization, the impact of agricultural growth on food insecurity and poverty alleviation will be insignificant. Many countries and international development agencies therefore, place emphasis on the intensification and commercialization of smallholder agriculture as a means of achieving poverty reduction (Abera 2009, citing Leavy and Poulton, 2007). This is in agreement with the comment by Sharp *et al.* (2007) that rural development strategies intend to contribute to the transformation of the productive rural sector, from a primary subsistence-oriented to a market-oriented sector; contributing to overall economic growth and poverty reduction.

Despite widespread skepticism about the capabilities of small scale farmers (Johnson, 2003; Mkhabela, 2009), and strong arguments against the potential contribution of smallholders to poverty reduction in Africa expressed by Collier& Dercon (2009); small-holder agriculture as a predominant source of livelihoods in Africa has proven to be as, at least, efficient as larger farms when provided with similar support services and inputs (World Bank 2007, citing IFPRI, 2002). In the view of Howard *et al.(*1999) and Palmer (2004), upon adoption of improved technologies, access to inputs and investment in infrastructure, rapid growth in agricultural incomes is achievable in Africa (World Bank, 2007).

However, Collier and Dercon (2009) have expressed reservations about the emphasis on smallholder development, this misgiving is apparently supported by the debate about the future

viability of small farms (Hazel *et al*, 2007). They argue that in the face of rapid urbanization and out-migration from rural areas, it is pertinent to question the continuing commitment to smallholder agriculture as the main route for growth in African agriculture.

These 'smallholder pessimists' have voiced doubts about the evidence base for an exclusive focus on small scale farmers, arguing rather for a much more open- minded approach to different modes of production (Collier & Dercon, 2009; Hazel et al, 2007; Hendricks & Fraser, 2003). Collier & Dercon (2009) had articulated that for large scale poverty reduction in Africa, a 'fast growth in labor productivity is what is needed'; but smallholders and the institutions that support and sustain them are weak. Therefore much of the focus on smallholder farmers, in their view, may actually hinder large scale poverty reduction.

Continuing along this path, there is a call for a shift from the 'conventional donor approach' which is embedded in the standard development model which justifies current focus on smallholders (Collier & Dercon, 2009). Innovations of recent decades in the view of Collier & Dercon (2009) have made the rapid adoption of technology, access to finance, and high speed-logistics more important, and in the process given commercial agriculture a substantial advantage over the smallholder mode of production.

Notwithstanding the expressed qualms, the prevailing South African policy environment is favorable to the development of small scale farmers, and their passage to commercial production. After the period of policy-enforced exclusion, characterized by the well documented race-based dualism and dichotomy (OECD, 2006; Mukumbi, 2008) between commercial and small scale farmers; Hall & Aliber (2010) report that the needs and interests of small farmers have climbed the political agenda, attracting new policy emphasis in recent years.

This augmented policy emphasis on the development of the small scale farmer, comes at a period of a growing, and an increasingly cultured population in both urban and rural areas, with the concomitant pressures to meet the requirements of a more exacting food system. The South African agricultural and agro-food market landscape is changing in line with changes occurring as a result of globalization and market liberalization (Mkhabela, 2009), resulting in what Odurukwe *et al.* (2003) and Pingali *et al.* (2005) referred to as a renewed interest in the small farmer welfare.

2.2.4 Constraints to the development of small scale farmers

Small-scale farmers in South Africa have 'been subject to years of official neglect, despite numerous policies and programmes that proclaim the opposite' (Hall & Aliber, 2010), and the resultant effect of this neglect, is the high incidence of indigence among small scale farmers. The 2014 national budget review, also acknowledged the shortcomings of existing support programmes for smallholder farmers.

An analysis of agriculture and poverty in South Africa revealed high poverty rates and low incomes among black subsistence and small-scale farmer households (Ortmann & King 2010, citing Pauw, 2007). Notwithstanding the important role played by smallholders as food producers, the commercial prospects for millions of poor farmers remain challenging (Ferris *et al*, 2014). Kirsten & Van Zyl (1998) proclaimed that despite the achievements made by smallholder agriculture elsewhere in the world, the fact remains that the economic conditions for smallholder farming in sub-Saharan Africa are particularly harsh. These conditions have shaped smallholder behavior in a way that is not always the best from the standpoint of increasing incomes.

Within the South African milieu, there is a lot of uncertainty about the sector. Small scale agriculture never really had a chance in a policy environment that deliberately favored large scale farms, and the fact that there is no strong small farming sector in the view of Kirsten & Van Zyl (1998), contributes to the skepticism and confusion about small scale farming. With the specific mindset about small farms and farmers firmly entrenched, they concluded that it 'is hardly surprising that small farms are considered austerely'. This has contributed to doubts about the capability of small scale farmers to participate effectively and meaningfully in market-oriented production, due to their limited access to markets, capital, inputs, technology and extension services. According to Aliber & Hall (2010), the dismantling of the apartheid-era Agricultural Development Corporations in the 1990's, 'left a vacuum in production and marketing support for the estimated 200,000 commercially-oriented smallholder farmers, and 2,5 million households engaged in subsistence agriculture'.

Moreover, in discussing the viability of small scale farms, Kirsten & van Zyl (1998) complained that 'one is not certain who to focus on'. This lack of clarity is amplified by Hendricks & Fraser (2003) who concurred that 'it is much more difficult to determine who are meant, when reference is made to small-scale farmers'. They further hinted that the difficulty arises in the methodological problem of characterizing and defining the small scale farmer.

With numerous terms used by all and sundry, is it the poor farmer, the black farmer, small farmer, subsistence farmer, emerging farmer, semi-commercial farmer, farmers with a small piece of land or farmer with a small turnover, that are in focus. It is without any doubt, these farmers that need government assistance and who should be empowered to form part of a new and vibrant agricultural sector. In most rural areas where small scale farmers operate, they are faced with significant difficulties in accessing seeds, fertilizers and other inputs, and often cannot sell their farm produce at significant prices; and when they produce a surplus for the market, they are often forced to sell at lower prices (Toenniessen *et al.*, 2008).

Moreover, these farmers have not effectively organized themselves to achieve economies of scale in bulking, storage and marketing of produce; or in accessing agricultural inputs and capital markets. Consequently, they have been unable to drive down their transaction costs, termed 'structural constraint', and actually 'face much higher transaction costs than larger producers' (Ortmann & King, 2010). Overcoming these transaction costs, in the view of Kirsten &Van Zyl (1998) can be considered to be at the heart of a strategy for increasing the access of smallholders to the assets, information, services and markets necessary to grow their income.

Small scale farmers producing for the market also face the same external drivers as their larger commercial counterparts. However, in most cases, small farmers do not have the economies of scale benefits, and are hence more sensitive to external market policy or weather related shocks (BFAP, 2008). These external drivers include international oil prices, exchange rate fluctuations, improvement in yields of other key crops grown by the commercial sector; and have a devastating effect on the profitability of small-holder farmers. It is therefore important to recognize that the small scale farmer is embodied within national, regional and global trade systems and markets. As noted by Vorley *et al.*(2008) small scale farmers who form the bedrock for global agric-food supply are faced with markets in an unprecedented state of flux, the domestic markets in this state are undergoing rapid but uneven modernization, while higher-value and export markets are increasingly the preserve of commercial producers and large scale suppliers.

The paucity of targeted innovations in the small scale agricultural sector, absence of public-private partnerships, and declining investments in research and extension systems that promote smallholder production, is a cause for concern. Watson (2008) highlights the need for emphasis on developing crops, farmer organizations, business associations and scientific organizations explicitly supporting the needs of small scale agricultural producers, and entrepreneurs, to capture and add value to on-farm, post harvest and off-farm enterprises. These support structures, in-tandem with development-

oriented local governance and institutions, are required to assist the small scale farmers overcome high marketing costs, thus enabling them harness their market potential (Madhin 2009, citing Watson, 2008).

The current ruling party in South Africa, the African National Congress (ANC), in recognition of the need for smallholder development, adopted wide-ranging resolutions on rural and agrarian development. These resolutions focus on addressing rural poverty and agriculture, aiming to 'implement large scale programmes to establish new smallholders, improve the productivity of existing small scale and subsistence farmers, and to integrate smallholders into formal value-chains linking them to markets' (ANC, 2007).

Despite the growth of government budget for support to small scale farmers in the last decade, evidence shows that most small scale farming households received little or no support (Hall & Aliber, 2010). According to the Department of Agriculture, the number of smallholders and subsistence producers supported each year has grown substantially, from 85,500 in the year 2010, to a projected 435,000 subsistence and 54,500 small-holders by the year 2015 (Mail & Guardian, 07/03/2014).

In the words of Hall & Aliber (2010), 'there are huge numbers of people engaged in agriculture, mostly on a small scale, often part time, and largely with little or no interaction with official government programmes, supposedly there to support them'. Though government has trebled its support for agriculture since 1996, focusing on small-holder farmers and subsistence producers, there was a reported decline in small-holder production between the years 1998 and 2008 (Mail & Guardian, 07/03/2014).

Hall & Aliber (2010) therefore suggested that 'the primary constraint in state support to small scale farmers is not the level of budget, but the misallocation of funds', stressing that a lot of the funding already available to support smallholders is not well spent; and 'with a particular imbalance evident between relatively large amounts of support to rather few new farmers in badly conceptualized projects, at the expense of the many existing previously disadvantaged farmers'.

Moreover, the avowed insufficient understanding of small scale farmers is often cited as a major reason for the seemingly-continued failure of many targeted development projects and programmes. While the targeting of specific groups is time-consuming and described as difficult by Hendricks & Fraser (2003), it is widely known that small scale farmers receive only a portion of their gross income from farming. These farmers have production rights rather than land ownership, make use

of family or casual labor and their production objective vary from subsistence to sporadic or inconsistent surplus production for markets. This set of variables makes the small-scale farming system highly unstable, and gives weight to the prediction of Hendricks & Fraser (2003) regarding the eventual disintegration of the small scale farming sector.

However the positive contribution of smallholders to poverty reduction and economic growth requires that viable solutions be applied to 'a number of complex technical, institutional, and policy issues' which limits the potential of small holders. These issues have been identified to include land markets, research and extension, credit and connection to markets, development of rural infrastructure, rural non-farm employment, trade policy and food price stabilization (Dethier & Effenberger, 2012). This resonates with an earlier call by Poulton *et al*. (2010) for efficient pre and post paid services to small farms in high potential areas, necessary for the intensification of production and concomitant contribution to poverty reduction and economic growth.

2.3 Commercialization of small scale agriculture

2.3.1 Defining agricultural commercialization

Agricultural commercialization as a concept is complex, plagued by a lack of clarity which has given rise to misconceptions (Goshu *et al*., 2012; Jaleta *et al*., 2009). This lack of clarity has thus contributed to varying definitions and emphasis given in the literature. These definitions according to Zhou *et al*. (2013) 'differ in focus and breath, which has also influenced its measurement'. A simple definition provided by Pradhan *et al.*(2010) seen in Agwu *et al.* (2012) refers to agricultural commercialization as the process of increasing the proportion of agricultural production that is sold by farmers. Poulton *et al.* (2008) also follows the 'output-side definition', and views commercial agriculture as being the production primarily intended for the market, and is not dependent on scale of production or related to particular types of crops.

Agricultural commercialization however, implies much more than the marketing of agricultural outputs, it entail that the product choice and input use decisions are based on the principle of profit maximization (Von Braun *et al.*, 1991; Pingali & Rosegrant, 1995; Yoon-Doon & Yoon, 2009). Other definitions of commercialization, including Von Braun & Kennedy (1994) follow the 'input-side', and consider the degree of dependence on markets for the supply of production inputs.

In a broad sense, smallholder commercialization could be seen as the strength of the linkage between farm households and markets at any given point in time (Jaleta *et al*., 2009). This household-to-market linkage could relate to output or input markets, either in buying, selling or

both. Commercialization considers both the input and output sides of production, and the decision-making behavior of farm households in production and marketing simultaneously, which is a 'broad' view as espoused by Zhou *et al.* (2013).

Pingali (1997) looked at both input and output sides, and suggested that over time, these two aspects of commercialization will proceed broadly in tandem. Commercialization can also be seen from the perspective of the exchange economy; encompassing the benefits gained by the household from the rural economy. Accordingly, Okezie *et al.*(2012) defined commercialization as the volume of produce and household resources that enter the exchange economy; this includes off-farm exchange of labor and capital. In this instance, commercialization implies that both traded and non-traded inputs are valued in terms of their market value.

In most literature, as reported by Immink & Alarcon (1993) and Strasberg *et al.*(1999), a farm household is assumed to be commercialized if it is producing a significant amount of cash commodities, allocating a proportion of its resources to marketable commodities, or selling a considerable proportion of its agricultural output.

However, the most commonly adopted view of commercialization as proposed by Pingali & Rosegrant (1995), affirm that commercialized households are targeting markets in their production decisions, rather than being related simply to the amount of product they would likely sell due to surplus production. Aptly captured in the remark by Hinderink & Sterkenburg (1987) seen in Pingali & Rosegrant (1995), 'the sale of accidental surpluses does not automatically transform farming units into commercial farms'.

Smallholder commercialization could also be seen as a dynamic process (Jaleta *et al*., 2009), the various changes that are on-going at the farm household level being considered and looking at the rate at which the proportion of outputs sold and inputs purchased are changing over time at the household level. Commercialization is hence a product of the increased responsiveness and engagement by farmers to agricultural markets. Jayne e*t al.*(2011) in the view of Sharma *et al.* (2012) provided a 'rather lurid explanation' using a cyclic perspective, by asserting that smallholder commercialization refers to a virtuous cycle in which farmers intensify their use of productivity-enhancing technologies on their farms, achieve greater output per unit of land and labor expended, produce greater surpluses, expand their participation in markets, and eventually raise their incomes and quality of life.

2.3.2 Conceptual model for agricultural commercialization

In order to support our understanding of the concept of agricultural commercialization, Zhou *et al.* (2013) offer a framework useful as a conceptual model for commercialization. In the model, shown in Figure 3, key interrelated components such as the drivers of commercialization, determinants, processes, approaches, indicators and effects are condensed into an acceptable framework valuable for the planning, implementation and review of programs in agricultural commercialization.

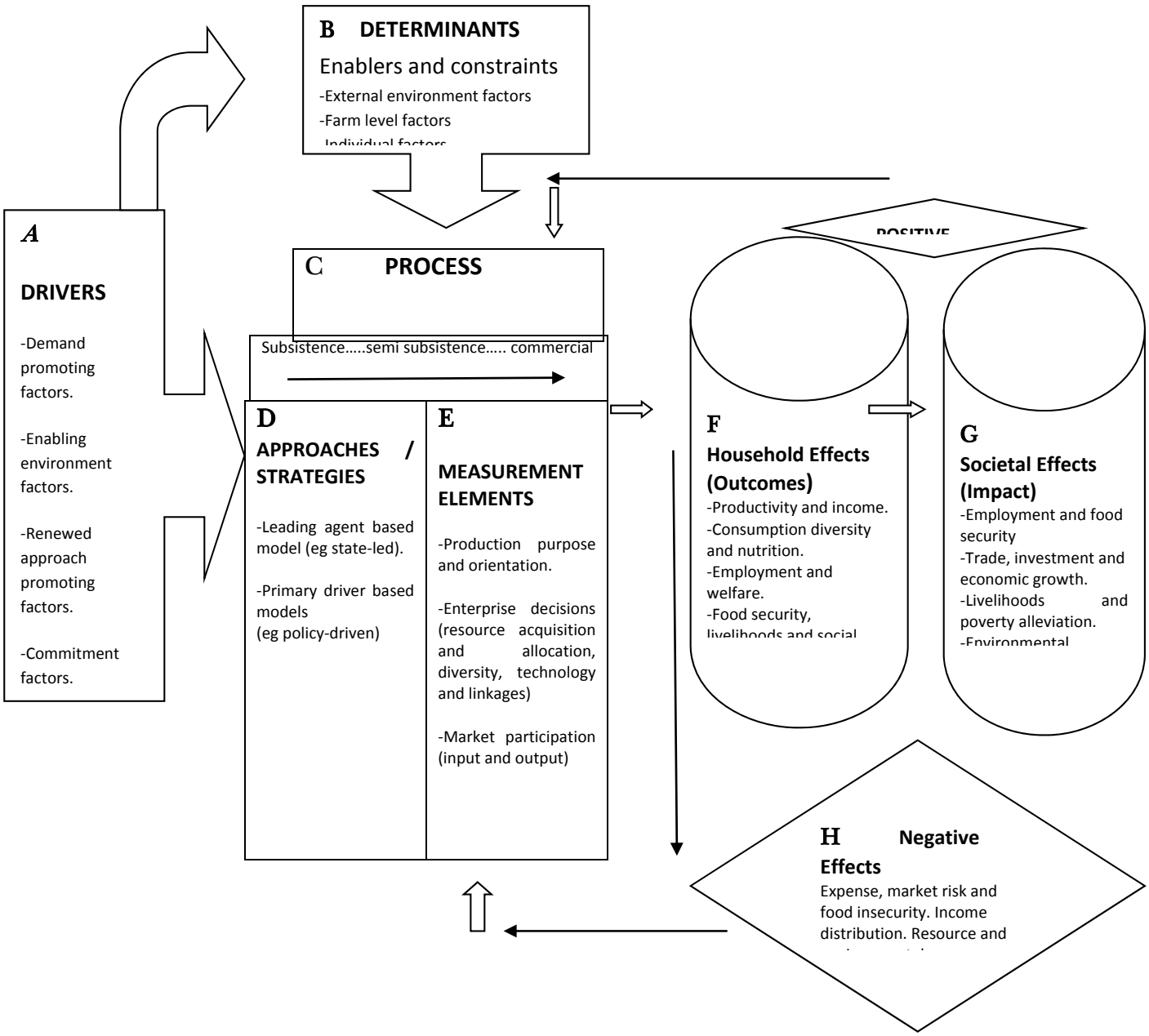

Figure 3: A conceptual framework for agricultural commercialization (Source: Zhou et al., 2013).

According to the model in Figure 3, diverse drivers (A) set in motion the commercialization process through a number of ways, such as increased demand for produce, a favorable policy environment, an availability of resources, new approaches to farming, more efficient farming technology and increased entrepreneurial activities. When this happens, the production for markets become increasingly efficient and the transition process by small-holders towards market orientation becomes influenced by socio-economic factors and other determinants (B). These factors are either favorable or unfavorable to the process, facilitating the progression, or otherwise, from subsistence to commercialized production (C).

The commercialization process could be driven by different approaches or strategies (D), depending on the change agent and driver. The progress towards commercialization may be measured, or is indicated by elements (E) including purpose of production, allocation decision, and market participation. Success in the commercialization process ultimately leads to improved outcomes at the household level, and impact at the societal level (F & G). Concurrently, some negative effects may also manifest (H), which all provide a feedback into the process.

2.3.3 Importance of agricultural commercialization

Agricultural commercialization has been described as an indispensable pathway towards economic growth and development for most developing countries relying on the agricultural sector (Von Braun, 1995; Pingali and Rosegrant, 1995; Timmer, 1997). According to Jayne *et al*. (2011), the main starting point of structural transformation is broad based smallholder-led agricultural growth and commercialization.

The structural transformation process begins with broad-based agricultural growth, causing a build-up of purchasing power by millions of small scale farmers, trapped at the base of the income pyramid. The recycling of money fuels demand and employment growth in other non-farm sectors, in turn increasing demand for food and other farm products; a virtuous cycle in which the rural and urban labor force provide a market for each other. Smallholder commercialization is a crucial feature of the structural transformation process, considered by most development economists to be the major route from a semi-subsistence agrarian society to a more diversified and food-secure economy with higher general living standards (Jayne *et al*., 2011).

In promoting improved living standards, Rahut *et al.*(2010) argued that commercialization allows increased participation of individuals and poor households in the domestic and international exchange economy, resulting in higher average farm incomes and hence lower farm income

inequality; collaborating the view of Samuel & Sharp (2007) that the final intent of going commercial is not just making a shift from subsistence to market oriented farming, but by doing so, to achieve better welfare outcomes for the smallholder (Rahut *et al*. 2010).

The commercialization process allows the smallholder to participate in the exchange market, both for inputs and outputs. Okezie *et al*. (2012) surmised a view held by a number of authors that the commercialization of agricultural systems leads to greater market orientation of farm production, progressive substitution out of non-traded inputs in favor of purchased inputs, and the gradual decline of integrated farming systems and their replacement by specialized enterprises.

Capturing the benefits of specialization through market transactions is also highlighted by Von Braun *et al*. (1994) as an implication of commercialization. Many authors concur with this view, and, that commercialization leads to increased diversity of marketed commodities at a national level, and increased specialization at regional and farm levels (Pingali and Rosegrant, 1995; Timmer, 1997; Kurosaki, 2003). Jaleta *et al*. (2009) reported that Romer (1993) confirmed the 'net gains' from market-oriented production, arising from specialization that builds on, and creates comparative advantages, potential for large scale production, and from dynamic technological, organizational and institutional change effects, which arise through the 'flow of ideas from exchange based interactions'.

Commercialization is increasingly viewed as the future path for agriculture, as subsistence agriculture in the future, may not be a viable activity which ensures sustainable household welfare and food security (Pingali, 1997). In affirmation to this, Kennedy & Cogill (1987), and Dorsey (1999) postulated that commercialization tends to generate more household income due to its comparative advantages over subsistence production. Its linking power between input and output sides of the market is also recognized. Pingali (1997) asserted that the demand for modern technologies by the commercializing sector promotes the input side of production and facilitates the development and advancement of technological innovations. The use of modern technology, in turn, results in higher productivity and production entering markets.

The process of commercialization also facilitates the emergence of new services, intermediation and value addition. Such services include an energized financial services sector providing credit, insurance, business advisory and related services. This fits the assertion by various scholars including Jaleta *et al*. (2009) that commercialization is a major route to the overall structural transformation of the economy, in which larger proportions of economic output and employment are generated by the non-agricultural sectors. The welfare effects or impact of agricultural

commercialization have been identified to include gains in farm household income, employment, health and nutrition (Jaleta *et al*., 2009).

The impacts of commercialization can be categorized into first, second and third orders (Jaleta *et al*., 2009). First order effects are mainly income and employment effects that are directly reflected in the household welfare, the second order effects include health and nutrition aspects, usually contingent on the level of income attained through the existing level of commercialization. Third order effects (higher order) are the macro-economic and environmental effects that go beyond the household level. Though the process of commercialization impacts on the smallholder farmer in various ways, Jaleta *et al*. (2009) surmised that the positive impacts of agricultural commercialization likely outweighs any adverse consequences associated with the commercialization process.

2.3.4 Constraints to small-scale farmer commercialization

Perception matters, as they say, and in some cases is everything. Commercialization is more often than not, thought in large scale, ignoring the fact that even small farmers and poor farm households participate in the market either because they produce a little surplus or sell to earn cash income to meet other family necessities.

Jayne *et al.* (2011) admitted that the small scale farmers generally lack land, capital and education, needed to respond quickly to technological changes and agricultural market opportunities. The land holding is a key determinant of commercialization (Ferris *et al*., 2014), as the land allows the farmers to cultivate more than is required for household consumption; and at any given yield level, a household with lower land per capita has to devote a higher proportion of its land to food production if it is to achieve a given level of self-sufficiency, and hence there is less land available, if any at all, for market production (Rahut *et al.*, 2010).

To a large extent, the production choice is determined by the land potential available to small farmers. This resource constraint also deters small scale farmers from high-value crop production options; which though promises higher rewards, is not open to most small farmers. In the view of Lerman (2004) and Pingali *et al.* (2005), a critical issue to be answered by smallholders specializing in high-value outputs is whether their size can profitably support such activities in the long run.

Also, in targeting specialized high-value output markets which may be export-oriented, the issue of product quality, standard and volumes of supply may be a barrier to commercialized smallholders (Jaleta *et al.*, 2009). These and other regulatory issues put smallholders at a higher income risk,

which might have an adverse consequence on the overall commercialization process. Little wonder therefore, that Pingali *et al.* (2005) speculated that for small scale farmers, commercialization can at best, offer the possibility of some diversification, but not a total specialization.

Commercialization according to Pingali & Rosegrant (1995) usually takes a long transformation process from subsistence to semi-commercial and then to a fully commercialized agriculture. Risks are higher under commercialized agriculture, and therefore have implications on the overall commercialization process for small scale farmers. In the view of Fafchamps (1992) and Dercon (1996), the extent of household commercialization is subject to risk and household's attitude towards risk. The riskier the marketing environment a household is engaged in, the less a household will be involved in activities that support market orientation (Finkelshtain & Chalfant, 1991; Von Braun *et al.*, 1994).

While perceived risks in labour and food markets compel small scale farmers to stick to the self-sufficiency objectives, both in their production and consumption decisions (Jaleta *et al.*, 2009); unreliable and costly food markets and fluctuations in market prices put the relatively market-oriented resource-allocation decisions of semi-subsistence households at stake, due to less reliability of food markets to guarantee household food security (Von Braun *et al.*, 1994; Govereh *et al.*, 1999).

Apart from risks in markets, poor market access also deters small scale farmers from the commercialization process. According to Chirwa & Matita (2012), the potential benefits from commercialization such as higher product prices and lower input costs, are not effectively transmitted to poor households when market access is poor. Subsistence farmers often sell their produce early in the season when prices are at their lowest, and buy in the deficit season from markets when prices are highest, hence discouraging them from greater commercialization (Omiti *et al.*, 2009).

A plethora of other factors constraining smallholder commercialization have been identified in the literature; these include the effects of agro-climatic conditions, infrastructure, community and household resources and asset endowment, laws and institutions, cultural factors affecting consumption preferences, production and marketing opportunities (Von Braun and Kennedy, 1994; Von Braun 1995; Jaleta *et al.*, 2009). Some exogenous forces such as population and demographic changes, urbanization, availability of new technologies, macro-economic and trade policies also affect commercialization. Pender & Alemu (2007) concluded that these factors affect commercialization, by altering the conditions of commodity supply and demand, output and input

prices, transaction costs and risks that farmers and others in the agricultural production and marketing system have to cope with.

2.3.5 Determinants of agricultural commercialization

In their review of the commercialization literature, Zhou *et al*. (2013) classified factors which trigger smallholder commercialization. Their characterization is based on the nature of its impact, and include;

i. Factors promoting demand growth, such as population growth and rapid urbanization including income growth.
ii. Environmental changes pushing for renewed approaches to farming, such as global warming, climate change, changing rainfall patterns and water availability.
iii. Productivity enhancing operating environment; such as natural resource endowment and suitable agro-ecological conditions.
iv. Factors making operations more efficient, such as appropriate technology, reduced transaction costs and an integrated value-chain.
v. Increased commitment of individuals to commercial activities, solely based on an entrepreneurial culture (adapted from Zhou *et al*., 2013).

Zhou *et al*. (2013) also observed that commercialization strategies or approaches can be grouped, according to the primary driving forceor leading change agent. In their view, efforts at commercialization could be dominated by 'one agent or more entities undertaking facilitation or operating roles'. The strategy could be led by the state, private sector, donor or a collaborative or partnership strategy; the partnership combines the joint effort by the state, the private sector and donor agencies. They argue that partnerships, among all other strategies, have proven the most successful, 'as single agent strategies proved costly or unsustainable'. On the other hand, a leading driving force for the commercialization process could be policy, demand, technology, entrepreneurship, or value-chain driven; it could also be driven by a combination of these forces.

The determinants of smallholder commercialization of agriculture are broadly classified either as external or internal factors.

External factors are beyond the control of the farmers and include population growth and demographic change, technological change, introduction of new commodities, development of infrastructure and market institutions, development of the non-farm sector and the broader economy, rising labor opportunity costs, macro-economic, trade and sector policies affecting prices

(Von Braun *et al*., 1991; Pingali and Rosegrant, 1995). Other external factors highlighted by Pender *et al*. (2006) include the development of input and output markets, institutions like property rights and land tenure, market regulations, cultural and social factors affecting consumption preferences, production and market opportunities and constraints, agro-climatic conditions, including market and production risks (Jaleta et al., 2009).

Factors such as smallholder resource endowments, including land and natural capital, labor, physical capital and human capital etcetera, are household specific and considered to be internal determinants.

2.3.5.1 Population growth and demographic change

The earlier theory of induced innovation (Hayami and Ruttan, 1971) shows that changes in person-land ratios, cause farmers to adapt their farming systems in predictable ways; other factors remaining constant, rising labor-land ratios cause land values to rise compared to agricultural labor, indirectly inducing farmers to adopt new land-saving technologies. This agrees with the view of Pingali & Binswanger (1988) and Binswanger & McIntire (1987), reported in Muyanga & Jayne (2012), that land-abundant agricultural systems evolve in response to growing population density, as rural communities become heavily populated, farmers transit to intensive land and factor use to raise the returns from land.

Muyanga & Jayne (2012) however, hypothesized that farm households in relatively densely populated areas, will exhibit evidence of declining farm size, constraints on farm intensification, and lower surplus production leading to lower commercialization, income and asset wealth, especially per labor unit; than households in less land-constrained areas. Their study on the implication of increasing population density in Kenya's rural areas on smallholder production and commercialization, concluded that farm productivity and incomes tend to rise with population density up to a certain threshold, beyond which rising population density is associated with sharp declines in farm productivity.

2.3.5.2 New technologies

The role of new technologies as a determinant of commercialization is sometimes viewed as more important than any other, and in some cases it is assumed that the adoption of technology is equivalent to commercialization [(Lockheed *et al*., 1980; Steward,1985; cited by Makhura *et al*. (1998) in Workneh & Michael (2002)].

Commercialization is enhanced by the use of productivity-increasing inputs and technologies, wherein Von Braun and Kennedy (1994) agreed that improved technology helps subsistence farmers to commercialize in low-risk ways. In this regard,Von Braun *et al*. (1994) confirmed that the importance of resource-saving and yield-enhancing technological innovation and their adoption are unquestionable in the smallholder commercialization process. They further argued that in the short run, increased commercialization could occur without changes in agricultural technologies, but the inverse would be less likely due to the very important demand-side pull for technological innovation; hence von Braun (1995) concluded that commercialization and technology are complementary (Workneh & Michael, 2002).

Though the prevailing optimistic view is that smallholders benefit from technological innovations in agriculture, this view is not universally held as some adherents of the pessimistic view hold that the forces for change can interact with, or even induce institutional and market failure, with adverse consequences (Asfaw *et al*., 2010). In conclusion, Asfaw *et al*. (2010) suggested that results generally underscore that a household's production technology choices fundamentally affects its level of market integration, primarily by affecting its productivity.

2.3.5.3 Institutions

Institutions according to Kharellah & Kirsten (2001) affect economic performance, growth and development through their influence on human behavior. Institutions are described as 'rules of the game' (North, 1990) and comprise both formal rules, such as laws, constitutions, property rights, among others; and informal constraints such as norms, conventions and codes of conduct, that provide the structure for human interaction (Jaleta *et al*., 2009).

Institutions also include both institutional environments and institutional arrangements. The environment refers to the fundamental political, social and legal ground rules which establish the basis for production, exchange and distribution. On the other hand, institutional arrangements refer to relations between economic units, defining how the units can cooperate or compete, and include contracts, auctions, exchanges and cooperatives (Williamson, 2000). In the view of Glover (1994),

the distributional benefits of agricultural commercialization, access to commercialization opportunities and sharing of commercialization risks are functions of institutional arrangements (Jaleta *et al*., 2009).

2.3.5.4 Risks

Risks impact on a farm household's decision making behavior (Finkelshtain & Chalfant, 1991). Under imperfect or non-existent markets, risk-averse households tend to produce more of the market-risky subsistence produce for consumption. The degree of change in household consumption due to shocks depend on the share of risky crops in total consumption, the income elasticity of demand for the risky crop, risk preference of the household and the covariance between consumption prices of risky crops and the income they generate (Jaleta *et al*. 2009, citing von Braun *et al*., 1994).

2.3.5.5 Markets and their integration

The existence of low-cost, well-integrated and efficient rural markets is a key element in agricultural commercialization. The resource allocation to marketed crops substantially diminishes in the absence of food markets, since the aim of food self-sufficiency at the household level takes prominence (De Janvry *et al*., 1991).

In explaining the importance of well integrated markets, Barret (2008) agreed that well integrated markets transmit excess supply to distant locations, and because of this, the returns to increased output due to technology adoption diminish less quickly in well integrated markets, than in poorly integrated markets.

2.3.5.6 Transaction costs

High transaction costs especially fixed costs, which are highly household or commodity specific, non-variant with the volume of transaction basically deters smallholders from participation in markets. Such costs include costs for searching, monitoring and screening. Apart from its direct impact in deterring or limiting household participation in cash crop markets, the prevalence of higher market transaction costs also restricts household's involvement in cash crop production, by discouraging participation in food markets and prompting smallholder farmers to give priority to subsistence food production (Key *et al*., 2000; Govereh & Jayne, 2003; Pingali *et al*., 2005).

The result of this is that agricultural household resources are diverted away from their potential use in cash crop production that would otherwise generate higher household income, hereby discouraging agricultural commercialization.

2.3.5.7 Asset holdings

Asset holdings are relevant in the smallholder commercialization process, as they mitigate unexpected shocks prevalent in the process of agricultural commercialization. On both the consumption and production sides, the importance of assets has been highlighted in the agricultural commercialization literature.Reductions in yield or unfavorable market prices may affect household income and consumption, in which case, asset liquidation may be the only option to smoothen household consumption. Conversely, assets are essential for the production of marketable surpluses; and include land, oxen, farm implements, machinery and human capital.

When factor markets are imperfect, in the view of Sadoulet & de Janvry (1995), resource ownership matters for efficiency. According to World Bank (2007) household asset holdings in the form of human capital (education, experience and skills), is one of the crucial elements in commercializing smallholder agriculture.

2.3.5.8 Government Policies

A number of authors including Pingali & Rosegrant (1995) have emphasized the importance of appropriate government policies in facilitating the smooth transition from subsistence to commercialized agriculture. This is necessary, as the process of smallholder commercialization cannot be left to the market alone (Von Braun *et al*., 1994).Priority areas where governments should act include investments in developing rural markets, transportation and communication infrastructure, research and extension, land and property rights, capital markets, support services in market information, credit, health, sanitation and nutrition for rural households (Pingali, 1992).

2.3.6 The pathway to agricultural commercialization

Scholars agree in the literature that agricultural commercialization is a long drawn-out process, occurring along a continuum or commercial pathway, as shown in figure 4. Foster (1998) defined the concepts of subsistence and commercial farmers in terms of the continuum which reveals how commercialization occurs.

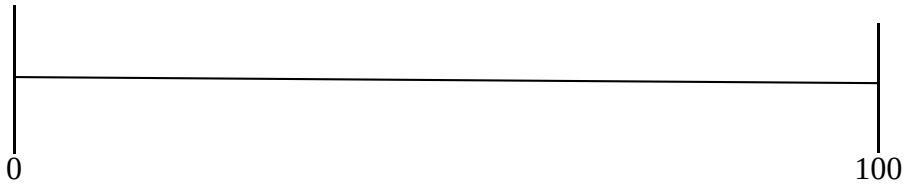

Figure 4: The commercialization continuum (Adapted from Foster, 1998).

Farmers could be at any point on this continuum, and those farmers moving to the right of the continuum devote increasing proportion of their production resources to marketed produce. Commercialized farmers are closer to the right end-side of the continuum, while subsistence oriented farm households are located on the left end-side of the continuum, closer to zero.

Commercial farmers according to Mahaliyanaarachchi & Bandara (2006) can also be classified based on the marketable surplus which they produce. Using this classification, subsistence farmers produce marketable surplus of less than 25% of total production, emerging farmers produce between 25 – 50 percent marketable surpluses from total production, while commercial farmers produce in excess of 50% marketable surplus from total production.In comparing the rate of agricultural commercialization, Norsida & Nawi (2010) concluded that the countries of East Asia are at the high end of the agricultural commercialization pathway; while South East Asian countries and parts of Latin America are rapidly moving commercialization. The countries in South Asia and much of sub-Saharan Africa were located at the lower end of the commercialization pathway.

While the speed of commercialization differs substantially across continents and countries, Pingali & Rosegrant (1995) concur that the countries are all moving in the same direction. A major question in the abundant literature of agricultural growth and development in sub-Saharan Africa, posed by Hinderink & Sterkenberg (1987), Inmink and Alarcon (1993), Kennedy (1994) among others, is how to encourage smallholder farmers primarily engaged in subsistence farming to become market oriented (Okezie *et al*., 2012).

Agricultural commercialization is not a frictionless process, and there is a need to understand the complex changes that the process of commercialization brings to the farmer, their farming activities and social life (Randela, 2005). Agricultural commercialization involves changes from the closed goal of the subsistence farmer, to the open ended and virtually insatiable economic goal of profit maximization; bringing with it a change in types of management decisions and the information needed to make these decisions. Primarily associated with the new involvement in the market, is a collection of new risks along the commercialization continuum, requiring new understanding of the nature of the risk, information and new coping mechanisms (Foster, 1998). The effects of a pro-market approach in supporting smallholder farmers, according to Ferris *et al*. (2014) can be remarkable especially for farmers poised to engage with markets, but lack the necessary support systems.

Agricultural transformation and agricultural diversification are closely related to agricultural commercialization, as a component of agricultural change. Smallholder commercialization is part of an agricultural transformation process in which individual farms shift from a highly subsistence-oriented production towards more specialized production, targeting markets both for their input procurement and output supply (Jaleta *et al*., 2009). In the view of Pingali & Rosegrant (1995), as the level of commercial orientation increases, mixed farming systems give way to specialized production units designed to respond to market prices and quality inputs.

Jaleta *et al*., (2009) highlighted the ongoing debate about targeting the process of smallholder commercialization. On one hand, there is disagreement as to whether the process of commercialization should aim at increasing the productivity and marketed surplus of staple food crops, or alternatively, to focus on newly introduced high value crops (Gabre-ab, 2006; Pingali *et al*., 2005). On the other hand, there is a lack of consensus as to whether, given the targeted commodity types for commercialization, to produce these commodities for the domestic or export market.

Whichever component of the debate one ascribes to, the importance of policy and strategic interventions aimed at improving factor and product markets, service provision and infrastructure to support the commercialization process, cannot be overemphasized.

2.3.7 Critics view of smallholder agricultural commercialization

Jaleta *et al*. (2009) conceded that there is a growing consensus that smallholder agricultural commercialization has different impacts on different socio-economic groups, under different socio-economic, institutional and policy environments. Jaleta *et al*. (2009), Pingali *et al*. (2005) and Von Braun & Kennedy (1994) alongside a host of other scholars in the literature, have admitted that the net impacts of commercialization are not necessarily or universally positive.

In the view of Hebnick *et al*. (2011), many experts continue to erroneously see agricultural development as best realized in commercial farming. Non commercial agriculture in this instance is often equated with subsistence farming, seen as having very little connection to markets and thus holding no future prospects. Commercialization is also hyped as a universal solution for the reversal of de-agrarianisation (Mtero, 2012), but often associated with failure. From observations in the Eastern Cape Province of the massive maize production schemes supported by government, Mtero (2012) presents evidence of the quest to 'modernize' agriculture in the former homelands area, with rather unfavorable outcomes.

Despite the economic benefits of a pro-market approach, often intertwined with commercialization, there is recognition by Ferris *et al*. (2014) that linkage to formal markets is not 'an absolute panacea'. In their view, it is important to appreciate that the issue goes beyond creating lucrative market links, but lie in adequately assessing the conditions of smallholders, their options and methods for optimizing market performance; while simultaneously ensuring that the options are manageable.

The position of these smallholder-commercialization critics encompass the link between smallholder commercialization and household risk and food insecurity, nutritional effect especially among children, health and employment, environmental and human risks, among others.

2.3.7.1 Household income risk and food insecurity

Commercializing smallholders especially those producing non-traditional cash crops for the market are faced by a number of risks. The risk portfolio include crop failure, weather related shocks, and exposure of household to volatile food market prices and food insecurity. When compared to the smaller but more continuous flow of income in the form of cash and food under semi-subsistence production system, the supposedly higher income from cash crops in lump-sum payments is usually spent within a short time and more on non-food commodities (Von Braun, 1994). This problem

according to Jaleta *et al*. (2009) is exacerbated in the absence of well-integrated financial systems that promote savings.

In order to mitigate risks or unforeseen income shocks, and keep smallholders on the path to full commercialization, Timmer (1997) stressed that governments need to play a crucial role in designing and implementing policy measures that could assist smallholders in crafting their own risk-management and risk-sharing strategies. Also Jaleta *et al*. (2009) suggested that either credit markets have to be easily accessible, or semi-commercial households have to set aside some income for consumption smoothing.

2.3.7.2 Nutritional effects on children

According to Inmink & Alarcon (1993), in cases of diversion from food to cash crop production, the attendant lower food from own production and increased dependence on local food markets may result in adverse nutritional effects on the household, especially children. The result of studies by a number of scholars in the literature including Dewey (1981), Randolph (1992) and Bouis & Haddad (1990), according to Jaleta *et al*. (2009), showed that higher income households preferred to spend more on non-food items. They therefore argued that raising household incomes appeared to be a necessary, but not sufficient condition for substantially improving child nutrition.

However, Kennedy (1994) concluded from analyzing child health and nutrition studies that there is no clear evidence that agricultural commercialization had any adverse effect on child nutrition (Jaleta *et al*., 2009).

2.3.7.3 Employment and health effects

With increasing commercialization and higher opportunity costs for labor, smallholder commercialization that favors labor-saving technologies such as mechanization may have an adverse effect on the employment of the agricultural labor force. Also, while the process of commercialization strengthens the linkages and interactions between rural and urban populations; this dynamics may increase the rate of disease transmission to rural communities (Jaleta *et al*., 2009). In the same vein, disease prevalence has a direct and adverse effect on the population in the active labor force.The literature on commercialization is however very negligible on the connection between smallholder agricultural commercialization and the transmission and prevalence of diseases (Jaleta *et al*., 2009).

2.3.7.4 Environmental and human risks

Commercialization in intensive production systems permits the increasing use of external inputs such as pesticides and herbicides. An increasing use of inorganic fertilizers is a common feature of agricultural commercialization, especially with high-value cash crops; and has adverse effects on the environment and natural resource base (Jaleta *et al*, 2009). Higher economic growth results in higher opportunity cost of labor, leading to excessive use of herbicides and pesticides, increased use of agricultural chemicals, in turn, could lead to higher environmental and human risks (Pingali, 2001).

When linked to irrigation schemes, improper use of water resources could have serious consequences on both surface and under-ground water sources, water logging and salinity are some of the major problems; the problem of downstream degradation of water quality by toxic agro-chemicals is a serious environmental problem. Nonetheless, Pingali (2001) was cautious in passing judgment on the net effect of agricultural commercialization on the environment; this circumspection could be due to the fact that the effect could vary, depending on the specific circumstances under which the commercialization process takes place (Jaleta *et al*., 2009).

By and large, critics of smallholder commercialization demand a rather deep re-assessment of strategies to achieve commercial modernized agriculture for growth and wealth creation, rather than being simply a rural safety net for poverty alleviation. Temu (2013) admonished supporters of smallholder commercialization to ‘stop romanticizing smallholder farming, and articulate with a commercial acumen and surplus profit in mind’; resonating with the insistence for a diverse win-win situation where large scale farming co-exists with smallholder agriculture.

2.3.8 Measuring the level of commercialization

There are diverse methods or indicators used for measuring the level of commercialization, emanating from how different authors perceive the concept of commercialization (Zhou *et al*., 2013). There is therefore no common standard for measuring the commercialization process or degree of farm household commercialization (Jaleta *et al*., 2009).

Due to the earlier dichotomy in the debate between food and cash crops in the commercialization process, a number of scholars including De Janvry *et al*., (1991) and Fafchamps (1992) advocated an examination of the household resource allocation decisions to these crops, as a proxy to the level of a smallholder commercialization. Some authors consider the input side of production, while others concentrate on the marketed output side of agricultural production to measure the degree of

commercialization. According to Haddad & Bouis (1990) captured in Omiti *et al.* (2007), the concept of market orientation or commercialization refers to the percentage of marketed output from total farm production.

Other authors including Von Braun *et al*., (1994) and Strasberg *et al*., (1999) used different types of ratios such as marketed outputs or inputs to the total value of agricultural production or total household income to measure agricultural commercialization. Various indices are suggested to estimate the input and output sides of commercialization, commercialization of the rural economy, and degree of integration into the cash economy.

In line with this thinking, there are suggestions to evaluate household commercialization using econometric analysis. Other analytical approaches comprise a set of equations describing the key relationships involved in the commercialization process (Okezie *et al*., 2012), and relate to a households time allocation, sources of income, spending of income, and determinants of the degree of subsistence. The analytic approach according to Okezie *et al*. (2012) is greatly applied in works on commercialization of agriculture, especially those related to the determinants of commercialization , including Von Braun *et al*. (1991), Kennedy & Cogill (1987),Von Braun & Kennedy (1994), Govereh & Jayne (1996) and Forouque & Tekeya (2008) among others.

The allocation decisions of farm households according to Von Braun *et al*. (1994) could be estimated econometrically, by using reduced form equations with an extended list of exogenous explanatory variables affecting many structural relations. The drawback to this method however, according to Jaleta *et al*.(2009) include the limitations of data, difficulty identifying underlying structural coefficients from reduced form estimates, and drawing conclusions about specific impact of crucial variables.

The study of commercialization begins with questioning whether a farm or household markets any of its output, going further to consider the degree of commercialization as measured by the amount or value of crops sold in relation to the value of crops produced (Jaleta et al., 2009). Following Craigg (1971), Heckman (1979) and Goetz (1992), it is tested further whether commercialization is actually a two stage decisive problem (cited in Jaleta *et al*., 2009). In the first stage, using Probit analysis, it estimates whether the farm household sells any surplus of their production or not; and in the second stage, estimation is made of how much produce were sold in the market. This method in the view of Jaleta *et al*.(2009), is mainly used to estimate the crop commercialization index (CCI) as used by Strasberg (1999) and Leavy *et al*. (2007).

The CCI however, assumes the household is only involved in crop production and looks only at the marketed output side. Another drawback of the CCI approach is that, it makes no meaningful distinction between a farmer who produces just a bag of maize and sells the whole bag, and another farmer producing one hundred bags, and sells sixty of the bags (Jaleta *et al*., 2009).

From earlier studies cited in Randolph (1992) and the literature reviewed so far, it appears that the most common approach in measuring the degree of farm household commercialization, is using the proportion of sales from the total value of agricultural production (von Braun, 1994); which is actually the revealed marketing decision of a household, particularly for commodities that are potentially used for both home consumption and sale (Randolph, 1992).

However, some households may sell commodities that are not intentionally produced for the market. In this case, considering the proportion of sales as an indicator of the degree of commercialization may lead to a wrong conclusion (Jaleta *et al*., 2009). Accordingly, Jaleta *et al*. (2009) suggested that in addition to the revealed marketing decisions of farm households, future studies on commercialization should also try to incorporate indicators that can capture household's production decisions, whether the commodity is mainly produced for home consumption or sale.

The concept of smallholder commercialization goes beyond the marketing of surplus staple products. It is very broad in the sense that it comprises household input decisions, major production objectives, participation of households in input and output markets, degree of specialization in production, and dependence on markets for income and consumption. This according to Jaleta *et al*. (2009) calls for the need to consider these dimensions when examining the level of smallholder commercialization. They also reveal that the use of panel data in commercialization studies have been limited, with most existing studies based on cross-sectional data sets; suggesting the use of panel data which may better reveal the dynamics of commercialization.

Other studies used the household commercialization index (HCI), adopted from the model used by Govereh *et al*. (1999) and Strasberg *et al*. (1999) to determine household specific levels of commercialization. The index measures the ratio of the gross value of crop sales by household(i), in year (j), to the gross value of all crops produced by the same household (i) in the same year (j), which can also be expressed as a percentage (%).

$$HCI\ i = \left[\frac{\text{Gross value of crop sales}_{\text{hh i year j}}}{\text{Gross value of all crop production}_{\text{hh i year j}}} \right] \times 100$$

The index measures the extent to which household crop production is oriented toward the market. A value of zero (0) would signify a totally subsistence orientated household, and the closer the index is to unity (1), the higher the farm household degree of commercialization.The advantage of this approach is that commercialization is treated as a continuum, thereby avoiding the crude distinction between 'commercialized' and 'non-commercialized' households; thus effectively bringing small scale and subsistence producers to the centre of the discussions about commercialization (Gabre-ab 2006, citing Govereh *et al.* 1999).

Also a number of current studies, especially those quantifying the magnitude and direction of the effects of the factors influencing commercialization, such as Martey *et al*. (2012), Agwu *et al.* (2012) among others, have used Tobit and Probit regression models. In these instances, commercialization has been modeled as a two-step analytical approach involving the unobservable decision to commercialize, and the observed degree or extent of commercialization (Vance & Geoghegan, 2004; Alene *et al*., 2008).

Zhou *et al*. (2013) opined that the difference in focus by authors in the literature has also influenced the measurement of commercialization. In their submission, they outlined two viewpoints held by scholars for measuring commercialization. These are a 'narrow view' and a 'broad view'. The narrow view looks at commercialization from the increase in the proportion of marketed output, or an increase in cash crop production as outlined by Kennedy & Cogill (1987), Govereh e*t al*. (1999) and Okezie *et al*. (2012). Alternately, the broad view considers the transition from subsistence towards market-oriented production, as articulated by Von Braun & Kennedy (1994) and Pingali & Rosegrant (1995).

It is pertinent to note however, that there is an 'oversimplification' of the concept of commercialization by the proponents of the narrow view, as some critical elements associated with commercial production are omitted (Zhou *et al*., 2013). These critical elements include the farmers' production purpose and behavior during the process of acquiring and allocating resources.This position according to Zhou *et al*. (2013), is supported in the works of a number of scholars such as Von Braun & Kennedy (1994), Jaleta *et al*. (2009) and Poulton *et al.* (2008). Worthy of note however, is that in both the narrow and broad views, the 'market' occupies a cardinal position, hence plays a central role in the commercialization process.

For the purpose of this study, there is recognition of the importance of a broad viewpoint of agricultural commercialization and its processes; and the resultant need to avoid the 'over-simplification' of the concept, as canvassed by some in the literature.However, as admitted by Zhou *et al*. (2013) and evidenced in various studies of agricultural commercialization, the broad viewpoint is not commonly applied in measuring commercialization. This therefore is an area for further research and modeling by scholars, so as to provide a more comprehensive measurement for the process of commercialization.

Therefore, following the footsteps of a majority of scholars in the commercialization literature, such as Govereh *et al*. (1999), Strasberg *et al*. (1999), Omiti *et al*. (2007) and Okezie *et al*. (2012); this study determines level of commercialization by the proportion of marketed output with a focus on crops. This determination follows on the methodology used by a number of scholars and authors including Kirsten *et al*. (2012), Salami *et al*. (2010), Poulton *et al*. (2008) and Von Braun & Kennedy (1994).

Chapter 3

RESEARCH METHODOLOGY

This chapter outlines the procedure employed in collecting the data needed for the study, and to meet the stated objectives of the research. Interviews were conducted using questionnaires to collect data, for calculating the commercialization index, and a regression model used to determine factors affecting commercialization.

3.1 Research approach and design

The study was quantitative in its approach and the data required for this research was collected from primary and secondary sources. The primary data was solicited from small scale farmers through interviews. Agricultural practices, inputs and outputs, prices offered and payments received by the farmers were of interest. Secondary data was sought from similar studies such as Agwu *et al*. (2012), reports from the South African government's Department of Agriculture Forestry and Fisheries, Potatoes South Africa, AgriSA and Statistics South Africa.

Farmer interviews and data collection was carried out using a purposive sampling technique, based on the June 2013 list of registered potato commodity farmers as obtained from the Department of Agriculture in the Bizana District Office.

Descriptive statistics and quantitative methods were used to analyze the collected data. Descriptive statistical analysis consisting of frequency distribution and mean values in the parameters of interest was done, and the results were presented in tables and graphs. The basic quantitative parameter of interest targeted in the results, was the household commercialization index (HCI); which was computed to estimate the level of commercialization among smallholder farmers. A regression model was also used to determine factors affecting commercialization. This method is similar to those employed in other commercialization studies completed by Okezie *et al*. (2012) and Govereh *et al*. (1999).

3.1.1 The Household commercialization index

The Household commercialization index measures the gross value of crop sales by a household in a given year, as a fraction of the gross value of all crops produced by the same household (i) in the same year (j).

$$\text{HCI (i)} = \left[\frac{\text{Gross value of crop sales}_{\text{hh i year j}}}{\text{Gross value of all crop production}_{\text{hh i year j}}} \right]$$

The HCI according to Govereh *et al*. (1999) can also be expressed as a percentage (%) = [ì x 100].

3.1.2 The Ordinary least square (OLS) regression model

Economic theory predicts direct relationships between a vast array of socio-economic and community variables and the willingness or otherwise of economic actors to participate in the process of value exchange. From a predictive perspective, it is therefore possible to fit a simple linear model to assess the determinants of commercialisation among smallholder potato producers in Bizana, Eastern Cape.

Following Gujarati & Porter (2009), the OLS model is expressed as:

$$Y = f(x_1, x_2 ..... x_n) \quad .....(1)$$

Where:

Y is the dependent variable representing some measure of commercialisation for the particular enterprise (potato), while x is the explanatory variable.

Following convention, the model was specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 ..... \beta_n X_n + \mu_i \quad .....(2)$$

Where:

$\beta_0 =$ Intercept or constant term

$\beta_1, \beta_2, ... \beta_n =$ Slope or regression coefficient

$X_1, X_2, ... X_n =$ Explanatory or independent variables

$\mu_i =$ Error or disturbance term.

The model was estimated to identify factors affecting the level of commercialisation. Given the rather large number of variables enumerated, the likelihood of correlation among independent or predictor variables was high. For this reason, the test of multicollinearity was applied.

The speed with which variances and covariance increase can be seen with the variance-inflating factors (VIF), which shows how the variance of an estimator is inflated by the presence of multicollinearity (Gujarati, 2003). A formal detection of tolerance or the variance inflation factor (VIF) for multicollinearity was used as follows:

$$VIF = \frac{1}{tolerance} \quad \text{.....} \quad (3)$$

where tolerance $= 1\text{-}R^2$

A VIF of 10 and above indicates the presence of multicollinearity among the variables;where multicollinearity was detected on the basis of the VIF value, the highly collinear variables were dropped from the model.

A number of reasons informed the use of Ordinary Least Square model for the regression. These include;

- The small sample size which makes application of other models like Tobit a challenge.
- The dependent variable (commercialisation) is continuous, which makes Ordinary Least Square, the better model to use.
- If data was categorical for the commercialization process, binary models like Logit or Probit could have been employed.

3.2 Research paradigm

A paradigm is a broad view or perspective of something and according to Collis & Hussey (2003), the paradigm followed in a research has immense importance for the research methodology.

3.2.1 Positivist research paradigm

This study followed a positivist research paradigm, which searches for observable facts using a deductive or theory testing approach.

Positivism is based on the assumption that social reality is independent of individuals, and exists regardless of whether or not people are aware of it (Collis & Hussey, 2003). Creswell (1994) affirmed that a positivist research is an inquiry into a social or human problem, which is founded on theory testing and made up of variables, measured with numbers and analyzed using statistical procedures so as to establish whether the predictive generalizations of the theory holds true. The end product of a positivist research, as claimed by Collis & Hussey (2003), can be the source of

laws and law-like generalizations, which provide a basis for explanation, allow the anticipation of phenomena, predict the occurrence and therefore allows for control.

A positivist research paradigm was followed as literature was studied in order to establish an appropriate theory or construct. The quantitative nature of the data captured by questionnaires was also in line with positivism, as it emphasizes quantifiable observations that lend themselves to statistical analysis (Collis & Hussey, 2003).

3.2.2 Classification of farmers and farm typology

According to Bailey (1994), classification is a process that is central to all aspects of life and consists of aligning individuals into groups or classes based on similarities (Everitt *et al.*, 2011), which provides a basis for analysis, reasoning and decision making.

A typology as defined by Tefera *et al.* (2004) is a qualitative or quantitative procedure that categorizes households or individuals into homogenous groups, which face similar constraints and incentives, and are influenced by external factors in a similar way. The relevance of typologies depends on its ability to capture the diversity of farming systems through maximizing group homogeneity and inter-group heterogeneity (Emtage, 2004).

Various theoretical perspectives informed the development of typologies and include farming style, sustainable livelihood, farming context and market structure theory; which Emtage (2004) asserts to account for individuals behavior, and is a product of the interaction between socio-economic, cultural, personal, institutional and bio-physical factors.

The farmers in this study are classified as small scale farmers, who use basic farm inputs to produce for household requirements and market any production surpluses.

3.2.3 Farming systems approach

A farming system is a population of individual farm systems that broadly have similar resource bases, enterprise patterns, household livelihoods and constraints for which an analogous development strategy and interventions would be considered correct. The farming system, depending on the scale of the analysis, could encompass a few dozen or many millions of households (FAO, Undated).

The farming system in the study area falls under the maize mixed farming system, as described by the Food and Agriculture Organization, prevalent in East and Southern Africa; and the research

approach included elements of participatory rural appraisal (PRA) techniques, which Norman (2002) assured would provide a way of responding to concerns related to how farmers articulate their needs and constraints to researchers.

3.3 Methodological framework used for the study

The Table 1 below outlines the methodological framework utilized for the study, it shows the relationship between the research question, it purpose and target respondents alongside the relevant and applicable research tools and approach.

Table 1: Methodological framework of the study.

Research Question	Purpose	Respondents	Research Tools	Paradigm and Approach (Analytical tools)
1. Is small holder agricultural commercialization necessary for economic growth?	To understand the link between agricultural production and economic growth.	Researcher Scholars Authors Policy makers	Literature search Interviews	Interpretivist Mixed methods
2. Who is a small scale farmer in the South African context?	To identify and understand the characteristics of the study's target population.	Researcher Scholars Authors	Questionnaire Literature search	Positivist Quantitative
3. What are the constraintsto small scale farmers'commercialization in Mbizana?	To identify and understand the challenges faced by smallholder farmers.	Farmers Researcher Scholars Practitioners	Questionnaires Literature search	Positivist Quantitative OLS Regression model
4. How is the level of farmers' commercialization measured?	To understand the concept and identify patterns and / or trends among the study population.	Farmers Researcher Scholars Practitioners	Questionnaire Literature search	Positivist Quantitative (HCI)

3.4 Study population

The population used for the study was taken from a June 2013 list of potato commodity farmers, registered with the District Office of the Department of Agriculture in Bizana, Eastern Cape. According to Terre Blanche *et al*. (2006) and Collis & Hussey (2003), a study population is any precisely defined group of people, events or things that are of interest to, and under investigation by the researcher; and from which the sampling elements are drawn.

3.5 Sample and sampling

A research sample according to Bryman & Bell (2007) is a sub-set and representation of the population selected for the study, and consists of a selection of members from the population. The sample, aims at representing the main interest of the study, is compiled from the population, and is simply the elements or people that are included in the research (Terre Blanche *et al.*, 2006; Collis & Hussey, 2003).

The study targeted all 71 farmers on the list. However, only 62 farmers were available and interviewed, with 58 questionnaires successfully completed and 4 questionnaires declared invalid. The basic idea of sampling is that, through the selection of members of the population, the researcher could draw conclusions regarding the entire population; where sampling refers to the process of selecting elements to observe.

A purposive sampling technique was used to identify the sample. This type of sampling is a non-random and convenience sampling technique, which according to Terre Blanch *et al*. (2003) involves selecting sample elements readily available to participate in the study, and can provide the information required by the researcher. Convenience sampling is a form of non-probability sampling (Leedy, 1993), and refers to any kind of sampling where the selection of elements is not determined by random selection.

3.6 Data collection tools

The study used a quantitative data collection method relying on structured questionnaires to achieve some of the objectives of the study. In this instance two sets of instruments were developed for the purpose of collecting the data.

3.6.1 Components and details of the instruments

The first questionnaire was prepared for use in interviewing the farmers that constitute the target population of the study. Elements in the questionnaire (attached as Appendix 1) were developed based on stated objectives of the study, and were used to capture data such as demographic characteristics of the farmers, farmers' production and inputs, including produce marketing. The questionnaire also solicited the availability of support services, records kept and farmers' perception of their enterprise.

The second questionnaire (attached as Appendix 2) was administered to various commercial outlets, formal and informal vendors selling potatoes within the town of Bizana. The town area was targeted because most commercial activities take place in the town centre, the surrounding rural areas have very limited outlets and most of the small shop (spaza shops) proprietors make purchases for their spaza shops in town. In this questionnaire, marketing issues related to potatoes were explored in order to understand the sources of potatoes sold within the Bizana area, estimated quantities supplied and other issues. This was done to characterize the supply and marketing of potatoes, and quantify the ability or potential of local farmers to fulfill their supply function.

3.6.2 Validity and reliability

The questionnaires were pre-tested and necessary corrections made to produce a study instrument deemed appropriate to the objectives of the study.

3.7 Limitations of the study

This study is constrained by a number of factors including the reliance on the respondents' ability to recall certain information requested. The non-availability of records and the poor record keeping attitude of subsistence farmers might have an effect on quality of the data. The study focused on commercialization, which is basically an input-output relationship, requiring data to reach an acceptable conclusion. The study hence relied on recall data by the farmers for purchased inputs, quantities purchased or amount received. In some cases, approximations and price quantifications had to be made to arrive at a given data set. This was a major limitation of the study.

Though the study targeted potato production, it had to use the marketed surplus of all crops produced as a proxy for commercialization. This was necessary because most of the farmers in the target group produced a mixture of crops, in addition to potatoes. It was noticed by the researcher that cultivated hectares was not exclusively reserved for potatoes, hence area under potato

production vis-à-vis area under other crops could not be used as an indicator of diversification into potato production.

Extension Officers from the Department of Agriculture assisted in administering the questionnaires, due to lack of funds to travel to the different farmer locations. The officers were however experienced in administering questionnaires, though the researcher rehearsed the questions with them and observed several interview sessions to ensure similar interpretation of the questions.

Though the list of potato farmers used may not be representative of all small scale farmers in the study area, who cultivate the potato crop; it encompasses the population of farmers involved in the project with Potato South Africa and supported by the Department of Agriculture, therefore constitute the key actors for the study.

3.8 Delimitation of the study

This study followed a theoretical perspective that assumes an increased interaction of farmers with the markets, either for inputs or outputs. The main variables of interest therefore were quantities produced and marketed.

The analytical instrument employed to measure the commercialization of respondents; the household commercialization index (HCI) is delimited. It is a tested tool used in a number of commercialization studies such as Govereh *et al.* (1999), Strasberg *et al.* (1999), Munguzwe & Jayne (2012), and Agwu *et al.* (2012) among others, which determined level of commercialization through marketed output of crop, the analytical tool is relevant when working with smallholder farmers who do not keep detailed records of their activity.

Nevertheless, for the purposes of enhancing the results from this study, and provide a rigorous analysis of the data; the researcher incorporated a regression analysis to determine the factors affecting commercialization.

The choice of respondents or study population is delimited, the sample selected purposively from the list of registered potato commodity members in Bizana. The geographical area of the study is limited to the Mbizana local municipality of the Eastern Cape Province.

Chapter 4

RESULTS AND DISCUSSION

This chapter outlines the main findings of the research and discusses its relationship with related literature. The results and related discussions are arranged according to the stated objectives of the study, beginning with a general overview of the demographic characteristics of respondents.

4.1 Categorization of study respondents

The general characteristics of the sample population from the study is highlighted in Table 2 below.

Table 2: Demographic characteristics of respondents.

Variable	Frequency	Percent (%)
Sex:		
Male	18	31
Female	69	40
Age (Years):		
35 or less	5	9
36 – 45	14	24
46 – 56	26	45
Above 56	13	22
Education (Number of years in school):		
0	4	5
5 or less	8	14
6 – 12	42	72
More than 12	4	7
Marital status:		
Married	45	77
Single	8	14
Widowed	5	9
Bank account:		
Have a banking account	32	55
Do not have a banking account	26	45
Farming Experience (Years in farming):		
5 or less	13	23
6 – 10	17	29
11 – 20	21	36
More than 20	7	12
Farm size (Hectares)		
Less than 2	23	53
2 – 4	28	35
More than 4	7	22
Household size (Number of persons):		
5 or less	33	57
6 – 10	19	33
More than 10	6	10
Other Income source:		
None	2	3
Social grants	35	60
Pension	12	21
Salary	7	12
Self employed	2	4

A total of 58 respondents were successfully interviewed out of a sample population of 71 farmers who are registered with the Department of Agriculture as potato farmers, providing a response rate of approximately 82%.

Sixty nine percent of the respondents were female and male respondents constituted forty one percent, while the age bracket of respondents was varied, about 45% of the farmers were between 46 and 56 years. Nine percent of the respondents were youths (35 years or less), and twenty two percent of respondents were above 59 years. Though only seven percent of the respondents had completed high school (Matric), and five percent did not have any education, the majority (72%) had between 6 to 12 years of schooling (the equivalent of a post-primary education).

Seventy seven percent of the respondents were married, 14% single and 9% were widowed. While sixty two percent of the respondent live in a tin-roofed brick house, approximately fourteen percent were staying in thatch-roofed mud houses and twenty four percent were staying in compounds that had a combination of buildings with brick / zinc and mud / thatch-roofed huts (commonly referred to as rondavels), which is an attribute of the predominantly rural environment.

More than half of the respondents (55%) did not own bank accounts, and on average the respondents had about 14 years of farming experience. However, a sizeable proportion of the respondents (23%) had only been farming for about five years while about 23% of the respondents have been farming for more than twenty years. The respondents' minimum

farming experience was 3 years, while three respondents had been farming for at least 40 years.

Fifty three percent of respondents had farm sizes of two hectares or less, while thirty five percent of the respondents and twenty two percent were farming on land sizes of between two and four hectares, and more than four hectares respectively. The average household size among the respondents was six persons, comprising five persons or less (57%), six to ten persons (33%) and more than ten persons (10%) in the household. However, large households are characterized by the extended family or nuclear family systems, with more than one family unit living in the same compound.

Ninety-seven percent of the respondents had an alternative source of income, which were mainly government social transfers of grants (60%) and pension (21%). Twelve percent of the respondents

were engaged in salaried work and about seven percent were self-employed in other non-farm activity such as sewing, craft making and transportation.

4.1.1 Discussion of the result

The high number of female respondents is a feature of rural homesteads in the study area, where there are many female-headed households. This occurs as large numbers of able bodied males from these communities are labor migrants in urban areas or in the mining belt. Joubert (2000) also highlighted this from an earlier study in the Ciskei, suggesting that men have often been away from the farms, working as contract labor in large cities. Young persons are also not keen on staying in rural communities, as there are very minimal opportunities available. Barlow & van Dijk (2013) complained that farming in South Africa faces an uncertain future, and has lost its appeal considering the scant number of young people committed to an occupation in farming.

While most of the respondents (95%) had attended some school, very few had completed high school with only 5% with more than 12 years of schooling. In most of the rural communities and towns, those with a post-Matric experience would have probably moved out of farming areas into urban towns in search of employment opportunities.

Farm experience in rural communities begins at an early age in life, and mostly involves working in family owned plots to produce subsistent crops. It is therefore is a part of daily life to participate in cropping or herding activities, and respondents will count these as part of their farming experience. Results from the study indicate a household size of six persons per household, which is comparable with the five persons per household recorded from the census 2011 exercise. There is therefore no shortage of farmhands to assist the smallholder farmers in the study area with needed activities.

The size of farm plots is typical of small scale farming as variously indicated in the literature, where the smallholder is described as one with limited land available (Chamberlin 2008; Hazel *et al.* 2007). Majority of the respondents have farm sizes of about two hectares or less, which Kirsten & van Zyl (1998) suggest is too small to attract the provision of services needed to significantly improve productivity. This is a typical situation among smallholders in the rural Eastern Cape Province (Ngemntu, 2010), with most smallholders having less than two hectares which leaves them mired in subsistent indigence. According to Ferris *et al.* (2014), while emphasizing the importance of large land holdings for commercialization, they affirm from experience that agricultural modernization requires fewer farmers with large land holdings. In line with this,

Munguzwe & Jayne (2012) declared that the development prospects for land-constrained smallholders are limited.

Reliance on the proceeds from farming activities alone is not common-place among respondents, as many depend on government grants for survival. Mtero (2012) observed the decline of crop farming in the former homelands of the Eastern Cape Province, which was portrayed as hopelessly unproductive, and failing to meet even the subsistence needs of rural households. Farming is therefore a part-time activity to supplement incomes from non-farm sources. Hazell *et al*. (2007) lent credence to this in their assertion that the importance of farming in household income had declined. Interestingly however, they also suggest that the number of rural households who use farming as a platform for their livelihoods strategies were on the upward trajectory. Madikizela (2012) also commented on the importance of mixed livelihood sources in the area, where subsistence farming and seasonal jobs in addition to government grants and pension are the means of survival. Pienaar (2013) also noted that rural households in South Africa are very dependent on government welfare support, which serves as a safety net for the rural poor.

There is a high reliance on social grants among residents in the study area, which is typical of most rural communities in the Eastern Cape Province, as highlighted in a recent general household survey in 2013 by Statistics South Africa (SSA, 2014). The survey highlighted the continued dependence on government grants in traditionally poorer provinces, as those with low economic output had the highest percentage of grant beneficiaries; the report indicates that more than 40% of individuals in the Eastern Cape Province benefit from these grants.

4.2 Review of the problems faced by small scale farmers in Mbizana area

In outlining some of the constraints affecting smallholder farmers in the study area, a number of questions on identified issues were posed to the respondents. The questions relate to how land is obtained for farming purposes, the knowledge of the farmers regarding farmer support programmes available, their access to credit facilities for farming, and whether they had benefitted from the supply of inputs or received any grants or loans for crop or livestock production.

The interview tool also required the farmers to identify some of the constraining factors which had affected their production activities in the past cropping season.

Table 3: Issues affecting small scale potato farmers in the Mbizana area.

Issue	Yes		No	
Allocated land by Traditional or community leader?	85% (49 respondents)		15% (9 respondents)	
	Male (14)	Female (35)	Male (4)	Female (5)
Aware of farmer support programmes?	41% (9 respondents)		59% (13 respondents)	
	Male (4)	Female (5)	Male (3)	Female (10)
Have access to credit facilities for farming?	17% (10 respondents)		83% (48 respondents)	
	Male (5)	Female (5)	Male (13)	Female (35)
Received inputs, loans or grants for farming?	48% (28 respondents)		52% (30 respondents)	
	Male (11)	Female (17)	Male (7)	Female (23)

Most of the respondents from the survey were allocated their farm land by the traditional leader in their community. Only 15% of respondents got access to farmland through other sources, mainly passed down through family inheritance or leased from friends and relatives, as shown in Table 3.

Mbizana is a predominantly rural area, where traditional authorities have control over land, held in trust for members of the community. The issue of land is emotive in the former homelands, and community land is accordingly shared out to members of the community in commensurate parcels. These small parcels of land which have no title deeds cannot be used as collateral to obtain production credit; and the size of the land has been identified (Rahut *et al*., 2010; Pingali *et al*. 2005; Lerman, 2004) to be one of the constraints to increasing the profitability of agricultural activities. McCann (2005) reported that Mbizana had the second highest number of unsettled claims for land in the district, and most of the claims were for farming areas.

Fifty nine percent of the respondents are not aware of any government support programme for farmers, while 49% are knowledgeable about farmer support programmes in the area. While there are a number of support programmes for farmers in the area, the information seems not to have been widely circulated among small scale farmers; they therefore are unable to access some services because of this lack of information. This situation lends credence to the views expressed by Hall & Aliber (2010) regarding the plight of small scale farming households, who have little interaction with, and minimal support from government programmes intended to assist them.

Also 83% of respondents do not have access to credit facilities for farming, while 17% have access to credit facilities for farming. The respondents with access to credit for farming relied on the services of Uvimba Bank, which is a government agency set up by the Eastern Cape Rural Development Agency (ECRDA) to provide matching credit for farmers involved in a number of government supported farmer projects. Other source of farming credit identified by the respondents was from LIMA Rural Development, a non-governmental-organization operating in the area and working with farmers. The lack of access to credit facilities for farming has been identified by many scholars including Bembridge (1988), Makhura (2001) and Mayson (2003), as a key constraint to small scale farming.

Though 48% of respondents affirm the receipt of inputs, or a loan or grant for farming; 52% of the survey respondents have not been fortunate. Support for small scale farmers is essential to enable improvements in productivity, and progress from subsistence based activities to semi-commercial or fully commercialized production. Institutional support in the form of inputs provision by the Department of Agriculture, grants from the local municipality complemented by loans from agencies such as the Eastern Cape Rural Development Agency or Uvimba Bank, and non-governmental organizations in the area; comprise the comprehensive support package required by the less commercially oriented farmers; which Makhura *et al*. (1998) advocated as a prerequisite for closing the gap between established commercial and previously disadvantaged subsistence based smallholders.

Small scale farmers in the area are also constrained by a plethora of other factors, as highlighted in Table 4. Some of these factors are related to weather, when excess rainfall or drought negatively affects agricultural production. Rain-fed agriculture is the practice among the smallholders and implies a heavy dependence on ample rainfall at the appropriate time.

Table 4: Other constraints affecting smallholder potato farmers in Mbizana area.

Other constraints	No of responses	Percent
Weather related	31	55
Crop diseases	6	11
Pests and livestock	15	27
Others (ploughing costs, inputs)	4	7

Fifty five percent of the responses highlighted in Table 4 identified weather related constraints as a major factor that constrains their farm activity. The weather factor could be excess rainfall at the time of soil preparation, leading to flooded fields, or the late arrival of rain during planting phase, which could cause delays in seeding the soil. In some cases heat waves or windstorm damage crops in their growing stage, and there has been reported drought in some parts of the Mbizana area, while other areas have reportedly had ample or excess rainfall. The Mbizana area however, generally experiences good rainfall for farming.

Crop diseases also posed a problem and identified by 11% of the respondents as a constraining factor. The incidence of insect invasion, other crop pests and ants were identified by 27% of the respondents, who also pointed to the damage to crops in the field by uncontrolled livestock, especially cattle, and small ruminants. Seven percent of the respondents were worried about the rising cost of inputs used in cropping, this include the costs of hiring machinery for soil preparation, seeds, fertilizers and other chemicals.

4.2.1 Discussion of the result

The size of most farm holdings is small and on the average, smallholder farmers in the Mbizana area farm on less than two hectares of land which has been allocated by the traditional leader. In the area, each householder is entitled to a residential site as well as an allotment of arable land, normally allotted by the chief, and the use of the commonage where there is no restriction on the number of stock which may be grazed.

The lack of title deeds and the small size of the fields is a constraining factor for increased crop production (Rahut *et al*. 2010; Pingali *et al*. 2005; Lerman 2004), which has led to calls for innovative land reforms, seen as crucial to securing property rights to farmers (Fan & Chang-Kang, 2005), since an overwhelming majority (97.75%) of the population in the Eastern Cape Province, according to McCann (2005) is resident on tribal land.

The land issue is also linked to the unavailability of credit for production, but it is generally recognized that smallholders are not well served by formal financial institutions. Saito *et al*. (1994) posited that financial services are important for improving farm productivity, promoting a more efficient allocation of scarce resources. For smallholders with low assets base, access to credit provides a lifeline in smoothing of consumption over time, the acquisition of working capital to obtain required inputs, making capital improvements to the farm (such as fencing and irrigation), and taking advantage of market opportunities.

According to Imnick & Alarcon (1993), the lack of adequate access to credit prohibits smallholder farmers from assuming certain production risks, necessary for improving productivity. In their studies from other countries, Saito *et al*. (1994) reported that credit access problems were cited by 74% and 67% of farmers surveyed in Nigeria and Kenya respectively. Hazell *et al*. (2007) confirmed this problem among smallholders, claiming that smallholders are less able to obtain farm credit to purchase inputs at comparable prices; which raises the stakes against small scale farmers, thereby requiring policy interventions.

For the survival and prosperity of smallholders, Hazell *et al*. (2007) articulated that political will is the fundamental pre-condition for agricultural investment and policy reform; and equally important in the view of Fan & Chang-Kang (2005) is reforms of public institutions in order to assist small farmers obtain access to credit, among others.

4.3 Identification of factors influencing the crop production decision of farmer-respondents

This objective aimed at identifying the major drivers of decision making among the respondents, regarding the primary and secondary factors that influence their decision to engage in their farming activities. The respondents were asked to identify among three listed factors shown in Table 5, namely home consumption, returns from sale and availability of markets, which was the most important reason and ranked the other listed factors in order of importance.

Table 5: Key factor influencing respondents decision to produce.

Reason	Respondents (%)
Available market	38
Home consumption	17
Returns from sale	45

The returns to be made from the sale of crops produced was identified by 45% of the respondents as the key factor which influenced their decision, and 38% of respondents were of the view that an available market for the sale of their produce was the key factor that influenced decision. Seventeen percent of respondents however, placed greater emphasis on home consumption of the produce as key influence for their decision, as captured in Table 5.

When asked to rank five identified factors in order of importance to their crop production decision, the ranking shown in Table 6, indicated that returns from sale remained the most important factor

(41%), followed by the availability of a market for the produce (38%). The home consumption of the produce ranked third (9%), followed by the low cost of required inputs (7%) and ease of cultivation of the crop (5%).

Table 6: Respondents ranking of identified factors influencing their crop-production decision.

Factors	Ranking	% of Respondents
Returns from sale	1	41
Available market	2	38
Home consumption	3	9
Low cost of inputs	4	7
Easy to cultivate	5	5

4.3.1 Discussion of the result

Farmers in the study population placed greater importance on the financial returns from their crop production activities. This is shown by their ranking of the returns from sale and the availability of a market for their produce as more important, than home consumption of the producein Table 6. The costs of the required inputs and ease of cultivation ranked fourth and fifth respectively, placed in the bottom of the ranking. Farmers were hence willing to incur the necessary costs for the inputs, in addition to the required agronomic practices, so long as a market exists for the produce, and the financial returns from sale guaranteed.

It follows therefore that, as a result of the opportunities open to farmers in the production of high-value crops, the smallholder farmers in the Mbizana area are willing to produce commodities that have higher returns to factors of production; a notion supported by Birthal *et al.* (2007). Alternatively, the emphasis on market oriented production as indicated by the importance attached to returns from sale and availability of market, is in line with the observation of Rahut *et al.* (2010) that some farmers seek to spread risks while generating returns for the sake of some household commitments, such as the education of their children.

Market availability is crucial for the survival of smallholders, and Ferris *et al.* (2014) suggests that finding avenues to link smallholders and markets is generally considered a critical part of long term development strategies for poverty reduction. There are however, signs of revitalization in the agricultural sector following the global economic downturn, with the seeming recovery of

commodity prices, that Ferris *et al.* (2014) admit provides 'growing opportunities' for farmers who can consistently match high production with sales.

4.4 Description of farming practices used by small scale farmers in the Mbizana area

Farmers use different practices in their farming activities, and an insight into the crop production system provides an indication of how to describe the degree of intensification of production. One of the specific objectives set for this research was to describe the farming practice employed by smallholder farmers who make up the target population of the study. Questions were asked that relate to the use of purchased inputs, whether the farmer employed casual labor to assist in any stage of cropping, how the non-family labor was remunerated, the use of irrigated systems in production, method of soil preparation and weed control including mixed cropping and number of crop cycles planted each year.

Other responses sought by the study include a number of post-harvest activities which were identified, reasons behind storage of produce, the timing of crop sales and whether produce was sold at the farm or marketed in town.

Table 7: Production practices of small scale farmers in Mbizana.

Type of inputs purchased by respondents:		
Seeds only (16%)	Seeds & fertilizer (31%)	Seeds, fertilizer & chemicals (52%)
Use of casual labor:		
Yes (72%)		No (28%)
How casual labor is paid:		
Cash Only (43%)	Farms produce only (17%)	Some cash & produce (40%)
Use of irrigated system:		
Yes (40%)		No (60%)
Type of irrigated system used:		
Manual (96%)		Sprinkler (4%)
Soil preparation method:		
Mechanized tractor (52%)	Animal traction (35%)	Manual hoeing (13%)
Weed control:		
Mechanical (68%)	Chemical (4%)	Mixed (28%)
Multiple cropping:		
Yes (93%)		No (7%)
Crop cycle planted per year:		
One (15%)		Two (85%)

All the respondents from the survey purchased inputs for their crop production, and these inputs are normally sourced from an agricultural supply shop, or through the farmer's cooperatives. Fifty two percent of the respondents as shown in Table 7 purchased seeds with fertilizers and other chemicals (herbicide or pesticide), while thirty-one percent of the survey respondents purchased seeds and fertilizers. Sixteen percent of the respondents bought only seeds for their cropping activity in the previous season.

When asked if they used casual labor for cropping, 72% of the respondents answered in the affirmative, while 28% did not use additional casual labor. Cash payment only was the preferred way to pay for services rendered, and was used by 43% of the respondents. Though 17% of the respondents also offered farm produce only, a mixed system of payment involving some cash and farm produce was used by 40% of the survey respondents.

The use of irrigated systems in crop production is not commonly used in the study area, as sixty percent of the respondents relied exclusively on rainfall. Though forty percent of respondents used some form of irrigation as shown in Table 7, most of these (96%) involved the use of watering-cans and only one respondent had a sprinkler irrigation system in use.

Smallholder farmers in the area relied on motorized tractors and animal-drawn traction for soil preparation, with only 13% of respondents using manual hoeing to prepare the soil for seeding. 52% employed the services of tractors and 35% used animal-drawn traction to plough the soil. The control of weeds in the field was done mechanically by 68% of respondents, 4% of respondents used chemical means and 28% used a mix of mechanical and chemical weed control methods; mechanical weed control mostly involves hoeing to remove weeds.

Multiple cropping is generally practiced among respondents in the area, wherein more than one crop type is present in the field at a given time. 7% of respondents however only had a crop type in each field per crop cycle. 85% of respondents planted two crop cycles and 15% planted only once during the cropping year.

Table 8 shows that 71 percent of the respondents normally plant a mix of crops which contribute to the household consumption requirements, 24 percent produced a single crop for home consumption while 3% of the respondents did not produce any crop for home consumption. When asked about which crops they produced primarily for sale, 16% of the respondents planted only a single crop (such as maize), while 84% of the respondents planted a mix of different crops (for instance, maize, potatoes, cabbage and beans).

Multiple cropping is commonly practiced by farmers in the study area, wherein the farmer plants a variety of crops such as maize, potato and cabbage; which caters for some household consumption needs and the excess marketed for needed cash.

Table 8: Other related practices in production and post-production.

Crop produced for home consumption:			
None (3%)	Single Crop type (24%)	Mix of crops (71%)	
Crop produced for sale:			
Single crop (16%)		Mix of crops (84%)	
Storage of harvested crops:			
Yes (83%) 48 respondents		No (17%) 10 respondents	
Purpose of storage:			
Marketing only (27%)	Home consumption only (27%)	Mixed (46%)	
Period of crop sales:			
During harvesting (63%)	Within one month (16%)	Within three months (21%)	
Have a supply or marketing agreement:			
Yes (14%) 8 respondents		No (86%) 50 respondents	
Practice record keeping:			
Yes (60%) 35 respondents		No (40%) 23 respondents	
Type of records kept:			
Inputs purchased only (40%)	Quantity of crops sold only (6%)	Planting dates only (6%)	Mixed (48%)

Most of the respondents from the survey sell their produce during harvest, this group comprises 63% of respondents, while 16% and 21% sell their crop within one and three months respectively. Produce not sold immediately during harvest was stored by 83% of respondents. The purpose of storage among 27% of respondents was for marketing only, another 27% stored for home consumption only, while 46% of respondents stored for a mix of marketing and home consumption.

Only 14 % of respondents have marketing or supply arrangements in place, while 86% do not have such an arrangement to market their produce. When asked whether they keep records of their farming activities, 60% of the respondents answered in the affirmative while 40% did not keep any records. Among those who keep records, the records of inputs purchased only was recorded by 40%, the record of produce quantities sold only was kept by 6%, record of planting dates only was kept by a further 6%, while 48% of the record keepers recorded a mix of the afore-mentioned variables.

4.4.1 Discussion of the result

Most of the respondents from the survey purchased inputs for their cropping activity, however some purchased only seeds, while others purchased seeds and fertilizers only; with other buying seeds, fertilizers and other chemicals (such as herbicides or pesticides). This difference in the type of input purchased is related to the costs involved, thereby leading to affordability choices for some of the farmers. Denning *et al.* (2009) among others, ascribed a meager productivity growth in African agriculture to inadequate institutional support, low input use and the limited availability of high-yielding crop varieties. While some developed countries have continued to subsidize their farmers, smallholder farmers in South Africa have been left on their own; a reason the former Minister for Agriculture, Forestry and Fisheries, Ms Tina Joemat-Pettersson, called for a targeted reduction in the costs of essential inputs (BDlive, 2014).

The lack of irrigated farming and irrigation infrastructure poses a challenge to the farmers in the area. Among the respondents who used extra water addition methods, most of them collected water with watering cans to apply to their crops, a rather tedious endeavour; and this is in line with the observations of Barlow & van Dijk (2013) regarding the inadequacy of irrigation infrastructure among smallholders.

Hussain & Hanjra (2004) highlighted the importance of irrigated production systems from studies in a number of countries. In line with this, investments in irrigation have a net positive effect on the economy (Gunda *et al.* 2013), leading to shifts in production, supply and other indirect linkages (Asayehegn *et al.* 2011). Webb (1991) according to Asayehegn *et al*. (2011), reported that results from irrigated projects in Gambia show increased incomes and investment in productive assets among smallholder farmers.

With over one million hectares of irrigated land in South Africa, irrigation carries significant potential to increase agricultural productivity, which Gunda *et al*. (2013) confirmed as key to improved livelihoods for smallholders in Sub-Saharan Africa. This viewpoint is also supported by FAO (2011), which informed about the expectation of future growth in crop production coming from intensification, in developing countries. In line with this, irrigation is foreseen to play an increasingly strategic role through improved water services, water-use efficiency improvements, yield growth and higher cropping intensities.

However, rain-fed agriculture will continue to dominate crop-production systems in the area, which prompted Denning *et al*. (2009) to suggest a number of ways to improve smallholder production.

These include the practice of conservation farming, requiring reduced tillage, crop residue retention and crop rotation. Other measures in their view are improved water use efficiency, planting seed varieties with greater drought and heat tolerance, weather forecasting and related services for farmers and the promotion of weather-related crop insurance products.

The cost involved in soil preparation is one of the major budget items for smallholder farmers, and most of the respondents rely on hired tractors to plough their fields. While half of the respondents used the services of motorized tractors, others relied on the cheaper animal-traction or outright manual hoeing for soil preparation activities. Perhaps the call for increased conservation farming may be worth giving an ear, as its proponents acclaim it to be synonymous with zero-tillage operations. Conservation farming according to FAO (2011), is a concept for resource-saving agricultural crop production which intends to achieve acceptable profits with high and sustained production levels, and conserving the environment at the same time. Its attraction is the reduction of production costs, as practices such as mechanical soil tillage is reduced to the barest minimum.

Putter *et al*. (2014) recognized conservation agriculture as farming whereby the farmer needs to invent, adapt, apply and learn things within the constraint of their own circumstances and situations; a clear indication of the complexities associated with the practice. It requires a high initial cost of specialized planting equipment, adequate management skills and an intricate farmer learning process.

An effective and economic weed control is important in most crop production activities, and in the Eastern Cape Province, inadequate weed control has been described by Joubert (2000) as one of the major cause of poor returns among smallholder farmers. From an earlier study among smallholder farmers in the province, Steyn (1988) according to Joubert (2000), observed that the detrimental consequence of weeds in farm-plots was common knowledge among smallholders, who however do not possess the resources required to eliminate weeds; especially where the practice of mechanized ploughing had led to increases in the area under cultivation.

Most respondents from the survey used hand hoeing for the purpose of weed control, and this collaborates the finding by Joubert (2000) in the Ciskei area of the province; claiming that hoeing and hand weeding were the methods generally used by smallholders in the province. The minimal use of chemical means for weed control is mainly due to costs.

Smallholders from the survey practiced multiple cropping, whereby two or more crops are grown in the same field within a given year. The practice of multiple cropping is designed to achieve some

benefits which include, the maintenance or enhancement of soil fertility, improved crop growth, reduced spread of crop disease, weed control, inhibition of pest and insect growth, increased soil cover, efficient utilization of resources, reduced risk of crop failure and improved food and financial security. Though the research did not probe into respondents' reason for multiple cropping, it is possible that the smallholders in the area practice multi-cropping due to some of the afore-mentioned benefits. This cropping system according to REAP (undated) is designed to mimic nature and bring diversity into farming systems, promotes crop rotation, strip-intercropping and planting for genetic diversity.

4.5 Identifying prospects in the potatomarket and obstacles faced by small scale farmers

4.5.1 Potato supply chain in Bizana area

A total of 25 outlets selling potatoes were interviewed to obtain information related to the potato supply chain in the study area. Table 9 shows that 28% of the outlets were large supermarket type chain stores, local grocer shops made up 12% of interviewed outlets, 8% were informal wholesalers and loose potato retailers made up the majority of respondents (52%).

Table 9: Number of potato sales outlets interviewed in Bizana.

Outlet type interviewed	Number	Percent
Supermarket chain store	7	28%
Local grocer shop	3	12%
Informal wholesaler	2	8%
Loose potato retailer	13	52%
Total	25	

A majority of the large outlets were sourcing their potato supplies from external commodity suppliers, as depicted in Figure 5 . These consist largely of supermarket chains in the study area that had a centralized buying system, and depended on supplies from external commodity agents or large scale potato producers. All the outlets interviewed obtained supplies from commercial farmers based outside the study area, and some except the supermarket chains, also obtained supplies from informal wholesalers.

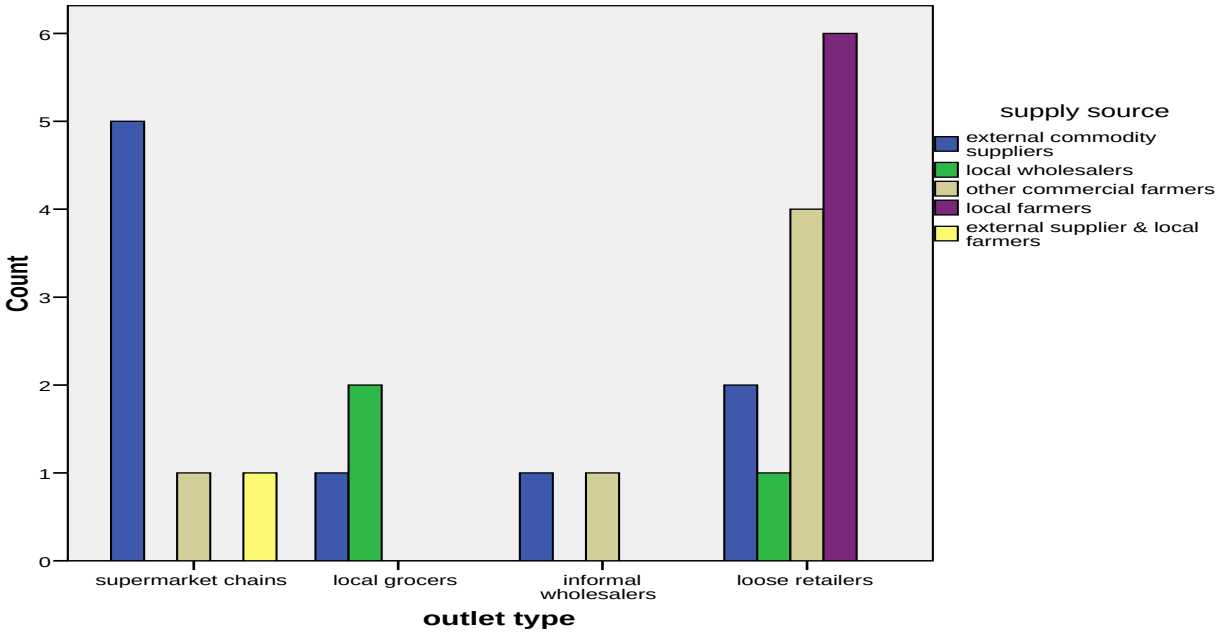

Figure 5: Supply source of potato sold in BizanaTown.

Apart from a few supermarket stores, the informal 'loose potato' retailers were the major outlets selling potatoes supplied by local small scale potato producers.Most of the outlets did not sell potatoes supplied by local farmers; out of 25 outlets interviewed only 6 sold potatoes supplied by local small scale farmers.

4.5.2 Market obstacles facing local potato producers in the Mbizana area

As shown inTable 10, it is evident that 84% of interviewed potato selling outlets had been approached by local farmers, seeking a supply arrangement. Only 16% of the outlet-respondents had not been approached by local smallholder producers. Out of these numbers, just 24% of the outlets were selling potatoes supplied by local smallholder producers.Without a doubt, local smallholder producers have made attempts to source market outlets for their produce, with limited success.

Table 10: Outlets approached and selling potatoes from local farmers in Bizana.

Outlet type surveyed	Approached by local farmers		Selling local farmers potatoes	
	Yes	No	Yes	No
Supermarket chain	24%	4%	8%	20%
Local grocer shops	4%	8%	0%	12%
Informal wholesalers	8%	0%	0%	8%
Loose retailers	48%	4%	16%	36%
(Total)	(84%)	(16%)	(24%)	(76%)

However, 80% of outlets interviewed claimed there were no obstacles to getting supplies from small scale farmers in the study area, as indicated in Figure 6.

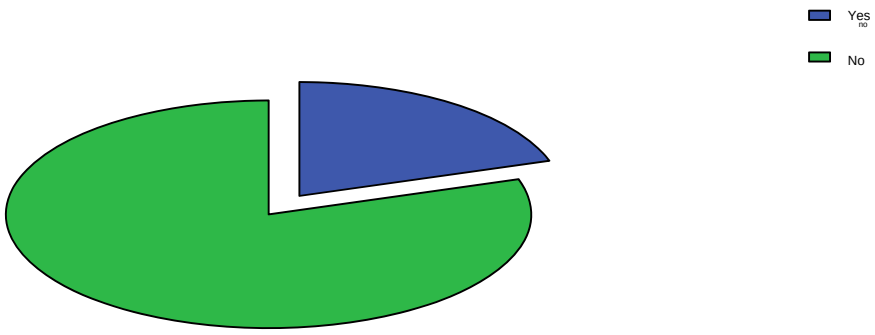

Figure 6: Existence of obstacles to smallholder potato growers supplying outlets.

On the other hand, 20% of interviewed outlets identified a number of obstacles constraining smallholder producers from supplying potato produce to their outlets. Some of these constraints relate to the centralized purchasing systems in place especially with large chain stores such as Pick'n Pay, Super Spar, Boxers, Browns, Rhino Cash'n Carry and Checkout. Another identified issue was the ability of individual farmers to supply the quantities required on a regular basis.

The supply negotiation process, supplier registration requirements and processes including payment systems of the large chain stores was also identified as bottlenecks for small scale producers. In some cases, local smallholders were blamed for lack of follow-up on some opportunities; by not providing any feedback after being interviewed by head buyers from the large chain supermarkets.

4.5.3 Market prospects in Mbizana area for small scale potato farmers

Seventy six percent of the total quantities of potato sold in Bizana were dispensed by large outlets especially the supermarket chain stores (such as Pick ‘n Pay, Boxers, Browns, Spar) and informal wholesalers.

Table 11: Estimated quantities of potato sold weekly by outlets in Bizana.

Quantity Sold (Bags per week)	Outlet Type	Percent
250 - 600	Supermarket chain store	40
100 - 250	Informal wholesalers	36
Less than 100	Local grocers	20
Less than 50	Loose retailers	4

Data from the survey shown in Table 11 indicate that supermarkets sold in excess of 250 bags of potatoes on a weekly basis; informal wholesalers sold more than 100 bags per week, while some local grocers sold less than 100 bags per week. The ‘loose’potato retailers accounted for less than 50 bags of potatoes sold per week. The survey indicates that the ‘loose’ retailers controlled a small segment of the market, based on the quantities sold per week. The ‘loose’ retailers however, were the major outlets for small scale potato farmers in Bizana.

4.5.4 Discussion of the result

There is a large market for potatoes which the small scale farmers need to explore, through either increasing the quantities supplied to ‘loose retailers’, or trying to secure supply agreements with the larger outlets such as the supermarket chains or informal wholesalers. Markets play an important role in the growth of all categories of producers, and the limited access to agricultural markets for smallholder farmers especially in the rural areas represents a key challenge confronting scholars, producers and policy makers in developing countries. Salami *et al*. (2010) viewed improved access to markets for both inputs and produce, as a major requirement for the transformation of the smallholder sector, from subsistence to commercial production. Without access to cost-effective markets especially for their produce, Ngumntu (2010) proclaimed that smallholders are denied the beneficial effects of agricultural growth.

The outcome of this research and other studies such as Ngemntu (2010), indicate that the majority of smallholders faced various limitations in marketing their produce. The respondents had difficulties accessing formal supply chains and confirms the views of Schalkwyk *et al*. (2012) and Vermeulen *et al*. (2008) cited in Heijden & Vink (2013) among others, who outlined a number of factors that challenged farmers in accessing formal markets. These challenges include their lack of market information, grades and standards, contractual agreements, social capital, good market infrastructure, group participation and low bargaining power.

The survey indicates that most of the large chain stores in the survey area had centralized purchasing centers, and even some suppliers were wary of smallholders' who did not follow-up on supply related queries. This is in line with the findings of Barlow & van Dijk (2013), from their market investigation of emerging farmers, which reported that most large retailers had moved away from direct deliveries by suppliers, to a supply mechanism operated from larger regional distribution centers (RDC). They also reported on the 'lack of commitment in produce supply' from smallholders, who are accused of disregarding supply agreements in their quest for short-term gains.

All in all, the difficulties faced by smallholders in supplying produce to large chain-stores are not unexpected. Heijden & Vink (2013) in their critical review of marketing approaches, outlined that a close examination of the chain-stores model suggests an inherently 'hostile orientation' towards smallholder producers, related to the challenges in obtaining access to such markets.

The access by smallholder farmers to formal markets has been the 'subject of contestation' in the literature (Heijden & Vink, 2013). While a majority view is optimistic regarding its prospect for increased smallholder incomes (World Bank, 2008), an orthodox viewpoint sketch the different barriers that impede smallholders from benefitting from these markets. These barriers can however be overcome, according to Heijden & Vink (2013), with increased government support; as there are no fundamentally cast-in-stone impediments to smallholder entry.

This standpoint is highlighted by results from the questionnaire survey of potato marketing outlets in the area, which indicated that a huge majority of the respondents did not see any obstacles to smallholders' supply of produce. Some of these outlets are franchise or owner run stores, which are able to buy outside the centralized buying structure, therefore procuring directly from farmers or suppliers, and hence providing an avenue for small scale farmers (Barlow & van Dijk, 2013). Also there are issues of delivery frustrations among some of the outlets due to the late arrival of requested supplies from the centralized purchasing stores (Pers Comm: Shoprite Worker, 2014).

This also indicates that the central purchasing system also suffers from complex logistical headaches and may be capitalized on by smallholders.

Another window of opportunity for smallholders to access chain-stores markets is the government procurement policy. The Broad Based Black Economic Empowerment (BBBEE) policy requires retailers to purchase at least 30 percent of produce from emerging farmers, and Barlow & van Dijk (2013) report that therefore various initiatives have been adopted by the chain stores for implementing formalized processes, through which smallholders receive sufficient support to access their supply chains.

4.6 Support services provided to small scale potato growers in Mbizana by key role players

4.6.1 Findings for support provided to smallholder potato growers

The growth and success of smallholder farmers in South Africa depends on the facilitating role played by key stakeholders, which includes governmental and non-governmental agencies. This pledge to support smallholders is expressed by officials and politicians at every opportune moment. In order to get a broad view of the constraint and prospect for smallholder potato producers in the study area, this objective explored the support provided by the government through the Department of Rural Development and Agrarian Reform (DRDAR), local authority represented by the Local Municipality, non-governmental organizations in the area such as LIMA Rural Development and Potatoes South Africa (PSA). Farmer Cooperatives are also identified as opportune to provide the requisite support services to potato growers.

Questions such as membership of farmer cooperatives, purchase and marketing of inputs and produce, attendance at information sessions, extension services, awareness of services and benefits from the mentioned role-players were included in the farmers' questionnaire, and the response captured in Table 12.

Interviews were conducted with the District Controller for Agriculture, a LIMA official, a Potatoes South Africa official and with the Local Economic Development (LED) section of the Local Municipality.

Table 12: Support services received by potato farmers in Bizana.

Question posed to respondent	Yes		No	
Do you belong to a farmer's cooperative?	57% (33 respondents)		43% (25 respondents)	
	Male (13)	Female (20)	Male (5)	Female (20)
Do you participate in group purchase of inputs?	59% (34 respondents)		41% (24respondents)	
	Male (10)	Female (24)	Male (8)	Female (16)
Do you participate in group marketing of produce?	7% (4 respondents)		93% (54 respondents)	
	Male (0)	Female (4)	Male (18)	Female (36)
Have you attended any Farmers' or Information Day?	100%		0%	
Do you receive extension visits and advice?	100%		0%	
Are you aware of the activities of Potatoes South Africa?	45% (26 respondents)		55% (32 respondents)	
	Male (12)	Female (14)	Male (6)	Female (26)

The results from the survey shown in Table 12 indicate that 57% of the respondents belonged to a farmer's group, while 43% did not belong to any farmer association. More than half of the respondents (59%) participated in group purchase of inputs, especially seeds, though almost all the respondents did not partake in any group marketing of crop produce. All the respondents had attended a Farmers' or Information Day in the area, had been visited and received advice from extension officers from the Department of Agriculture; however, only 45% of the respondents were aware of the activities of PSA.

4.6.2 Support provided by the Department of Rural Development and Agrarian Reform

There are a number of ways by which the Department provides support to potato growers in the area. According to the Bizana District Controller, these include training of the farmers in basic agronomic practices, formation of an association of potato growers, some financial support with an amount set aside for the potato commodity group, assistance with bulk purchase of certified seeds from suppliers, transportation to receive and deliver the purchased inputs to farmers, conduct farm trials at selected farms for new potato varieties, and organize farmers day or information sharing with other stakeholders. An extension officer is responsible for coordinating the activities of the potato commodity group in the District (Pers. Comm: T.W. Neno, 2014).

Another non-potato specific support by the department is through the siyazondla or cropping programme, which focuses on food security for farmers. The programme provides a conditional grant, and accommodates farmers with at least five hectares of land; involving a phased period of payment subsidy, starting with no payments in the first year and between 25%, 50%, 75% and full payment in a five year period for inputs and mechanization provided for cropping activities.

The programme is intended to cover other crops in a later stage, but initially targeted the production of maize.A mentorship system was also included in the programme, using recognized successful commercial farmers during the initial year of the cropping programme, with the Eastern Cape Rural Finance (Uvimba Bank) supporting the financial process.

4.6.3 Support provided by the LIMA Rural Development Foundation

LIMA Rural Development is a non-governmental organization working in the area, and provides support to smallholder farmers through its work program called Abalimi Phambili, which is implemented in a number of districts in the country.

The programme is funded by a consortium of partners including the Chamber of Mines, Anglo-American, the jobs Fund, Northam and Anglo-Platinum; as a corporate social responsibility programme (CSR) of the mine companies in labor sending areas. The Abalimi Phambili program provides linkage with input suppliers, credit, mechanization, technical information and produce markets; which the organization believes are essential to integrating smallholder farmers into the broader agri-business sector.

Apart from providing some credit to smallholder farmers, the farmers are also assisted to procure certified varieties of potato seeds. The LIMA Rural Development Foundation currently works with 896 farmers in the Bizana District; these farmers are assisted with loans up to a value of ten thousand Rands (R10, 000). The program is implemented in conjunction with DBSA, supporting smallholder farmers to cultivate maize, potatoes and vegetables (Pers. Comm: Ms Bonisiwe Dlamini, 2014).

4.6.4 Support provided by Potatoes South Africa

Potatoes South Africa is an association incorporated under the South Africa Companies Act, with the main objective of serving and promoting the interests of the South African potato industry.Its transformation strategy aims at increasing the number of black persons that own, manage and control the potato producing enterprise. In the Bizana area, Potato South Africa implements the

Small Grower Development Programme (SGDP) through demonstration trials, as a way of training and disseminating important production and business information necessary for successful potato production.Potatoes South Africa is not involved in providing financial assistance to producers, but assists in identifying sources of certified seeds and mentorship (Pers. Comm: P. Madolo, 2013).

4.6.5 Support provided by the Mbizana Local Municipality

The local municipality assists farmers through its Income Generating Projects (IGP) grants to support and improve their livelihoods activities; there is also another fund called the Anchor Projects (AP) grant. While the income generating projects grant targets smaller household based activities, the anchor project grant supports larger projects that employ a number of persons. There is no potato-specific assistance programme, and most of the grantees have been funded through a general call for grant funding.

4.6.6 Discussion of the result

The importance of targeted support for smallholder farmers is vital, and Pienaar (2013) expressed that the success of an expanded smallholder sector depended on sustainable and targeted support programs. According to Masiyiwa (2014), providing smallholder farmers with the incentives, investments and regulations they need to succeed should become a top priority.

Smallholder support is also well articulated by the Department of Agriculture, Forestry and Fisheries in its Strategic Plan for Smallholder Support (SPSS), the plan aims to provide support to existing smallholders that will enable them engage in commercial production. There is a recognition of the poor and uncoordinated support services which smallholders presently receive (DAFF, 2013), and the need for adopting mutually reinforcing mechanisms is highlighted in DAFF's strategy plan.

Potato growers in the Mbizana area have a number of avenues to obtain support for their farming activities, including governmental and non-governmental agencies. Following a growing demand for agricultural products, there is a much larger role for the private sector in delivering value, and this resonates with the call by Karuku (2014) for government to engage more with public and private sector partners in order to release new sources of finance and technology. Although Rahut *et al*. (2010) suggested that the commercialization of agriculture is considered as a private-sector stimulated activity, they however opined that public policy is essential to facilitate the various driving forces, which include trade and market reforms, rural infrastructure, and the institutional framework for legal and contractual arrangements.

Extension services are available to the smallholder farmers in the Mbizana area, attested to by the fact that all respondents had received an extension visit. The respondents had also attended or participated in Information or Farmers' Day activities. Poulton *et al*. (2006) suggested the inclusion of non-state actors in providing extension services, especially in areas where public extension services are severely constrained. There is an extension support service in Bizana, and the need in this instance is improving the professional development and skills training for existing officers.

This call for upgrading and professional development for extension officers is due to the total reliance by farmers on government extension services, and doubts expressed by McCann (2005) on the effectiveness of the extension support service in the Eastern Cape Province. This reservation is a result of poor public research systems, a lack of technical expertise among extension workers and limited resources for effectiveness.

Farmer organizations or cooperatives are pillars of agricultural development and food security (IFAD, 2011). More than half of the farmer respondents belonged to a cooperative, which others are encouraged to join. According to IFAD, smallholder farmers benefit from membership of cooperatives, including bargaining power and resource sharing. Through negotiating better terms and lower prices for inputs such as seeds, fertilizers and equipment, farmers improve their profit margins. Membership of associations or cooperatives offer prospects which smallholders would be unable to achieve individually, and disadvantaged groups can obtain market opportunities, training and access to information, technology, innovation and extension services (IFAD, 2011) from institutions. There is however, no properly constituted group marketing arrangements among the potato farmers in Mbizana,and the cooperatives are only active for input purchases.

4.7 Measure of commercialization level among small scale potato farmers in Mbizana

4.7.1 Commercialization classification index of respondents

The household commercialization index was used to determine the position of farmer respondents on a commercialization continuum. The index measures the gross value of sales by a household in a given year, as a fraction of the value of all farm produce by the household in the same year. The index can also be expressed as a percentage (Govereh *et al*, 1994), and a recent commercialization study by Okezie *et al.* (2012) employed this method. The continuum was divided into four percentiles and farmers were classified accordingly, as indicated in Figure 7.

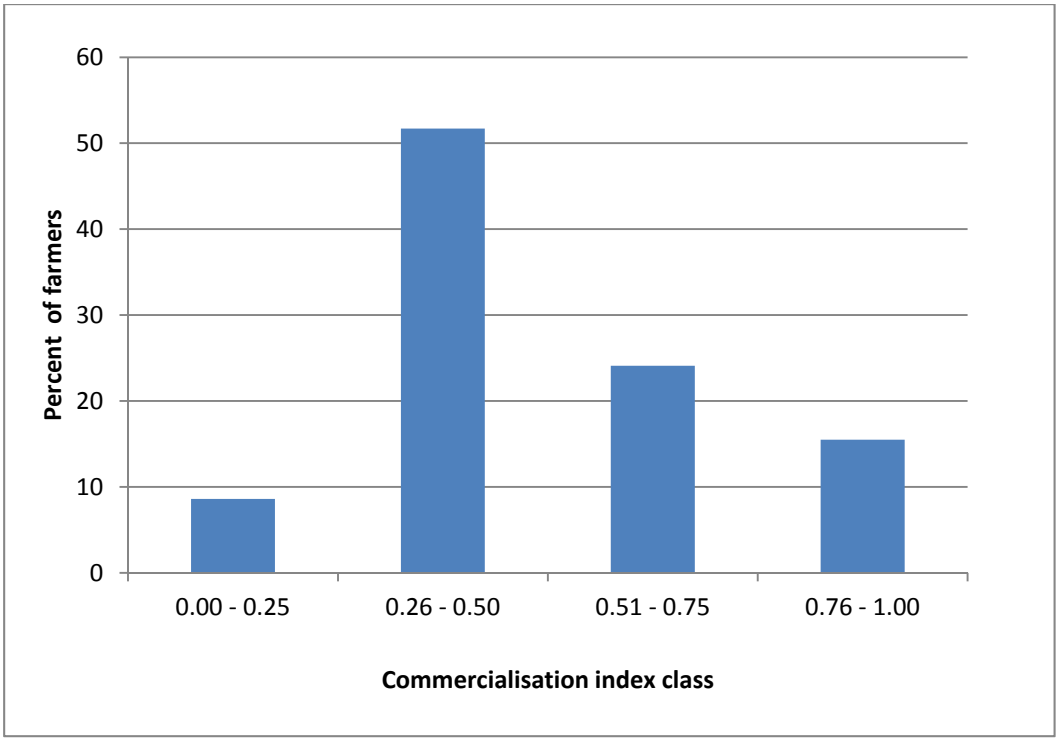

Figure 7: Percent of Mbizana small scale potato farmers on each commercialization percentile.

More than 50 % of smallholder farmers in the target population fall into the second percentile of the commercialization index class (between 0.26 -0.50). Approximately 24% of the farmers are in the third percentile of the commercialization index class (between 0.51 – 0.75), 15% of the farmers fall into the top percentile of the commercialization index class (0.76 – 1.00). Close to 10% of the respondents however, fall in the bottom percentile of the commercialization index class (0.00 – 0.25). Overall, 60% of farmers in the study area are located below the halfway mark of the commercialization continuum.

4.7.2 Variables and the commercialization classification index

A number of identified variables from the study, shown in Table 13, are important in locating respondents at strategic points of interest in the commercialization class clusters. The variables include ownership of a bank account, the size of their farmlands, beneficiaries of either grants or loans for farming and other associated support programs. Also included is the use of additional labor in the farming activity.

Table 13: Import of variables on commercialization classification of small scale potato farmers in Mbizana.

Variables		*Commercialization index class*				*Totals*
		0.00 – 0.25	0.26 – 0.50	0.51 – 0.75	0.76 – 1.00	
Bank use	Banked	1	17	6	8	32
	Unbanked	4	13	8	1	26
Farm size	≤ 2 ha	4	15	8	4	31
	>2 and ≤4 ha	1	13	2	4	20
	>4 and ≤6 ha	0	2	3	0	3
	>6 ha	0	0	1	1	2
Financial support	Grant / loan	1	16	5	6	28
	None	4	14	9	3	30
Other support programs (trials, study visits)	Participants	1	20	8	7	36
	Non-participants	4	10	6	2	22
Casual Labor	Used	2	23	10	7	42
	Not used	3	7	4	2	16
Gender	Male	2	9	4	3	18
	Female	3	21	10	6	40

It can be seen from Table 13 that eighty percent of respondents in the lowest commercialization index class (0.00 – 0.25) do not have a bank account, compared to more than 80% of respondents in the highest commercialization index class (0.76 – 1.00) who have a bank account. All farmers from the survey with farm sizes more than six hectares are located in the upper percentiles (0.51 – 1.00) of the commercialization index class. Comparatively, most farmers with farm sizes of four hectares and below, are situated in the lower percentiles (0.00 – 0.50) of the commercialization index class.

In line with the trend above, farmers who have received financial assistance in the form of a loan or farm-grant were positioned in the higher commercialization percentiles. Approximately 67% of loans and farming grant beneficiaries are situated in the top cluster of the commercialization index class (0.76 – 1.00), this is in contrast with 80% of farmers placed in the lowest stair of the commercialization ladder, who are non beneficiaries of any financial support for farming.

Seven out of nine farmers in the top of the commercialization class index (0.76 – 1.00) have also been part of support programmes, such as farm trials, study visits, information day attendance or group purchase of certified inputs. A cursory glance at Table 13 also indicates that 80% of farmers in the bottom percentile of the commercialization class index (0.00 – 0.25) have not benefitted or participated in these other support activities.

The use of additional casual labor among farmers in the area is rife, based on the responses received and the data is not supportive of a clear trend in placing farmers in any of the commercialization index clusters. Gender disaggregated data shows no interesting distinction, as there were more females than males from the responses, and the observed data uniformly reflects that disparity.

4.7.3 Significance of identified variables on household commercialization index

Multiple regression analysis was employed to ascertain the significance of certain identified factors in driving household commercialization. The ordinary least square method of analysis was carried out with the household commercialization index as a dependent variable, and the factors as independent variables. The use of the Ordinary Least Square (OLS) for the regression was informed by the small sample size, and the homogenous nature of the study population which made the use of other multivariate regression models inappropriate.

4.7.3.1 Model variables

Socio-economic and technical variables that enhance or hinder commercialisationof smallholder farmers were analysed. Table 14 presents a summary of these variables, their units of measurements, type, and hypothesized relationships with the dependent variable.

Table 14: Model variables applied in the analysis of Mbizana small scale farmers' response.

Variable	Unit	Variable type	Expected sign(+/-)
Number of years farming	Actual in years	Continuous	+
Size of farmland	Actual size of land owned (ha)	Continuous	+
Post-harvest practice	Whether a farmer engaged in post-harvest storage practices (Yes=1/No=0)	categorical	+
Access to credit	Access to credit (Yes=1/No=0)	categorical	+
Use of irrigation	Access to irrigation (Yes=1, No=0)	Categorical	+
Use of casual labor	Use of casual labour(Yes =1, No=0)	Categorical	+

4.7.3.2 Empirical specification of the model.

The theoretical model, which is specified as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 ....\beta_n X_n + \mu_i \text{ ....(1)}$$

can be empirically specified as:

Y (Commercialisation) = β_0 + β_1Number of years farming + β_2Size of land + β_3 location of farm + $\beta_4$post-harvest practice + $\beta_5$access to credit + β_6Income type + β_7Use of irrigation + $\beta_8$use of casual labour + μ_i

4.7.3.3 OLS estimates of determinants of commercialisation.

Table 15: OLS estimates of the determinants of commercialization among potato farmers in Bizana.

Variables	Coefficients		T	Sig.	VIF
	B	Std. Error			
Number of years farming	.006**	.003	2.129	.039	1.518
Size of farmland	-.016	.038	-.410	.684	1.264
Location of farm	-.055	.036	-1.517	.136	1.925
Post-harvest practice	.194**	.077	2.523	.015	1.224
Access to credit	.224***	.074	3.021	.004	1.397
Income type	.047	.034	1.355	.182	1.265
Use of irrigation	.067	.056	1.194	.239	1.999
Use of casual labor	-.059	.078	-.747	.459	1.131
Model summary	R-Square = 0.383; F-Change = 3.647 ; Sig F-Change = 0.002*** Note: ***,**and * denote significance at the 1%, 5% and 10% levels, respectively.				

The OLS model fits the data well as shown by the significance of the F-Value, and multicollinearity is very minimal since VIF is less than 10. The variables indicated in Table 15, whose coefficients were statistically significant are number of years of farming (5%), which indicates that farming experience is a positive driver of commercialisation. Post-harvest practice is also statistically significant at 5%, showing that the ability to store produce until prices improve lead to higher returns; and access to credit (1%) highlighting the importance of financial support for enterprise development, purchase of productive assets, and inputs.

Of the three variables, access to credit for farming was the variable with the strongest significance level, and hence affects the household commercialization index (dependent variable).

4.7.4 Household commercialization indices

The values of all crops produced during the previous cropping season and amount received for the crops sold by respondents, was used to determine the commercialization index of the household. Also the quantity of potatoes produced and sold was utilized to establish the farmers' potato marketing index, as shown in Table 16.

Table 16: Statistical summary of crop values produced and sold by Mbizana potato farmers

		Value in South African rands			
Variable	No. of response	Mean	Standard Deviation	Minimum	Maximum
Total value of all crops produced	58	17507.15	42725.56	1400.00	325000.00
Amount received from all crops sold	58	10965.51	39467.72	0.00	300000.00
Total value of potato produced	58	5982.50	17639.71	0.00	135000.00
Amount received from potato sales	58	4983.88	17598.97	0.00	135000.00
Potato marketing index	58	0.7557	0.20657	0.00	1.00
Household commercialization index	58	0.4876	0.21634	0.00	0.93

There is a noticeably large gap in the values of crops produced and sold among the farmers, which shows in the minimum and maximum values. While there is a maximum value of R325000.00 for crops produced, a value of R1400.00 was observed as minimum value. In some cases, the farmer did not sell any of their produce in the period. The same analysis is applicable for the potato crop produced and sold. A maximum value of R135000.00 was recorded as value of potatoes produced and sold in the period, while some respondents did not produce nor sell any potatoes.

The mean potato marketing index among the respondents was calculated to be 0.7557, which shows that approximately 76% of the potatoes produced by the farmers are marketed. The index indicates that some farmers sold all of their potato produce in the period, with a marketing index of 1.00; conversely there is a minimum potato marketing index of 0.00 which indicates that the respondents did not market any potatoes in the period; when the data source was cross-checked, the respondents concerned had either not produced any potatoes that cropping season or consumed the potatoes produced at home.

The mean HCI calculated among the farmers in the study area is 0.4876, with a minimum value of 0.00, a maximum value of 0.93 and standard deviation of 0.21634. The figures from the data indicates that on the commercialization continuum stretching from subsistent to fully commercialized (0 – 1), farmers in the study area are situated below the halfway mark at 0.48.

Some farmers from the data observed are at 0.93 while others are at 0.00, located on the opposite extremes of the commercialization continuum. The data indicates that degree of commercialization among smallholder farmers in the study population is 48%.

4.7.5 Discussion of the result

4.7.5.1 The commercialization process among smallholder potato farmers in Mbizana

The commercialization process is undoubtedly, a long drawn-out process that occurs along a commercial pathway that Foster (1998) refers to as a continuum. Farmers could be at any point along the process, and those at the higher levels of the commercialization process pyramid in Figure 8, devote increased proportions of their production resources to marketed produce.

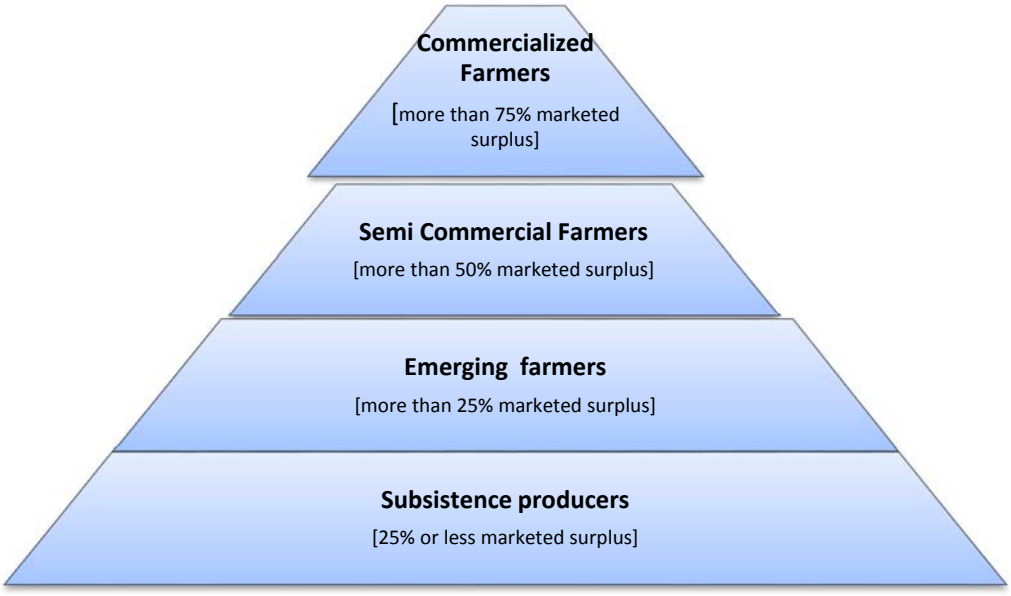

Figure 8: The commercialization process pyramid (Adapted from Mahaliyanaarachchi & Bandara 2006).

Most farmers from the study are still located at the lower half of the pyramid shown in Figure 8, indicating subsistence or mainly limited interaction with the markets. This group of farmers are those described as ultra-poor or vulnerable and market challenged (Ferris, 2014), and are simply 'hanging in' to maintain their livelihood levels, in the face of adverse circumstances. About sixty percent of farmers from the study could be located on the lower half of the commercialization process pyramid, as subsistence producers with less than 25% marketed surplus or at the emerging farmer's level, with not more than 50% marketed surplus.

At least twenty-four percent of the farmers are situated above the halfway height of the pyramid and market more than 50% of their produce. The top of the pyramid is occupied by approximately fifteen percent of the farmers who market more than 75% of their produce. It is obvious that these farmers at the top half of the pyramid have passed the halfway mark on the commercialization road-trip as indicated in Figure 9.

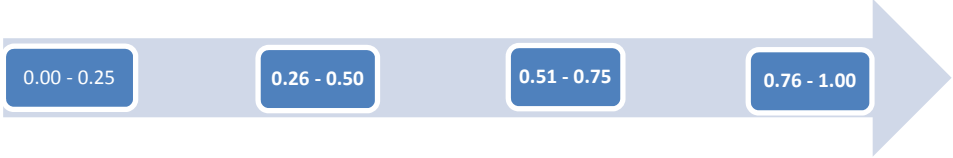

Figure 9: The commercialization road-trip (Adapted from Foster 1998).

The group of farmers above the halfway mark in Figure 9, from 0.5 and above, constitute those 'stepping up and out' with a view to expand their production enterprise and providing a launching pad for investments in other enterprises with stable returns (Ferris, 2014). They represent a group of progressive smallholders that are commercially active or market ready.

The data collected from the study shows differences among the farmers, as shown in Table 17 which is usefulfor customizing intervention programmes for the specific groups.

Table 17: Segmentation among small-scale potato growers in Bizana, Eastern Cape Province.

Farmer Type	Percent	Market sales	Characteristic features
Commercially active farmer	15%	Sells almost all farm produce (0.75-1.0).	Access to credit, large farm-size, irrigation facility
Market ready smallholder farmers	24%	Always sells some surplus (0.51-0.74).	Some access to credit, medium farm size, other income source
Market viable smallholder farmers	52%	Sometimes sells some surplus, market neutral (0.25-0.50).	Periodic access to markets, unbanked, some education.
Vulnerable, market challenged subsistence farmers	8%	Net buyers (0.00 – 0.25)	Small farm size, unbanked.

Adapted from Ferris *et al.*, 2014.

The results from the survey is in line with findings from studies in several African countries, with Ferris *et al*. (2014) reporting that between 50% and 70% of smallholder farmers are not transitioning from subsistence to commercial farming. To support the process of commercialization, a number of mechanisms need to be in place to assist in shifting from production to market based investment activities. In order to break down the barriers to commercialization among market viable and market ready smallholders, Ferris *et al*. (2014) suggests an urgent 'upgrading process' which involves targeted investments in local infrastructure, the strengthening of business services and enhancement of farmer skills.

The market ready and market viable smallholders from the study constitute the larger majority of farmers in the area (76%), need to be targeted and supported with access to capital (credit and

financial services), infrastructure (irrigation, storage facilities, improved transport networks) and extension services from government (information, land preparation, weather forecasting, crop planning and scheduling).

For the vulnerable and market challenged smallholder farmers located at the base of the commercialization pyramid, who constitute 8% of the smallholders from the study, support should aim at livelihoods sources for improving food security, through improved production practices. This group of farmers is very unlikely to participate sustainably in commercialized production, and attempts to enhance their commercialization prospects, according to Aliber & Hall (2010) are counter-productive in terms of efficiency and equity.

4.7.5.2 Marketing of produce among potato growers in Mbizana

Results from the study indicate that most of the small scale potato farmers do market their produce. At a calculated marketing index of 0.7556, at least 76 percent of the potato crop produced by the farmers is marketed.The study results also show that most of the potatoes produced are marketed through the informal market, with very little supplied to the formal market. These results are consistent with suggestions and findings by authors, including Ferris et al. (2014) that informal markets are the most accessible markets for smallholder farmers, especially in developing countries such as South Africa. Baipheti & Jacobs (2009) also suggested that smallholders usually, utilized either fresh produce markets or other informal markets for the marketing of their produce.

Informal markets include all exchanges at the farm gate, roadside, village and rural markets, and some sales in the main urban wholesale and retail segments. Accordingly, the informal markets are crucial to smallholder producers; and in some instances provide short-term higher returns from sales as indicated by Seville *et al*. (2011).

It is however, agreed that linking smallholders to formal markets remain a critical part of any long-term poverty reduction strategy. These markets in the main, are characterized by modern value chain systems, and can link the more commercial-oriented smallholders with larger commercial buyers.

Formal markets offer remarkable prospects for growth to small scale producers, as well as provide connections to reliable income streams and prospects of accessing support services; though Seville *et al*. (2011) highlighted the stringent quality standards, volume requirements as well as pricing lower than informal markets which the farmers have to contend with.

These formal markets exist in Bizana, and include the various chain stores in the town. With proper marketing arrangements for the supply of produce through their cooperatives, the farmers could break into their supply chains. Supporting this suggestion is the fact that corporations are seeking innovative partnerships, which support business models that integrate smallholder farmers into their supply chains. Such partnerships, as postulated by Ferris *et al*. (2014), signal new opportunities for farmers to access such services as technology, extension, finance and insurance required to operate effectively and more efficiently.

4.7.5.3 Factors in favour of commercialization among smallholder farmers in Mbizana

Three key variables were identified as significant in supporting the commercialization process among smallholder potato farmers in the study area, and include farming experience, post-harvest practice and access to credit.

Access to credit was however the strongest variable that enhanced the commercialization status of those located above the halfway point on the commercialization continuum. The result confirms the findings from other commercialization studies, such as Agwu *et al*. (2012) and Martey *et al*. (2012), about the impact of credit on farm productivity. Credit is an important instrument for enhancing the productive capacity of the poor through financing investments in human and physical capital (Okurut *et al*., 2004). According to findings from Spio (2002), users of credit or those with access to financial services, have higher values for farm area cultivated, input usage and productivity; and credit increased the output of a randomly selected farmer by as much as 21%.

The Development Bank of Southern Africa reported that black farmers predominantly lack access to credit, financial services and farming grants (DBSA, 2006). This motivated the establishment of the Micro Agricultural Finance Institution of South Africa (MAFISA) in 2006, a precursor to the UVIMBA Bank for improving access to credit for smallholders. The access to credit is regarded as one of the key elements in raising the productivity of agriculture.

Kimemia (2004) stated that credit is one of the most significant bases for capital accumulation, viewed as a device for facilitating the temporary transfer of purchasing power from one individual to another, providing the basis for increased production efficiency through specialized functions. In their study of the socio-economic determinants of commercialization in Nigeria, Agwu *et al.* (2012) found that access to credit positively influenced smallholders' orientation towards commercialization.

Significant to the commercialization process also, is the ability to properly perform various post-harvest practices. Farmers growing potatoes in the Mbizana area normally sold their produce during harvest. Only a few stored the produce and sold it at a later stage, as potatoes require proper storage facilities; storage in this instance involved a number of post-harvest practices such as sorting, grading, cleaning, bagging, and protection from pests.

For farmers generally, storage has added advantage since it increases market flexibility, and those with the ability to store do not need to market produce immediately after harvest when prices are low. They can therefore earn higher returns by selling when prices are higher, but Wison *et al*. (1995) however admitted that due to lack of storage facilities, financial considerations and to ease congestion, the farmers sell during harvest at lower prices (Olayemi *et al*. 2010).

Higher returns from sale of produce, enable farmers to invest more in the enterprise and also support their household requirements, leading to increased production and hence commercialization. On the other hand, especially among subsistence farmers who are net food buyers, early sale of produce when prices are low results in the purchase of the same produce at a later stage at higher prices; a situation which has been described as inverse arbitrage by Gabre-Madhin (2009), and is unfavorable for increased production and commercialization among small holder farmers.

Farm experience also supported commercialization among farmers in the study area, as experience leads to better performance of agronomic activities. This is due to increased knowledge of the required techniques and timing of production, better use of acquired information and networking. The study result also agrees with the findings by Agwu *et al*. (2012) and Agwu & Ibeabuchi (2011) of the significance of farming experience in the commercialization process. The conclusion from their study was that as number of farming years increased, the probability of commercialization also increased. This study agrees that farming experience is a positive driver of agricultural commercialization among small-holder farmers.

Chapter 5

SUMMARY AND RECOMMENDATIONS

This concluding chapter provides a brief summary of results from the study and conclusions that were arrived at. It also outlines some recommendations for supporting the commercialization process for farmers in the study population.

5.1 Introduction

Smallholder farming in South Africa is constrained by a plethora of factors, but has been recognized for its contribution to poverty reduction, creation of various linkages necessary for economic growth and the revitalization of the flagging agricultural sector. The purpose of the study was to explore the potential for commercialization among small scale potato farmers in the Mbizana area. In trying to achieve the stated aim, a number of objectives were outlined,which have enabled the study to meet its stated purpose.

5.2 Summary of findings from the study

The study reviewed the challenges facing smallholder potato farmers, identified the key factors that influenced their crop production decisions, describing their farming practices, and investigated the potato market in the study area in order to understand the sources of marketed potatoes. Also as part of the study, support services provided to the farmers was highlighted, and data collected was used to measure the commercialization index among the farmers.

The results from the study indicate that;

- Most farmers in the area are faced with the problem of small farm sizes, allocated from the communal fields by community leaders, which do not have title deeds, hence have no property rights; they therefore are unable to access credit from formal financial institutions. Damage to crops in the field by livestock is an issue that confronts smallholder farmers in the study area, who rely solely on rain-fed agricultural systems for production.
- The key factor influencing the farmers' production decision is the financial returns to be made from the farming enterprise. Very few farmers produced crops for home consumption only, and there is a willingness to purchase inputs so long as markets are available for the sale of produce.

- The farmers in the study area normally purchased inputs for cropping, including seeds and fertilizers. There is a widespread use of mechanized equipment for soil preparation; most farmers engage the services of private tractor operators while some use animal traction. Though some of the farmers use chemical methods for the control of weeds, the majority employ manual weeding of the field for weed control.
- There is considerable demand for potatoes in the study area, and small scale farmers rely on informal market sources to sell their produce. Though the supermarket chains in the area are not averse to receiving supplies from local smallholder potato farmers, their centralized purchasing system including cumbersome supplier registration processes constitute an obstacle to interested farmers. Most of the potatoes sold in the supermarkets are supplied from external sources, hence few of the stores sell the produce from small scale potato farmers.
- The farmers belong to cooperatives which are mainly used to purchase inputs, and they do not collectively market their produce.
- A number of support mechanisms are in place to assist the small scale potato farmers in the study, such as the extension services provided by DRDAR, development of the potato commodity group, and provision of transport to ferry inputs to the farmers. The Department also organizes demonstration, trials and field studies, including organizing Information of Farmers Days. The farmers are also supported by LIMA, a non-governmental organization active in the area, through the provision of loans for farming, and assistance with procurement of certified seeds. Potatoes South Africa supports the farmers through mentorship, demonstration trials and provision of business information. The farmers are also assisted with sourcing of certified seeds, post harvest training and market information.
- A majority of the smallholder potato farmers in the Mbizana area are market ready or market viable, constituting approximately 75% of the study population who are marginal market players. Some of the farmers were found to be fully commercialized in their farming activity, constituting approximately 15% of the study population and regularly marketed their entire produce. It was also found that a small percent of the population were subsistent producers; this group consist approximately 8% of the study population, with limited access to production factors.

- On average the farmers in the study population are below the halfway point on the commercialization continuum, the mean calculated household commercialization index was 0.48, representing a 48% degree of commercialization (when the percent of produce sold is compared to total value of production). Some of the farmers are at the bottom of the index, while some of the farmers are located close to the top of the index.
- A number of factors are responsible for determining the level of commercialization among the smallholder farmers, including access to credit, farm experience, farm size and post harvest practice. Most of the farmers participate in markets, either for the purchase of inputs, sale of produce, or both.

5.3 Conclusion made from the study

Results from the study agree with literature regarding the production and marketing challenges faced by smallholder farmers in the area. The evidence from the research showed the predominance of small farm sizes, dependence on rain-fed production agriculture, low level of education among farmers in the area and their lack of access to credit for farming. The results indicated that most farmers sell their produce during or immediately after harvest, when prices are low; highlighted their lack of post-harvest skills and dependence on informal marketing channels to market their produce.

However, of note are the farmers' quest for a rewarding interaction with the markets, and their acquisition of inputs needed for production. The study acknowledged the availability of a market for potatoes in the area, requiring farmers to initiate mechanisms to tap into the readily available and lucrative formal potato supply-chain.

While the average level of commercialization is low at 48%, there are a number of respondent farmers already fully commercialized, and a large chunk that are market ready or market viable, whose potential needs to be tapped, to enable them participate regularly in output markets.

5.4 Recommendations

Emanating from the study results and conclusion, a number of recommendations are herein proposed which will enable the small scale potato farmers in the Mbizana area to meet their production objectives. The recommendations are based on the recognition of the economic and social benefits of a vibrant smallholder agricultural sector, and that small scale farmers on their own cannot achieve transformation to commercial farming.

5.4.1 Policy recommendations

Policy recommendations are made from a welfare and commercialization view-point, which target subsistence and market-viable farmer segments. The purpose of this segmentation is to enable the meeting of self-sufficiency and increased market supply goals, which generate greater livelihoods benefits for the farming population.

Policy recommendations for the subsistence farmer segment are to;

a) Provide subsidized inputs for household food gardens to subsistence farmers.

The cost of improved inputs is a deterrent to subsistent farmers who continue to struggle to increase their production. With subsidized inputs provided as part of a well designed food security programme by government, subsistent farmers will not only benefit from increased productivity, but will be able to sell their surpluses in the local markets thereby ensuring the availability of fresh produce in their communities.

b) Link local groups of subsistence farmers to school feeding programmes

While enhancing the household food security of subsistent farmers, the current school feeding programme can be supplied from the surplus of farmers in localized areas. This will be beneficial to the farmers as a way to provide a guaranteed market, hence ensuring their continued participation in output markets and ability to earn an income from sale of farm produce; as agronomic support alone will not be enough to achieve large-scale poverty reduction among subsistent farmers.

c) Increase support for farm-based training and extension services

Continued training in improved production practices for subsistent farmers will increase their knowledge and skill base, needed for better productivity. Targeted extension services to ensure the proper use of certified inputs, better timing of production activities, improved agronomic practices will contribute significantly to improve overall agricultural productivity among smallholders.

Policy recommendations for the market-ready or viable farmer segment include;

i. Collective marketing of the farmers produce

The use of collective marketing structures provides opportunities for small scale farmers to raise their incomes from agricultural production. With collective marketing farmers can explore other markets, and are able to overcome market factors hindering their participation in the formal potato value-chain in Bizana. The existing cooperatives used by farmers for purchase of inputs, can also be utilized to collectively market their produce.

ii. Provision of adequate market information

Farmers need to be provided with price information for inputs and produce at the start of the cropping season, to enable them plan adequately for production. The market information can be sent through mobile phones, displayed at the offices of the Department of Agriculture, other related government agencies such as Small Enterprise Development Agency (SEDA) and non-governmental organizations active in the area.

iii. Facilitate contract farming

To improve the spread of benefits from the Broad Based Black Economic Empowerment (BBBEE) in agriculture, policy directives should be strengthened to encourage supermarket chains to facilitate supply agreements with small-scale farmers in their local areas, to enable local farmers to participate in their supply chains.

iv. Increased value addition

Potato farmers working through their cooperatives should be encouraged to add value to their produce, through for instance, producing chips for the fast food industry. This may be assisted through supply agreements with food stores and other users; and provides an avenue for on-farm job opportunities. Government will be required to support with enabling infrastructure such as cold rooms for storage, and improved supply of power to local communities.

v. Improved storage and post harvest practices

Additional training by extension officers in improved post-harvest practices including sorting and storage will be helpful to the farmers in Bizana, who sell all their produce immediately they are harvested. Aligned to group marketing and value addition, farmers in Bizana should be provided with a common storage facility to pool their produce.

vi. Establishment of fresh produce market in the area

Though the area has a viable market for produce, and most rural dwellers in the area frequent the Bizana town for shopping, there is no organized fresh produce market serving the area. The establishment of such a market will increase the marketing channel for small scale farmers in Mbizana, and serve as a contact point for suppliers and other bulk buyers seeking new sources of produce supplies.

vii. Enhance the access to credit and financial services

This research highlighted the importance of access to credit for the small scale farmers in Mbizana, and calls for the establishment of an office of the agricultural financial services agency in the area. There are no specialized agencies providing credit support and other related financial services to farmers in Bizana.

viii. Strengthening of the extension service

The knowledge and skill-set of the Extension Officers need constant updating, to enable the extension agents provide current and credible service to the farmers. Improved understanding of farmers' needs and challenges, including specialized training in agronomic and post-harvest technologies will be beneficial.

ix. Improved marketing infrastructure

Transport of produce from the rural communities in Mbizana to the market centre in Bizana is constrained by poor roads; some communities are even cut-off after heavy flooding. Improved road conditions and the establishment of service centers in far-flung communities, are recommended to meet the needs of farmers in these areas.

x. Security of tenure and development of viable land markets

The current re-opening of the land claims process and proposals for transfer of portions of land to farmers, presents an opportunity to re-look at land markets and the control of land by traditional authorities. It is recommended that government facilitates the development of viable land markets and access to property deeds for small scale farmers in the area.

5.4.2 Recommendation for further research

This study applied the household commercialization index, as the sole tool for measuring the level of commercialization among small scale farmers in the study area. It will be valuable to apply other commercialization measurement tools for evaluating the level of interaction with the markets in meeting the stated goals of the farmers.

Furthermore, only listed potato commodity farmers in Mbizana area constituted the study population; the geographical area for future studies should be expanded to cover more areas in the Eastern Cape Province, as the finding from this study may not apply to farmers in other closely located areas within the Province.

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APPENDIX

Appendix 1. Questionnaire for potato farmers.

Appendix 2. Questionnaire for potato marketing outlets.

Appendix 3. List of potato commodity farmers.

APPENDIX 1:

QUESTIONNAIRE FOR POTATO FARMERS

Title of Study: **Prospects for commercialization of potato production among small scale farmers in Bizana .**

Student: **Nwafor Christopher Ugochukwu**

Objectives of this questionaire:

1) *To facilitate the process of data collection from identified respondents for the study.*
2) *To enable the researcher categorize the various segments of the data required .*
3) *To provide a reference document to field data collectors and act as a guide in collecting the required information.*
4) *To provide a framework for the verification of the proposed research work.*
5) *To define the boundaries of information to be collected in the course of the research.*
6) *To provide data required for quantitative analysis and supporting the findings from the proposed research.*

This questionnaire is developed as part fulfillment for the M.Tech Agriculture at the Central University of Technology (CUT).

Study Leaders: Prof Ca Van der Westhuizen & Prof PJ Fourie (Pr. Sci. Nat)

School of Agriculture & Environmental Sciences
Tel: +27 51 5073113 | Fax: +27 51 507 3435|
E-mail: pfourie@cut.ac.za
Central University of Technology, Free State (CUT)
Private Bag X20539, Bloemfontein, 9300, South Africa

Index

Q2 - Q13 Demographic Characteristics of Respondents
Q14 - Q35 Production and Inputs
Q36 - Q48 Enterprise planning & marketing
Q49 - Q61 Availability of support services
Q62 - Q71 Record keeping and perception of enterprise.

Notes for Questionnaire Administrator.

Please inform the respondent of the following;

a. The information provided will be confidential and used only for an academic purpose.
b. The respondent may decide to opt out of the interview at any point.
c. The respondent is welcome to ask for clarification to any question.

Kindly ensure that the respondent is in a comfortable place to participate in the interview, as the process may last at least 30 minutes.

Mark the correct answer with an X, and write down any comments offered by the respondent in response to any question.

For office use only	
Questionnaire number	1

Section A: DEMOGRAPHIC CHARACTERISTICS

1 Gender — 2, 3

Choose one	
Male	
Female	

2 Age — 4

_____ years

3 Have you attended any school? — 5

Yes
No

4 If Yes, how many years of schooling? — 6, 7, 8, 9

_____

5 How long have you been farming ? — 10

_____ years

6 Size of land that you farm on? — 11

_____ ha

7 What is your marital status? — 12, 13, 14, 15

Choose one	
Married	
Single	
Widowed	
Divorced	

8 Number of persons currently living in household? 16

_____

9 Type of residential dwelling ? 17 18 19

_____

10 Do you have a bank account ? 20

Yes
No

11 Do you receive income from any other source apart from farming? 21

Yes
No

12 If "yes" to question 11 above, please indicate income type . 22 23 24 25

Grant	
Pension	
Salary	
Other	Pls elaborate

_____

13 Are you the only income provider for the household? 26

Yes
No

Section B: PRODUCTION AND INPUTS

14 What crop (s) did you cultivate last season? 27 28 29

_____

_____

_____

15 Which crop(s) have you cultivated this season? 30 31 32

_____

_____

_____

16 Where is the location of your farm ?

Choose one or more	
Around the compound	
Communal fields in village	
In another village	

33
34
35

17 Was the farm allocated to you by the community leader?

Yes
No

36

18 If "no", how did you get access to the land?

37
38
39

19 Do you purchase any inputs for farming?

Yes
No

40

20 If "no", how do you get your inputs?

41
42

21 If you purchase inputs, from what sources?

43
44
45

22 Please identify inputs you purchased for the last cropping season.

Choose one or more	
Seeds	
Herbicides	
Implements	
Fertilizer	
Other (Pls elaborate)	

46
47
48
49
50

23 Do you use paid casual labor for your farming activities?

Yes
No

51

24 If yes to 23, what is the additional casual labor mainly used for ?

Choose one or more	
Soil preparation	
Planting	
Weeding	
Harvesting	
Other	

52 53 54 55 56

25 If yes to question 23, how do you pay for the labor used?

Choose one or more	
Cash	
Farm produce	
Labor exchange	
Food	
Other (Pls elaborate)	

57 58 59 60 61

26 Do you use any irrigated method for farming?

Yes
No

62

27 If yes to question 26, please elaborate.

63 64

28 Do you rear any livestock for sale ?

Yes
No

65

29 If yes to question 28, what type of livestock do you keep?

Choose one or more	
Cattle	
Sheep	
Goats	
Pigs	
Other (pls elaborate)	

66 67 68 69 70

30 Do you keep any poultry for sale? 71

Yes
No

31 If yes to question 30, which type of poultry do you keep? 72 73 74 75

Choose one or more	
Chicken	
Ducks	
Turkey	
Other (pls elaborate)	

32 How do you prepare your field for planting? 76 77 78

Choose one	
Manually (Slash & Burn, Hoeing)	
Mechanized (Animal Traction)	
Mechanized (Tractor)	

33 How do you control weeds in your crop field ? 79 80

34 Do you cultivate different crops in the same field? 81

Yes
No

35 What production problem (s) did you encounter in farming last season? 82 83 84

36 How did you deal with the problem (s)? 85 86 87

Section C: **PLANNING & MARKETING**

37 Which crop(s) do you produce mainly for home consumption? ☐ 88

_____

38 Which crop(s) do you produce mainly for sale? ☐ 89

_____

39 Which crop (s) did you sell last season? ☐ 90
☐ 91

_____

40 How much did you realize from crop sales last season? ☐ 92

_____

41 How much do you expect from crop sales this season? ☐ 93

_____

42 How many crop cycles do you cultivate each year? ☐ 94

_____

43 Do you store your harvested crop? ☐ 95

Yes
No

44 If yes to question 43, for what purpose do you store? ☐ 96
☐ 97
☐ 98

_____

_____

_____

45 Do you sort, grade, clean or bag any crop after harvest? ☐ 99

Yes
No

46 If Yes, which do you do?

Choose one or more	
Sorting	
Grading	
Washing	
Bagging	

100
101
102
103

47 Where do you normally sell most of your harvested crops?

Choose one or more	
Farm	
Homestead	
Community Market / Town	
Other (pls elaborate)	

104
105
106
107

48 When do you sell your harvested crops?

Choose one or more	
Immediately after harvest	
Within one month	
Within three months	
Other, pls specify	

108
109
110
111

49 Do you have any crop marketing or supply agreement?

Yes
No

112

50 Do you experience difficulty transporting your crops to the market?

Yes
No

113

51 If Yes, please elaborate

114
115

52 Please indicate any other problem (s) you experience during crop sale? 116 117 118

_____

_____

_____

53 If problem(s) indicated, suggestions for overcoming the constraint(s)? 119 120 121

_____

_____

_____

Section D: GROUP MEMBERSHIP, KNOWLEDGE AND AVAILABILITY OF SUPPORT SERVICES

54 Are you a member of any farmers cooperative? 122

Yes
No

55 Do you partake in any group marketing of produce? 123

Yes
No

56 Do you participate in any group purchase of farm inputs? 124

Yes
No

57 If yes to question 56, please indicate type of inputs. 125 126 127

_____

_____

_____

58 Have you attended any agricultural information or farmers day? 128

Yes
No

59 Have you received any extension advice or support from Agric Dept? 129

Yes
No

60 Have you benefitted from any farmer support programme (s)? 130

Yes
No

61 If yes to question 60, please indicate which programme (s).

131
132
133

_____

_____

_____

62 If no to question 60, are you aware of any farmer support programme? 134

Yes
No

63 If yes to question 62, please indicate which programme (s).

135
136
137

_____

_____

_____

64 Have you received any inputs, loans or grants for farming? 138

Yes
No

65 If yes to question 64, indicate source and type received.

Type Received	*Source*	
Farm Inputs		139 / 140
Farm loans		141
Grant for farming		142
Other (pls elaborate)		

_____

66 Are you aware of the activities of Potatoes SA? 143

Yes
No

67 If Yes to 66, have you benefited from activities of Potatoes SA? 144

Yes
No

68 Do you have access to input credit facilities for farming ? 145

Yes
No

69 If Yes, please indicate source (s). 146

Bank	147
Informal financial agent	148
Govt Department / Agency	149
NGO	150
Other (pls elaborate)	

Section E: RECORD KEEPING AND PERCEPTION OF ENTERPRISE

70 Do you keep any records of your farming enterprise? 151

Yes
No

71 If Yes to 70, what records do you keep? 152

Inputs purchased	153
Quantity of Crops harvested	154
Quantity sold	155
Planting dates	156
Other (pls elaborate)	

72 What quantity of crops did you harvest last season?

All apllicable	50kg bags
Potato	
Maize	
African Cocoyam (madumbe)	
Vegetables (indicate which)	
Other (pls elaborate)	

157
158
159
160
161

73 Approximate value / quantity of potatoes sold last season?

162

74 How do you rate the returns from the potato crop?

Choose one	
Very high (5)	
High (4)	
Satisfactory (3)	
Poor (2)	
Very Poor (1)	

163

75 If applicable, how do you rate the returns from other crop(s) cultivated?

Choose one for each crop type	Crop	Rating
Very high (5)		
Good (4)		
Low (3)		
Poor (2)		
Very Poor (1)		

164
165
166
167
168
169

76 Are you considering cultivating any other crop type?

Yes
No

170

77 If yes to question 76, identify which crop.

171

78 Which key factor informs your decision to cultivate any crop type? 172

Choose one	
Availability of market	173
Home consumption	174
Easy to cultivate	175
Low cost of inputs	176
Returns from sale	

79 On a scale of 1-5, rate the mentioned factors according to importance attached (1= highest).

Availability of market	177
Home consumption	178
Easy to cultivate	179
Low cost of inputs	180
Returns from sale	181

80 Any related comments from respondent? 182

_____

_____

Thank you for your time.

APPENDIX 2:

QUESTIONNAIRE FOR POTATO MARKETING OUTLETS

Questionnaire for Potato Dealers / Sellers

For Office Use Only

1 Potato sales outlet type

Supermarket Chain Store	
Local Grocer Shop	
Spaza Shop	
Informal Wholesaler	
Informal Loose Retailer	

2 Location.

Bizana Town	
Other Town (Nodal area)	
Rural area	

3 Period of existence of outlet.

More than 2 years	
More than 1 year, less than 2 yrs	
Less than 1 year	
Less than I month	

4 Commodity type dealt with?

Multi- mixed variety	
Crop produce only	
Mixed sundry items	
Potatoes Only	

5 Supply source of the potato sold by outlet?

External commodity supplier	
Local Wholesaler	
Other Commercial Farmer	
Local Farmers	

6 Quantity supplied at monthly interval?

250 bags or more	
100 bags or more	
Less than 100 bags	
Less than 10 bags	
Less than 5 bags	

7 Has your outlet been approached by any local potato farmer(s)for supply of potatoes?

Yes
No

8 Do you sell potatoes supplied by local farmers in Bizana?

Yes
No

9 If Yes to question 7, are you satisfied with the produce supplied?

Yes
No

10 Are there any factors limiting local potato farmers from supplying to your outlet?

Yes
No

11 If yes to question 10, Please elaborate!

_____

_____

_____

12 Any comments from respondent?

_____

_____

Thank you for your time!!!!!!

APPENDIX 3:

LIST OF POTATO COMMODITY FARMERS

Province of the
EASTERN CAPE
RURAL DEVELOPMENT AND
AGRARIRIAN REFORM

OR TAMBO DISTRICT: CONTROLLER: Extension & Advisory Services
Private Bag X525 .Bizana.4800.
REPUBLIC OF South Africa Website: www.agr.ecprov.gov.za

BIZANA LOCAL MUNICIPALITY

POTATO COMMODITY FARMERS LIST

S/N	INITIALS & SURNAME	CONTACT NUMBER
1	Mrs. Mdolo	073 656 9421
2	Mrs. Madikizela	083 983 2204
3	Mrs. Sontubana	073 311 0634
4	Mrs. Mhlongwe	078 605 8519
5	Mr. Mgolozana	078 912 1479
6	Mr. Magidela	076 271 7825
7	Mrs. Njomi	078 960 3593
8	Mrs. Mdiya	073 390 1902
9	Ms. Mazangela	071 753 3719
10	Mrs. Gwanisheni	072 381 9881
11	Mrs. Madikizela	079 976 7193
12	Mr. Mpandle	083 581 7069
13	Mrs. Makhaya	083 547 8038
14	Mr. Majidana	078 992 5922
15	Mr. Njonga	073 371 3944
16	Mr. Ngqolosi	076 770 4540
17	Mrs. Njeya	073 1763401
18	Mr. M Madikizela	078 736 2673
19	Mrs. Manono	073 939 1180
20	Mr. Masela	072 277 9656
21	Ms. Manana	083 394 8195
22	Mr. Mavana	073 308 8432
23	Mr. Sikhenya	078 849 5382
24	Mrs. Tolezi	078 336 7697
25	Mrs. Somtumane	073 311 0634
26	Ms. Njikazi	073 577 7614
27	Mr. Mzana	073 008 4745
28	Ms. Nosicelo	078 236 7697
29	Mrs. V. Tshobonga	078 681 8708
30	V.F Tshangela	071 265 6201
31	Z. Nceba	073 651 8707
32	N.D Vukeka	083 422 8894

Appendix 3: List of potato commodity farmers

33	M. Njekeni	073 795 8539
34	D. Busuku	073 723 0315
35	N. Mtiliva	073 638 0246
35	Mrs Ndayi	078 716 3312
37	Mrs Mthinjwano	082 370 7378
38	N. Myeki	083 425 2784
39	B. Mbhele	073 939 4047
40	M. Hlongwe	078 844 3443
41	N. Mfedu	078 123 0762
42	F.N. Gcothoza	078 615 6772
43	J. Hlandelo	079 540 0432
44	N. Nontunja	078 044 3898
45	T. Dawethi	079 453 6666
46	Z. Matshoba	076 849 2165
47	N. Madikizela	073 549 1375
48	M. Dzambe	076 533 1470
49	E. Nompula	076 426 2446
50	S. Ncenjane	073 583 0109
51	E. Gwita	079 140 6349
52	Mrs Majola	073 261 9689
53	Ms Mzekandaba	082 342 8615
54	Mr Vutha	083 346 5863
55	Mrs Thinta	076 104 9998
56	Majila	078 565 6061
57	Ms Mdingi	078 364 1446
58	B. Jakwini	073 161 6087
59	Mrs Daki	073 101 6876
60	Mr Madikizela	073 278 9336
61	Ms Siphathe	079 732 7153
62	Mrs Tojkozwayo	082 727 4357
63	Mrs Gebe	083 436 7141
64	T. Njomeni	079 746 2702
65	Mrs Njomi	078960 3593
66	Mr Danca	078 548 3438
67	Mrs Ndovela	072 356 6433
68	Mrs Kheswa	082 344 1195
69	Z. Nohombile	078 615 6772
70	M. Qalaba	073 476 8299
71	Mr Mabophe	072 280 2078

Appendix 3: List of potato commodity farmers