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The role of contracts in improving access to credit in the smallholder livestock sector of Swaziland

By

Tengetile Xolile Mamba

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DECLARATION

I, Tengetile Xolile Mamba, declare that the dissertation, which I hereby submit for the degree MSc Agriculture (Agricultural Economics) at the University of Pretoria, is my work and has not previously been submitted by me for a degree at this or any tertiary institution.

SIGNATURE: T.X. Mamba

DATE: 15 July, 2016

DEDICATION

This dissertation is dedicated to my late father, Moses Khangezwayo Zondamavila Ziyanyenya Mamba, and my late sister, Nqcobile Victory Mamba-Dlamini.

I also give a special dedication to my husband, Thulani Celokwakhe Ngcamphalala, for encouraging me to further my studies and for supporting me financially, emotionally, spiritually and otherwise. Thank you for your patience, staying and raising our kids. My two daughters, Luvuyo and Okuhle, thank you guys for your endurance when mommy was away, I love you.

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ABSTRACT

The role of contracts in improving access to credit in the smallholder livestock sector of Swaziland

By

Tengetile Mamba

Degree: MSc Agric (Agricultural Economics)

Department: Agricultural Economics, Extension and Rural Development

Supervisor: Professor Charles Machethe

Co-Supervisor: Dr Nadhem Mtimet (ILRI)

The study investigates the role of contract farming in improving access to credit for smallholder cattle producers, cattle finishers and traders in Swaziland. The contracts are verbal or informal and involve smallholder cattle producers, cattle finishers and traders on the one hand and other stakeholders in the value chain on the other. The study determined (a) the credit access status of smallholder cattle producers, finishers and traders, and whether participating in contracts leads to improved access to credit; and (b) identified factors that determine smallholder farmers', finishers' and traders' access to credit from formal financial institutions and those that may lead farmers to become involved in contracts with other actors in the value chain.

Two sets of structured questionnaires were designed to capture the required data for farmers, finishers and traders. The sample size was 111 randomly selected cattle farmers. They were divided into three stratas, that is, 53 cattle producers, 36 cattle finishers and 22 cattle traders. Two logistic regression models were applied. One model was employed to identify factors that determine access to credit from formal financial institutions. The other model was employed

to identify factors that may lead farmers to become involved in contracts with other actors in the value chain.

The descriptive results indicates that access to credit from financial institutions is 36 % for cattle producers, 36 % for cattle finishers, and 50 % for cattle traders have access to credit.. Informal channels, such as friends and relatives, are the predominant lenders. The results from the logit model for participation in formal contracts indicates that off-farm income, better access to extension services, being a member of a farmers' association, having access to assured market and access to marketing information are positively associated with farmers' involvement in contract agreements. The logit model on formal credit access indicates that income received from other business activities, age of the farmer, herd size, and training in beef cattle production had significant effects on a farmer's probability of having access to formal credit. The results further reveals that participating in contracts does not determine access to credit from formal financial institutions.

The study makes recommendations for increasing farmers' involvement in formal contract agreements, particularly by enhancing access to market, improvements in capacity building and, encouragement of collective action of farmers. In addition, their involvement might be improved by increasing farmers' access to credit from formal institutions by encouraging beef cattle farmers to diversify, thus receiving income from other businesses, and also the provision of producer training (and trader training) on marketing and production activities. It is further concluded that participating in contracts does not lead to improved access to credit and also access to credit relatively decreases participating in contracts. There is need to target the implementation and the monitoring of credit interventions for smallholder cattle farmers in order to improve their access to credit and participation in contract farming.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADB	African Development Bank
AgGDP	Agricultural Gross Domestic Product
AVCF	Agricultural Value Chain Finance
CBS	Central Bank of Swaziland
DFI	Development Finance Institutions
EU	European Union
FAO	Food Agricultural Organization
FINCORP	Swaziland Finance Development Corporation
FGD	Focus Group Discussion
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GIS	Geographic Information System
GOS	Government of Swaziland
IAASTD	International Assessment of Agricultural Science and Technology for Development
ICART	Implementation and Coordination of Agricultural Research and Training
IFAD	International Fund for Agricultural Development
ITF	Individual Tenure Farm
KDDP	Komati Downstream Development Project
LIMS	Lusip Information Management System
LUSIP	Lower Usuthu Smallholder Irrigation Project

LUSIP-GEF	Lower Usuthu Smallholder Irrigation Project – Global Environmental Facility
MOA	Ministry of Agriculture
NBI	Non-Banking institution
NGO	Non-Governmental Organisation
NIE	New Institutional Economics
SACU	Southern African Customs Union
SADC	Southern African Development Community
SCCO	Savings and Credit Cooperatives
SIDC	Swaziland Industrial Development Cooperation
SMI	Swaziland Meat Industries
SNL	Swazi Nation Land
SWADE	Swaziland Water and Agricultural Development Enterprise
TDL	Title Deed Land
US	United States
USA	United State of America
WTO	World Trade Organization

CHAPTER 1
INTRODUCTION

1.1 Background

Access to credit is essential for the development of the agricultural sector. The agricultural sector in Swaziland accounts for about 25 % of the total volume of credit from formal financial institutions, with commercial sugarcane farmers being the biggest recipients (CBS, 2012). However, the commercial banks are unwilling to participate in the provision of credit to smallholder farmers on Swazi Nation Land (SNL), due to their lack of collateral and the high cost involved in its administration (as smallholders usually borrow small amounts and are dispersed). Currently, there are no Non-Governmental Organisations (NGOs) involved in providing credit to smallholder farmers in Swaziland (Msibi, 2009).

Swaziland has both formal and informal financial institutions. Informal credit institutions have social relations with some of their borrowers and this enables the borrowers to have easy access to information about the informal credit institutions' lending ability. This permits the credit officers to play a more direct role in enforcing repayment. The fact that collateral is rarely required in the informal credit sector enables it to flexibly satisfy financial needs of smallholders that cannot be met by the formal financial institutions. However, in the informal credit system, credit is disbursed without thoroughly assessing the socio-economic condition of the community (Masuku, 2010).

Most of the credit aid programmes in Swaziland are supply-led and mostly attached to agricultural technology package programmes. Credit is provided without sufficient information about the community in relation to their attitude towards credit, in terms of repayment history (Msibi, 2009).The most active formal financial institution in servicing smallholders with finance is Swazi Bank, a state-owned bank. Swazi Bank has an adequate branch network and the capacity to provide credit to smallholder farmers. However, it is developing from a long reorganisation exercise that started back in 1995 and strengthening of its financial health is required before it can increase its lending to smallholder farmers (Swazibank, 2011). Other institutions include the Swaziland Industrial Development Company (SIDC), which is mainly engaged in the agro-industrial and industrial sectors and its coverage is limited in the smallholder farmer sub-sector. There is also the Swaziland Development Finance Corporation (FINCORP), which was established to support the rural poor and to promote Swazi micro-,

small-, and medium-scale enterprises. It has the mandate and technical capacity to engage in providing credit to smallholder farmers. Although it resources are limited, it has an active portfolio, mostly utilised by sugarcane smallholder farmers with a few loans extended to cattle farmers (FINCORP, 2012).

Agricultural producers rely on credit resources to raise the capital needed to initiate and sustain their production and marketing activities. The provision of credit to rural populations has been considered as an essential tool for raising their incomes, mainly by mobilising resources to more productive uses. In developing countries like Swaziland, agricultural credit plays a more significant role in enhancing agricultural productivity (Mavimbela *et al*., 2010). The question is, to what extent can credit be offered to the rural poor to assist in their taking advantage of the emerging entrepreneurial activities? Nevertheless, having access to credit may be difficult if the levels of income are low for the poor. Yehuala (2008) stated that under such circumstances, increasing family income through taking up a loan could help the rural poor to accumulate their own capital and invest in employment-generating activities.

Formal financial institutions fail to provide for the credit needs of smallholders, mainly owing to their lending systems. These institutions have created the myth that the poor are not bankable, as they are considered to be non-creditworthy because they cannot provide the required collateral. The majority of smallholder farmers in developing countries still have limited access to bank services to support their agricultural and private enterprises. This is despite efforts made to overcome the extensive lack of financial services and the expansion of credit in the rural areas of these countries (Masuku, 2010).

Provision of credit is important for promoting rural development. Credit helps in the attainment of necessary inputs for the rapid and sustainable growth of agriculture. Rural credit can be substituted temporary for personal savings. This type of credit can boost and promote the process of agricultural production and productivity as the smallholder farmer is able to use improved agricultural technologies. The adoption of modern technologies, however, is relatively expensive and smallholder farmers cannot afford to finance it themselves. This then leads to a low utilisation rate of agricultural technologies. Some researchers (Diagne & Zeller, 2001; Jabbar *et al.*, 2002) have argued that agricultural production and productivity would be accelerated through enhanced rural credit provision. Therefore, it is crucial to improve the credit status of smallholder farmers in order to increase agricultural production and productivity (Binswanger & Khandker, 1995).

Smallholder farmers' lack of access to credit has hindered agricultural revolution and the speedy eradication of poverty. Uncertainties arising from the agricultural process, such as dependence on rainfall, poor animal husbandry practices and poor farming systems, have made formal lenders hesitant to provide loans to smallholders for large-scale investments to boost agricultural productivity. Land ownership is one of the important prerequisites for loan qualifications set by formal financial institutions, but this has been denied to most smallholder farmers (FinMark Trust, 2011). Smallholder cattle farmers in Swaziland are located in SNL, and thus do not possess land titles.

Smallholder cattle farmers still lack essential inputs, lack access to financial markets for credit, lack access to irrigated land, have limited access to guaranteed markets, and are faced with high transaction costs, as they are located in the rural areas. Cattle production and marketing of beef are costly ventures and, therefore, smallholder farmers must have access to credit to increase production and income for their households (Vilakati, 1994).

The subsistence nature of livestock rearing in Swaziland, generally weak investments in the sector and poor linkages of most farmers to formal markets and value addition chains have led to the low beef off-take in the country. Cattle production, and more particularly beef industry value addition, is of little interest to investors and the financial sector. Only a small number of large-scale producers with strong links to, or own, slaughterhouses, processing and retailing facilities have access to finance (Jabbar *et al.*, 2002).

1.2 Research problem

In developing countries, including Swaziland, a major constraint to increasing the productivity of smallholder farmers is their inability to access credit from formal financial institutions. Despite many interventions involving supplier-led approaches to credit, limited success has been achieved in improving access to credit for smallholder farmers in Swaziland. Hence, the country is still searching for better ways to improve access to credit for smallholder farmers. Research has shown that improving access to formal credit will require a paradigm shift to a demand-driven approach (Zeller & Sharma, 1998; Meyer, 2002).

There has been a renewal of interest in improving access to credit in Swaziland, especially for sugarcane and vegetable farmers (Msibi, 2009). Cattle farmers are still lagging behind, as the livestock sub-sector is engulfed by poor animal husbandry practices. Masuku (2010), in a study

of access to credit by smallholder farmers, concluded that formal financial institutions must improve their lending terms and conditions for small-scale agricultural initiatives as this would provide an important opportunity to assist smallholder farmers to have access to credit. Therefore, having good institutional arrangements is vital for promoting the livestock sector and increasing its contribution to the economy.

In the agricultural sector contract farming is one of the alternatives for solving problems of lack of access to credit. Studies (e.g. Key & Runsten, 1999; Warning & Key, 2002) have confirmed the improvement in farmers' access to credit as being a result of participation in contract farming. To participate in contract farming, farmers are affected by physical, social and economic factors. The benefit of contract farming depends on different aspects, such as type of agricultural sector, behaviour of contractors and other socio-economic factors.

Contract farming has played a major role in improving access to credit for smallholder farmers, as empirical evidence from previous research has shown. As stated by Slangen *et al.* (2008), contracts have enabled farmers to gain access to a wide range of services that were otherwise unattainable, such as access to credit, markets, new technologies and risk reduction. Although contracts have the potential to improve access to credit, little research has been conducted in Swaziland to determine the role of contracts in enhancing access to credit. Results of a study by Da Silva (2005), on the growing role of contract farming in agri-food systems development, indicated that credit is enhanced and typically supplied through input provision and as investment credit for the acquisition of machinery and buildings by the contracting firms or the banking system. The study also found that credit is enhanced through contractual commitment as this served as a guarantee for the granting of loans by agribusiness firms.

Masuku (2011) conducted a study on the role of contracts in sugarcane farming in Swaziland, but did not address how participation in the contracts enhances access to credit from formal financial institutions for smallholder farmers. Studies on the role of contracts are few in the smallholder livestock sector and they focus mostly on production and marketing of products of smallholder farmers, rather than on livestock farmers' access to services. They also focus on the impact of contract farming on household income of smallholder farmers (Catelo & Costales, 2014; Musara *et al.,* 2011; Wainaina *et al.,* 2012) rather than enhancing access to credit from formal financial institutions. There is also scant information on the determinants of participation in these contracts in the case of smallholder cattle farmers. Assessing the impact of contracts on smallholders' access to formal credit is important for the design and

implementation of policies and strategies that aim to create sustainable markets for smallholder cattle farmers.

1.3 Research Questions

The research questions were:

1. Do smallholder cattle farmers have access to formal credit from commercial banks or other financial institutions for their livestock activities?
2. Does being involved in a contractual arrangement increase the probability of smallholder cattle producers, cattle fatteners and cattle traders gaining access to credit from formal financial institutions?
3. What are the constraints faced by smallholder cattle producers, cattle fatteners and cattle traders when trying to access formal markets?
4. What are the constraints faced by smallholder cattle farmers when trying to become freely involved in or engage in contractual arrangements?

1.4 Objectives of the study

The main objective of the study was to investigate the role of contracts in promoting access to credit for smallholder cattle farmers, cattle fatteners and traders in Swaziland.

The specific objectives of the study were to:

1. Determine the credit access status of smallholder cattle farmers, fatteners and traders.
2. Identify factors that determine smallholder cattle farmers', fatteners' and traders' access to credit from formal financial institutions.
3. Determine whether participating in contracts leads to improved access to credit.
4. Determine factors that may lead cattle farmers to become involved in contract agreements with other actors in the value chain.

1.5 Research hypotheses

The hypothesis to be tested in this study is that, participation in contract farming will improve access to credit for smallholder cattle farmers, cattle finishers and cattle traders in Swaziland.

This can be further divided into four sub-hypotheses:

1. Smallholder cattle farmers have limited credit access from financial institutions

2. Access to credit is enhanced by age of the farmer, herd size, income received from other businesses and farmer training

3. Participation in contracts leads to improved access to credit for smallholder cattle farmers

4. Smallholder farmers' involvement in contract farming is enhanced by age of the farmer, off-farm income, access to credit, access to extension services and markets

1.6 Organisation of the study

Chapter 2 provides an overview of the agricultural sector of Swaziland, livestock production, risks, issues affecting future success of the beef industry, and contract farming as an institutional arrangement for beef cattle production. Chapter 3 reviews the relevant literature on the role of credit in agriculture and livestock development, access to credit by smallholders, the role of value chain finance in the beef industry, and determinants of access to credit. Chapter 4 reviews the relevant literature on the role of contract farming, the costs and benefits, and determinants of participation in contract farming. Chapter 5 describes how the study was conducted by explaining the methods and procedures. Chapter 6 presents the socio-economic characteristics of the sample while Chapter 7 presents the results and discussion of the study. Chapter 8 presents the summary, conclusion, and recommendations.

CHAPTER 2
AGRICULTURE AND THE LIVESTOCK SECTOR IN SWAZILAND

2.1 Introduction

This chapter presents an overview of the agricultural and the livestock sector in Swaziland, including its productivity. The chapter further presents a review of literature on risk in the beef industry, issues affecting future success of the beef industry, and contract farming as an institutional arrangement for the beef industry.

2.2 The agricultural sector

2.2.1 Contribution to the economy

The economy of Swaziland is largely dependent on agriculture. The agricultural sector employs 70 % of the population and contributes 7.8 % of Gross Domestic Product (GDP) (MOA, 2013). The share of agricultural GDP has, however, been declining in recent years. The share of agriculture fell from 13.9 % in 2003 to 7.8 % in 2012 (CBS, 2012). Despite the decline in agriculture's share, the sector remains the key sector in Swaziland's economy. Since Swaziland heavily relies on agriculture, this renders her economic growth vulnerable to climatic shocks. This is shown by the real per capita GDP growth which fell from 6 % in 1990 to a negative rate of 1.5 % as of 2012, mainly attributable to a severe drought experienced in the country (MOA, 2013).

2.2.2 Land ownership types in Swaziland

There are two major types of land ownership in Swaziland: Swazi Nation Land (SNL) and Title Deed Land (TDL). SNL is communal and is held in trust for the nation by the King through Chiefs who allocate usufruct rights to individual Swazi families. Agriculture conducted on the SNL is basically subsistence in nature and about 75 % of the population is employed in subsistence agriculture. SNL suffers from low productivity and investment. That is why efforts are being made to encourage SNL farmers to produce commercially. Most Swazi families grow subsistence crops, mainly maize, and cotton as cash crops and about 65 % also own cattle (Vilakati, 1994).

TDL includes land used by commercial farms, estates and ranches that are freehold or held under concession agreements. Agriculture on TDL is mainly commercial with high levels of investment in productivity and irrigation. On TDL there are large sugarcane and citrus estates, forestry and other investments on individual tenure farms (ITFs) which generate foreign exchange earnings. Agriculture on TDL also includes beef and poultry production, dairy farming, and fruit and vegetable growing for mostly local consumption (Masuku, 2010).

2.2.3 Agricultural production

Swaziland has a number of commercially produced agricultural products which include, but are not limited to, sugarcane, cotton, tobacco, pineapples, corn, rice, citrus, sorghum, peanuts, cattle, goats, and sheep. The status of agricultural GDP (AgGDP), as shown in Figure 2.1, is led by crops in TDL and livestock is lagging behind. It must be noted that livestock includes goats and sheep, and not only beef and dairy cattle. Of the total AgGDP, forestry, livestock, crops (SNL), and crops (TDL) contribute 6 %, 7 %, 9 %, and 78 %, respectively (MOA, 2013). From these figures, it can be deduced that crops on TDL generate more than two-thirds of AgGDP because of commercialisation and this sub-sector relies heavily on irrigation and improved technologies for production. The 7 % of livestock contribution to the AgGDP is mostly from the TDL where there is irrigation and genetic improvements. For this reason, the commercialisation of the livestock sub-sector mostly in the SNL is being encouraged, as well as the use of improved technologies for genetic improvement, in order to obtain an increase in production and marketing of cattle (Government of Swaziland, 2007).

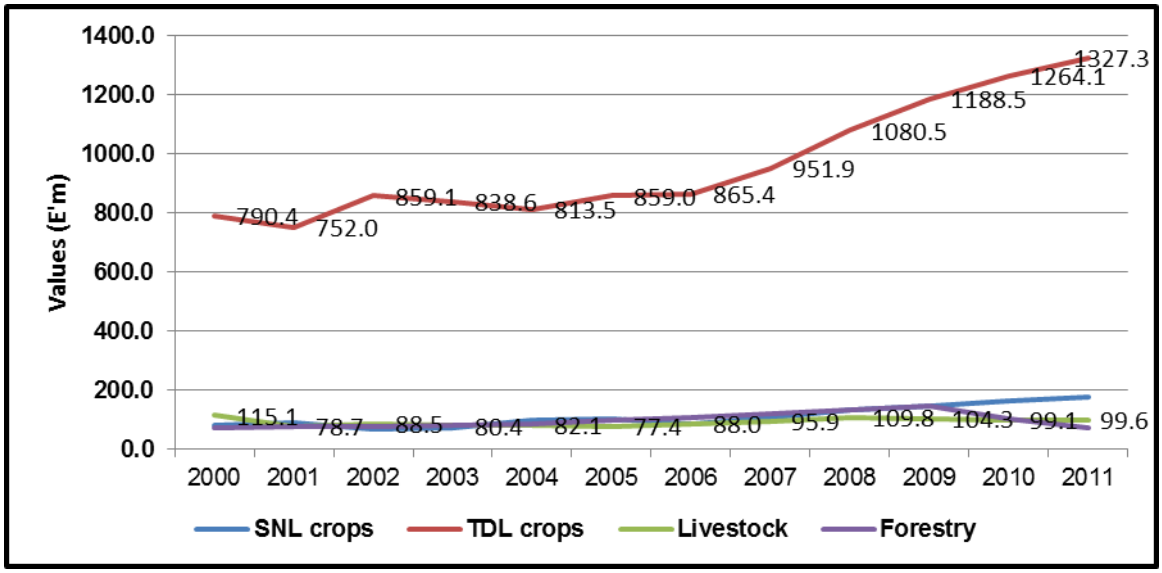

Figure 2.1: Agricultural GDP

Source: MOA (2013)

The agricultural sector is important to any developing country, as it provides employment and represents an important source of foreign exchange earnings, and, given its importance to the national economy, almost all governments give high priority to raising agricultural productivity, and hence farmers' income. Farmers, mostly from SNL, heavily rely on rainfall since access to irrigation is limited. This led the GOS, the International Fund for Agricultural Development (IFAD), and the Swaziland Water and Development Enterprise (SWADE) to establish the Lower Usuthu Smallholder Irrigation Project (LUSIP) and the Komati Downstream Development Project (KDDP), a water resource for small-scale irrigation that is exclusively used by small farmers. These projects are situated in the lower and upper Lowveld where the majority of the population is poor and the area receives low rainfall.

2.2.4 Agricultural exports and imports

The organizations which enable trade in Swaziland are the World Trade Organization (WTO), Southern African Developing Community (SADC) and Southern African Customs Union (SACU). Swaziland has experienced both a balance of trade surplus and a balance of payment surplus in recent years (CBS, 2012).

The major exportable commodities of the country are sugar, cotton, and wood pulp, which are exported to the United States (US), the European Union (EU) and South Africa. As of 2012,

exports amounted to $1.581 billion. The economy of Swaziland is closely linked to the South African economy. Swaziland receives more than 80 % of its imports and sends about 70 % of its exports to South Africa. The most important commodities which are imported in Swaziland are food, fuel, energy, motor vehicles and capital goods. Its import partners are Japan, Singapore, Mozambique, Botswana, Namibia and South Africa. In 2012, the total value of imports in the country amounted to $1.356 billion, and the total value of exports was $1.581 billion. This shows a trade surplus of $225 million.

The contribution of the agricultural sector to total exports is shown in Figure 2.2. Agricultural exports' contribution to total exports is more than a third, while agricultural imports constitute 11.5 % of total imports. However, the contribution of the livestock sector (7 %) to agricultural output is quite insignificant, taking into account that more than 65 % of the Swazi population owns livestock (cattle), with 81 % being owned by farmers on SNL (FinMark Trust, 2011).

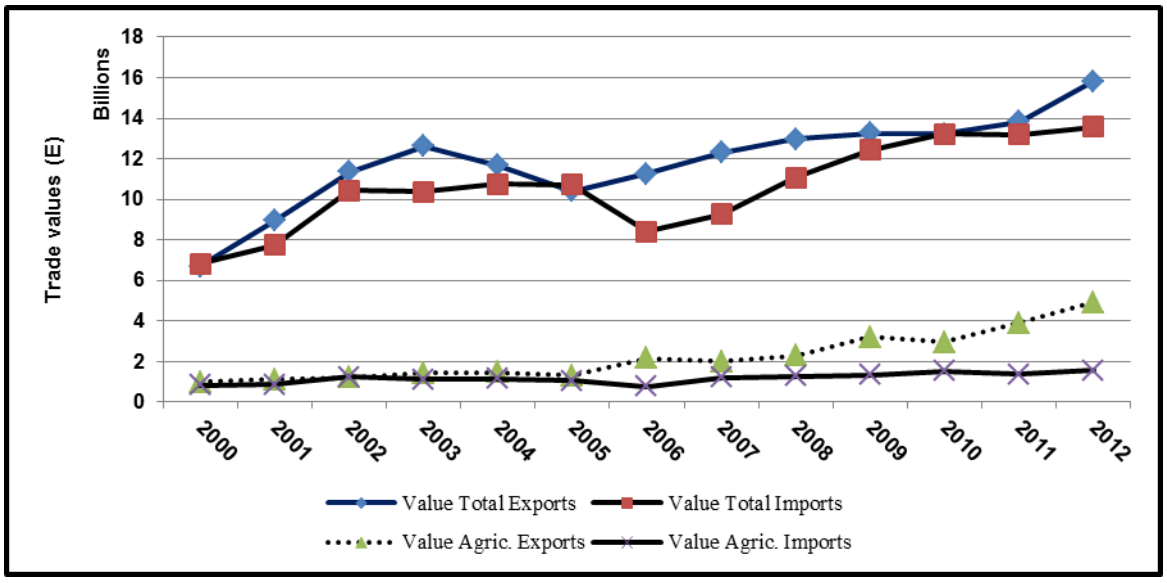

Figure 2.2: Imports and exports in Swaziland

Source: CBS (2012)

In the livestock sector, mostly beef cattle are exported. Table 2.1 shows a summary of beef exports from 2008 to 2012 in metric tonnes, together with the value contributed each year by the exports. Although the exports and value of exports are increasing, there is still room for improvement, as the quota allocated by the EU (3360 metric tonnes per annum) to the country has not been met. This is shown in Table 2.1, where beef exports stood at 1402 metric tonnes by 2012.

Table 2.1: Beef exports in Swaziland

Export	2008	2009	2010	2011	2012
Exports (metric tonnes)	1 169	1 238	1 400	1 339	1 402
Value of Exports (E'000)	52 464	50 338	62 178	70 637	85 888

Source: CBS (2012)

2.3 Livestock sector

2.3.1 Size and composition

The livestock industry consists of cattle, poultry, goats, sheep and pigs among the commonly domesticated animals. In 2013, the cattle population (Figure 2.3) accounted for a larger component of the country's livestock, that is, 633 954 herd of cattle, with goats at 485 826; sheep at 17 294, poultry at 4 041 764, and pigs at 43 548 (MOA, 2013). From Figure 2.3, it can be observed that Swaziland's national herd has stagnated at about 600 000 herd, corresponding to the country's carrying capacity. Livestock production is a major agricultural activity and cattle comprise the main investment asset for many Swazi households.

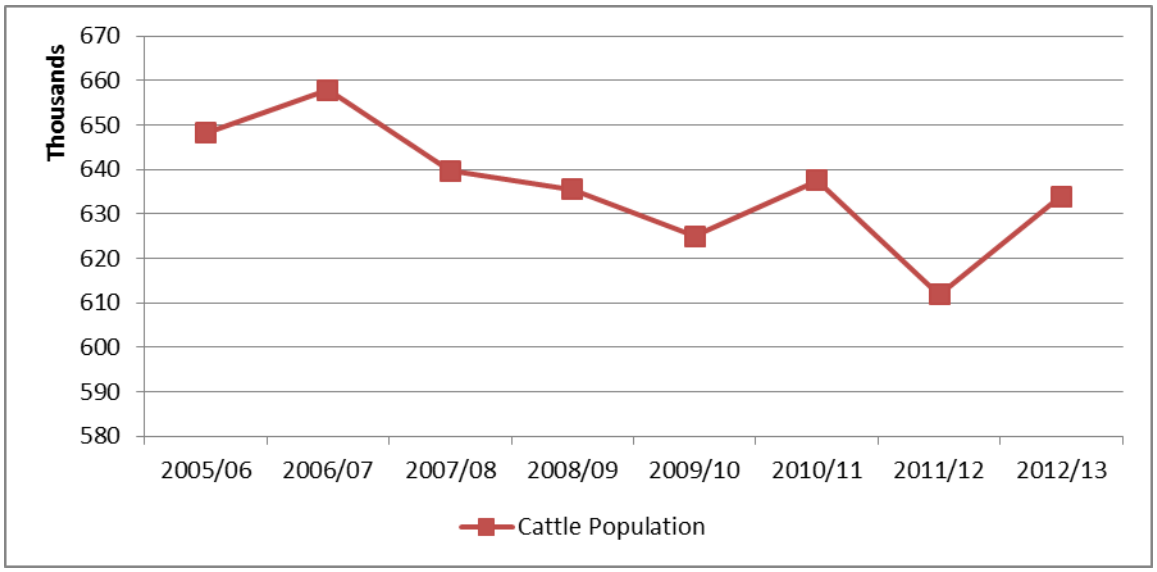

Figure 2.3: Cattle population in Swaziland

Source: MOA (2013)

2.3.2 Commercialisation of smallholder livestock farming

Unless forced by economic or climatic conditions farmers, mostly those on SNL are unwilling to sell good quality cattle. This has caused serious problems of overgrazing and soil erosion and the traditional belief that cattle represent wealth has hampered beef production. Many of the cattle are grazed on communal SNL and there is no individual incentive to preserve pastures and avoid overgrazing. Swaziland has one of the highest density grazing rates in Africa, one beast to each 1.6 hectares (Vilakati, 1994). The GOS initiated a government policy to commercialise the national herd, this was supported by Swaziland Meat Industries (SMI) which runs the EU-standard abattoir exporting beef to the EU market. Further, farmers do not sell their cattle as they claim that SMI and other livestock agents offer low prices for their cattle in proportion to their livestock production (Table 2.2).

Table 2.2: Average nominal cattle prices from auction sales for 2006-2012 period (E/Kg)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2006	6.71	6.04	6.10	6.31	7.40	6.84	6.99	6.00	7.78	10.13	11.84	9.00
2007	7.36	7.10	7.20	7.09	7.30	7.95	7.83	7.50	8.43	9.97	11.47	8.37
2008	8.37	8.45	8.11	7.83	9.50	7.44	8.79	9.05	8.52	9.41	13.78	14.61
2009	10.87	9.08	10.00	8.23	8.12	7.43	11.20	11.3	10.80	10.50	10.00	9.50
2010	8.90	7.62	8.88	8.62	8.76	9.28	9.54	9.71	9.87	10.10	10.23	10.35
2011	9.89	9.53	9.76	10.65	9.20	10.38	11.80	11.81	11.7	11.00	11.40	10.63
2012	10.80	11.11	9.64	10.62	10.70	10.40	9.98	9.87	9.87	9.97	10.20	10.67

Source: MOA (2013)

*The prices quoted are nominal prices in Emalangeni[1]

Table 2.2 indicates the average prices per kilogram of live cattle sold on auction sales, mostly held at government ranches. It can be observed that cattle prices are inconsistent, varying from month to month, and from year to year. This is the benchmark that is usually used by cattle agents or traders when purchasing live cattle from farmers.

The livestock and poultry industry is broadly divided into small-scale and large-scale production. Small-scale animal keeping is practised by small-scale farmers and households on SNL and this group is reported to own about 77 % of the total cattle population. Large-scale

[1] 1USD is equivalent to 11 emalangeni, October 2014.

livestock and poultry activities are carried out by some government farms, corporate organisations and private individuals, mainly on TDL. Small-scale farmers own between 1 and 150 cattle, while on commercial farms, the herd size could be up to 1 500 head of cattle (MOA, 2013).

The sector, therefore, provides employment and foreign exchange earnings for the country. Employment and income to farmers is provided through the Livestock Development Policy which encourages farmers to go beyond rearing livestock and move on to the meat processing level, where more revenue is received. The objectives of the policy includes but not limited to improving the national herd and animal health, nutrition, meat hygiene standards, processing industries, marketing, commercialisation and promotion of entrepreneurship, range management, legislation, and communication.

In Swaziland, cattle farmers receive best services from the government. There were 532 public dip tanks in 2013 distributed throughout the regions of the country (MOA, 2013). All SNL farmers are required to send their cattle and goats to the dip tank for tick control. Cattle are dipped once every week in summer, and once every second week in winter. The veterinary assistants keep records of all cattle in each dip tank and note deaths and slaughter information. Specimens are taken from dead animals to the central veterinary laboratory in Manzini to monitor incidences of infectious diseases. This encourages many farmers to raise cattle (Dlamini, 2000).

2.3.3 Risks in the beef cattle industry

Every industry has its own set of risks and rewards. The beef industry is no exception. Risk could be explained as being the possibility that an event will occur with a negative impact on the successful functioning of the overall value chain and/or farms objective performance (Jaffee *et al.*, 2010). There are different types of risks that affect the beef value chain, such as weather-related risks, natural disasters, biological and environmental risks, market-related risk, and logistical and infrastructural risks. In addition, there are classes of risks, that is, idiosyncratic risks and covariate risks (Jaffee *et al.*, 2010). Many countries' governments have injected significant amounts of money which is invested in research and development, but there are no guarantees that the genetic improvements that they develop would contribute to the beef industry's profitability.

Risks can impact on the reliability, cost and efficiency of production, processing, and marketing activities or, in other words, the whole beef value chain. Weather-related risks, such as those related to hail, strong wind, high humidity and excess rain, lead to diseases which affect the quality of product and disrupt the flow of goods and services. These risks mostly affect cattle and forage producers in the first segments of the beef industry value chain, directly and indirectly. A harsh winter might not only end the lives of many herds of cattle, but it might also affect the production of grain that could make it difficult or expensive to continue to feed the cattle (Katz & Boland, 2000). In Swaziland, for example, in August 2012, 10 000 herd of cattle died due to cold and wet weather, coupled with overgrazing and poor animal husbandry (IRIN, 2012).

Risks related to natural disasters are floods, drought, hurricanes and earthquakes. These kinds of risks are classified under covariate risks because they affect many enterprises simultaneously. Katz and Boland (2000) gave an example in their case study of US beef where cattle producers in the commercial cow–calf segment initially begin grazing their cattle in fields and, if there is drought in the area, this can make it difficult to provide enough nourishment for the livestock. Once the cattle reach 320–370 kilograms, the producers begin to fatten their herds. They change their feeding practices and begin to feed the cattle grains such as corn, wheat, sorghum or barley. This practice may result in higher feed costs because of the higher costs of inputs comprising the cattle feed.

Market-related risks are attributable to changes in supply and/or demand that impact on domestic and/or international prices of inputs. These types of risks affect the segment dealing with cattle production. If the demand for cattle is high, buyers will be willing to pay a higher price. Due to market variations, the price per kilogram of beef can fluctuate anywhere from $0.60 to $1.00 for grain-fed live cattle ready for slaughter (Katz & Boland, 2000; Jaffee *et al.*, 2010). The packing segment of the beef industry also faces some important risks. Since beef slaughtering is labour intensive, an increase in labour rates or decrease in labour availability might prove to be costly to the segment. A country like Swaziland, which has an annual quota to export beef and beef products to EU countries, might be affected by exchange rate risk.

Biological and environmental risks are attributable to crop and livestock pests and diseases, contamination, and degradation of production and produce. Finally, there are logistical and infrastructural risks attributable to changes in communication (Jaffee *et al.*, 2010). These risks

might affect transparency and information flow in the beef value chain among actors which might lead to a distorting of the whole beef value chain (Leat *et al.*, 2004).

According to Barnes and Barnes and Associates (2004), there is less control of risk in the livestock value chain. This is because business activities are shared and more time is spent in making decisions since more people are involved. There is less flexibility and independence. This then directly impacts on individual operations and sharing of proprietary information or expertise. Finally more money is spent to achieve a well-functioning value chain.

2.3.4 The beef industry: issues affecting future success

There are many factors that affect the future success of the beef industry, such as globalisation, differentiation, environmental factors and changes in diet patterns (Katz & Boland, 2000). Consumers all over the world are changing their consumption patterns for different reasons. The beef industry is highly competitive and characterised by small margins. The primary competition comes from local producers of fresh beef products and other protein products. Competition exists both in the purchase of live cattle, as well as in the sale of beef products. The main competitive element, in both buying and selling, is price.

a) Globalisation

The global beef market has a significant impact on the US and EU markets. As domestic per capita consumption decreases, the industry shifts towards international markets for future increases. This foreign market has high growth potential for premium beef. This has given many opportunities to the cattle industry, not only for large members but for smaller operations too, such as Swaziland. In competing for the global dollar, many smaller producers, suppliers and feeders will invest together to realise more profit through global ventures. This realisation will increase customer loyalty, broaden the customer base, and expand profits for these smaller operations (Katz & Boland, 2000).

b) Environmental regulation

The US and EU beef industries may be facing higher environmental standards in the near future (World Bank, 2011), and this will have a negative impact on Swaziland's beef industry, as the country exports beef to the EU market. Livestock farmers must become more environmentally

regulated, particularly with regard to water purity, manure removal and dead carcass disposal. Currently, the beef industry operations are subject to inspection and regulation by the country's veterinary department. They randomly inspect live animals and carcasses. Outbreaks of Foot and Mouth Diseases (FMD) have ruled out many African countries for exporting beef, but Swaziland was cleared of FMD in 2010 (SMI, 2011).

c) Information flow

Most of the higher costs in the beef industry come from lack of coordination between levels of the value chain and the poor information flow to and from the consumer. Producers can help reduce costs by strengthening their relationships with suppliers, buyers, and customers. By transferring information on consumer preferences back to the producer, a more desirable beef product can be produced. By forming cooperative alliances, producers can play a strategic part in improving the efficiency of the beef value chain and better prepare for the future (Katz & Boland, 2000; Schroeder, 2003).

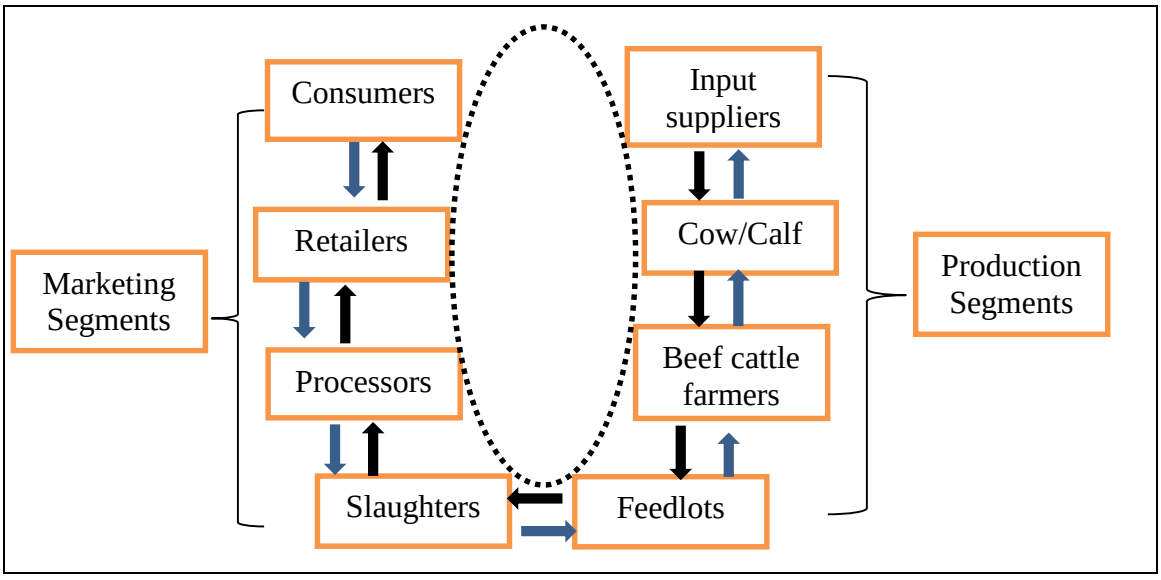

Figure 2.4: Information, product, and financial flows in beef industry

Source: Adapted from Schroeder (2003)

Key: Financial Flow Production Flow Information Flow

Figure 2.4 illustrates product and money flow in the beef production and marketing system, with information being the critical factor determining efficiency. Without transparent and detailed information flow, improvements at each segment are nearly impossible to achieve and the value chain fails to send appropriate information to actors (Schroeder, 2003).

d) Low-cost production

Another major factor for success in the beef industry is having a low-cost source of feed. Grain is a major input in the production of beef. Increases in the cost of grain will have a negative impact on the ability of beef to compete with other lower-cost sources of protein (Katz & Boland, 2000; Schroeder, 2003).

2.3.5 Contract farming as an institutional arrangement for the beef industry

Contract farming is one of the institutional arrangements that may help to solve farming problems of smallholders (Bijman, 2008). In the Swaziland livestock sector, only broiler chicken production is operated under formal contract farming (Masuku, 2011). Crops produced under formal contract farming are sugarcane, citrus fruits, pineapples and vegetables.

Although smallholder livestock producers perceive the benefits and advantages in engaging in formal contract production, the reason for not being engaged in these contracts usually cited by smallholder livestock producers points to their perceptions of the non-existence of formal contracts in the livestock production sub-sectors, that is, beef, pork and goat production. If the contractual opportunities existed, certain households and farm characteristics would render them as not being qualified to be chosen, among which is the small-scale nature of beef production in the country (Bijman, 2008).

Contract farming provides credit, improved technologies, inputs and a secured market outlet for smallholder farmers. In this regard, some of the problems in the beef sector could be solved through this institutional arrangement. The pricing system, enforcement and conclusion of contracts differ, depending on the contracting company concerned and other conditions (Hudson, 2000).

Futures and forward contracts are sales agreements between two parties to buy/sell an asset at a set price and at a specific point of time in the future. Forward contracts allow price hedging of risk and can also be used as collateral for obtaining credit (Miller & Jones, 2010). While futures contracts are standardised in order to be traded on futures exchanges and further provide price hedging, this allows trade companies to offset price risk of forward acquisitions with the counter-balancing of futures sales.

In the beef industry, contracts govern the terms for a promised transaction, such as date of delivery, the expected price of cattle, and other specifications. Contracts enable farmers to shift some financial risk to buyers, mitigate widely fluctuating price swings, and guarantee markets for their livestock. In return, buyers gain a reliable and uniform supply of beef cattle. Consumers also benefit through lower prices of meat and meat products, consistently higher quality, and a wider range of convenient beef products (European Commission, 2007).

The concept of New Institutional Economics (NIE) is increasingly used to determine the best agreement/contract for developing countries' producers in highly uncertain business environments with opportunistic behaviour of actors involved and weak (institutional) enforcement systems (Ruben *et al.,* 2007). Contracts are expected to reduce moral hazard problems through centralised decisions about input factors (such as feed, genetics and veterinary services) and production standards. The problem of adverse selection in the case of unobservable quality characteristics is decreased by contract systems with inherent monitoring approaches (Schulz *et al.*, 2006).

2.4 Summary

The chapter has presented an overview of the agricultural and the livestock sector in Swaziland. A review of literature on the risk in the beef cattle industry, issues affecting future success of the beef cattle industry, and contract farming as an institutional arrangement for the beef cattle industry was presented. Contracts reduce (price) risks and safeguard specific investments. In order for contracts to work, smallholder farmers should not be excluded from contractual relations. Contracts will enable farmers to gain market access, achieve better price security, and secure the availability of capital or inputs. Nevertheless, farmers should not be forced into contractual arrangements, as this might lead to inefficiencies.

CHAPTER 3
ROLE OF CREDIT IN AGRICULTURAL DEVELOPMENT, ITS ACCESS AND DETERMINANTS

3.1 Introduction

The main objective of the study is to investigate the role of contracts in promoting access to credit for smallholder cattle farmers, cattle fatteners and traders in Swaziland. In order to analyse the promotion of credit access through the role played by contracts, international experience on the role of credit in agricultural development and access to credit by livestock farmers is reviewed. The chapter also presents a review of literature on access to credit by smallholder farmers in Swaziland and the determinants of access to credit by smallholder farmers in developing countries.

3.2 The role of credit in agricultural development

The availability of adequate rural credit is essential to an improved economic climate for economic growth and poverty alleviation (Zeller & Sharma, 1998). In a developing country context, credit is a significant tool for improving the welfare of the poor through consumption smoothing, as well as for improving their productive capacity through financing investment in physical and human capital (Binswanger & Khandker, 1995). The high demand for credit for productive investments usually comes from the poor who are less risk-averse and the credit enables them to overcome liquidity constraints, making it possible to undertake investment that might boost production, employment and income. This type of credit is normally provided by formal financial institutions. Informal financial institutions usually provide credit for consumption purposes, which can have a long-term positive impact on household productivity, allowing acquisition of skills or improvement in health status, if such loans are used for education or health care. These may enhance the productivity of the labour force. The credit market is also, at least theoretically, an important instrument for consumption smoothing.

According to Shetty (2008), seed capital, even in very small amounts of cash, is important for buying seeds and/or fertiliser, starting a small chicken farm, for buying cattle and implements, or for starting up a small grocery store or carpentry shop (as an alternative livelihood option), and this will enable the rural poor to emerge out of poverty. Strategies to ensure the provision

of low interest (or interest free) loans are essential for rural people and/or smallholder farmers to break out of the cycle of poverty. Credit is the backbone for any business, and more so for agriculture which has traditionally been a non-monetary activity for the rural population. Agricultural credit is an integral part of the process of modernisation of agriculture and commercialisation of the rural economy (Masuku, 2010). The introduction of easy and cheap credit is the quickest way for boosting agricultural production.

Agriculture has a greater need for credit than other sectors of the economy. This is because of the seasonal variations in the farmers' returns and a changing trend from subsistence to commercial farming. The importance of credit availability can be seen by the fact that mean input expenditures per hectare are significantly higher for farmers with credit, regardless of their level of assets. Higher input expenditures are presumably associated with higher productivity growth. For instance, the impact of institutional credit on agricultural production in Pakistan has been found to be positive and significant (Abedullah *et al.*, 2009).

According to Ali (2007), agricultural production and productivity in most developing countries are known to be achieved by adequate funds and credit facilities. If agricultural production in many of these countries were to be organised under a virtuous cycle of high income, high savings and consequent high capital formation and non-dependence on government assistance, then great agricultural productivity and investment could be achieved. Credit also enables a majority of farmers to access the requisite finance necessary to increase their farm holdings and modernise their production methods. Ali (2007) further argued that farmers' access to adequate finance will allow them to adopt new production methods that might readily generate higher income.

According to Diagne and Zeller (2001), credit and savings facilities can help poor rural households manage and often augment their otherwise limited resources and acquire adequate food and other basic necessities for their families. Credit facilities enable them to tap financial resources beyond their own and take advantage of potentially profitable investment opportunities. Diagne and Zeller (2001) further stated that credit and savings facilities enable farmers to invest in land improvements and agricultural technology, such as high-yielding seeds and mineral fertilisers, that increase incomes (while sustaining the natural resource base). For rural households who do not own land, credit and savings facilities can help establish or expand family enterprises, potentially making the difference between the never-ending poverty and an economically secure life.

The most important objective for rural finance, according to Zeller and Sharma (1998), is to facilitate farmers' access to inputs and improved technology and thereby accelerate agricultural productivity growth. This is shown by the factors that determine agriculture productivity growth, such as availability of irrigation, access to inputs, prices for outputs, information on new technologies and markets, incentive structures embedded in the land tenure system, farmers' educational levels, and rural infrastructure. When credit is easily available, farmers switch quickly to new technologies and achieve rapid productivity growth. However, a number of features may affect farmers' access to credit, such as small farm size and tenancy arrangements that result in poor collateral status.

Additionally, Zeller and Sharma (1998) stated that credit may offer low returns to investment for households that own tiny plots of unirrigated land of low productivity, especially when they are illiterate, in ill health or lacking experience in high-yielding agro-technology and/or non-farm microenterprises. For these reasons, institutions such as Freedom from Hunger in Ghana, BRAC, and the Grameen Bank in Bangladesh, offer financial services in combination with other complementary services, such as basic literacy programmes, training in enterprise management, and education in nutrition, health, and family planning, that are likely to increase the productivity of the loans provided.

Agricultural credit plays an important role in enhancing agricultural productivity in developing countries like Swaziland. According to Mohamed (2003), agricultural growth depends on increased use of agricultural inputs, technological change and technical efficiency. Mohamed argued that technological change is the result of research and development efforts, while technical efficiency with which new technology is adopted and used more rationally is affected by the flow of information, better infrastructure, and availability of funds and farmers' managerial capabilities. The optimal use of inputs requires funds at the disposal of farmers.

These funds could come either from farmers' own savings or through borrowings. In less developed countries like Swaziland, where savings are negligible especially among the smallholder farmers, agricultural credit becomes an essential input along with modern technology for higher productivity. The credit needs of the farming sector have increased rapidly over the past few decades, resulting from the rise in use of fertiliser, improved seeds and mechanisation and hike in their prices. Wetengere and Kihongo (2012) observed that institutional credit also affects agricultural output through financing of capital investment.

They found that the responsiveness of agricultural output is larger to institutional credit than that of output to fertiliser.

Zeller and Sharma (1998) argued that the provision of financial services is a potent tool for poverty alleviation; therefore, developing countries' government should augment the delivery of such services to the rural poor. If an additional dollar spent on a credit-based programme reduces poverty by a greater amount than a dollar spent on another poverty reduction programme, then there is a case for redirecting resources to rural financing programmes.

In Swaziland, the income of rural people arises from farming and allied activities, and about 66 % of the population is unable to meet basic food needs, while 43 % live in chronic poverty (FAO, 2014). In 2007, Swaziland experienced one of its worst droughts which led to major food insecurity (FAO, 2014). Most of the people who live on SNL cultivate maize, keep cattle (leading to overgrazing which has caused soil depletion), occasionally produce a cash crop, and are illiterate.

Smallholder farmers living on SNL face a number of obstacles that prevent them from breaking out of poverty. The low agricultural productivity of the land can be attributed to a number of factors including difficulty in accessing roads, poor linkages to markets, limited availability of irrigation water, vulnerability to climatic changes, and more importantly, lack of access to credit. Therefore, it seems reasonable to argue that any strategy to improve incomes should include improving access to credit for smallholder farmers, as well as the commercialisation of cattle production among smallholder farmers who own cattle, thus reducing problems of income and overgrazing. To ensure that appropriate strategies are designed for improving access to finance, it is important to understand why smallholder farmers lack access to credit for farming purposes.

3.3 Access to credit by smallholder farmers in Swaziland

The dominant prevailing perception in Swaziland is that banks are not keen to extend credit to smallholder farmers. This stems mainly from the fact that smallholder farmers are considered high-risk, and they are usually unable to provide acceptable collateral to meet bank lending requirements. Furthermore, banks consider loans to farmers as being too costly to administer. These loans are normally small and do not justify the administrative and transaction costs involved (Msibi, 2009; Mavimbela *et al*., 2010).

Smallholder farmers are left in the hands of state-owned Development Finance Institutions (DFIs) and microfinance institutions. Agricultural financing is largely provided by three DFIs, namely, Swazi Bank, SIDC and FINCORP. Other players in agricultural financing are microfinance institutions which provide funding to farmers in rural areas. They include the Inhlanyelo Fund, which is a social responsibility rural financing programme sponsored by the Standard Bank of Swaziland, the World Vision Microfinance programme, operating in poverty-stricken areas, and cooperative societies (Msibi, 2009).

There are four commercial banks (three are South African subsidiaries) and one building society which are operational in Swaziland. The commercial banks are First National Bank Swaziland, Nedbank Swaziland, Standard Bank Swaziland, and Swazibank.[2] Commercial bank lending is dominated by short-term loans to the agri-processing sector, principally the sugar industry. The Swaziland Building Society is the country's major provider of long-term mortgage lending on TDL properties, and it recently started lending on SNL properties. There are also 265 Non-Banking Institutions (NBIs) and 56 savings and credit cooperatives (SCCOs) (SACU-Kingdom of Swaziland, 2009).

One commercial bank, Nedbank Swaziland, has in recent times 'broken' the traditional barriers between farmers and commercial banks by joining the financing of commercial agricultural activities in rural societies living in SNL, although mostly sugarcane and large-scale farmers (CBS, 2012).

In a study conducted by Masuku (2010) on access to credit by smallholder farmers in Swaziland, the results indicated that among the formal sources of credit, most (58 %) of the respondents sourced credit from Swazibank, and a modest number (17 %) of the respondents used Swaziland Building Society as their source of credit. Cooperatives were used by most (30 %) of the respondents in quasi-informal sources, followed by NGOs with 29 % of the respondents. Among the informal sources of credit, most respondents asked the help of friends and relatives (30 %) and moneylenders (24 %). From the results, it can be concluded that smallholder farmers in Swaziland mostly rely on informal finance and the statutory bank for their agricultural activities.

[2] Swazibank, previously Swaziland Development and Savings Bank, is licensed to provide the full range of banking services, but is also required under its statutes to promote rural development, infrastructure development, and local empowerment.

Smallholder farmers and rural populations in developing countries, in general, have always faced constraints in obtaining credit financing. Indeed, Jessop *et al.* (2012) in their study revealed that most farmers in developing countries have no access to any kind of financial service (safekeeping and saving, credit, payments, insurance), which hinders the efficiency and security of their operations. Many farmers struggle to pay for their seasonal harvest inputs, and investing in agricultural technology and expansion is even more difficult. Lack of finance is one of the reasons why agricultural productivity in developing countries and sub-Saharan Africa in particular, is low. In spite of vast agricultural potential, many African countries import large quantities of food, and this is not limited to countries where the climate is less kind to agriculture (e.g. Senegal and Tunisia).

The lack of agricultural finance is as pressing as ever. In spite of government programmes undertaken over the years, supply and demand for financial services continue to be mismatched, in terms of both the types and the volume of services. Past government policies have not been able to remedy these shortcomings (Jessop *et al.*, 2012). Nevertheless, recent innovations in agricultural finance have created renewed interest in the sector. Such innovations include value chain finance approaches involving traders and processors, warehouse receipt finance, agricultural (index) insurance, (rural) microfinance, just to name a few.

Smallholders are typically trapped in poverty because they do not have the money required to invest in income-enhancing productive activities. This constraint has been addressed by a variety of smallholder credit schemes and a positive correlations between supplies of credit from formal credit institutions and expenditure on modern inputs exist, such as improved seeds, irrigation and fertiliser, that resulted in increased agricultural output (Wetengere & Kihongo, 2012).

In terms of livestock credit, Jabbar *et al*. (2002) argued that there is less empirical evidence on the role of credit in the smallholder livestock sector. For example, contrary to expectations, the authors in their study revealed that the Grameen Bank in Bangladesh extends as much as 40–50 % of its loans to landless and poor farmers to acquire and raise livestock. The incentive for this is livestock's potential for generating regular incomes and realisable assets that are essential to enabling the beneficiaries to stay out of poverty in times of adversity.

Jabbar *et al.* (2002) conducted a study on demand and supply for livestock credit in sub-Saharan Africa and the study revealed that banks which offered rural finance had a common official

objective of increasing lending of institutional credit to large numbers of smallholder livestock producers. To meet this objective, they had established specialised subsidised credit schemes and had opened branches in rural areas. Despite these mechanisms, the study revealed that few smallholder livestock producers actually obtained credit from formal financial institutions. Often, smallholder producers were screened out by the criteria for loan eligibility.

For livestock farmers to gain access to formal finance, Jabbar *et al.* (2002) observed that the Central Bank in Uganda required potential borrowers to show evidence that they owned livestock infrastructure, which was partly what they wanted the loan for. In Ethiopia, they further observed that credit was allocated on political, rather than financial considerations, and it was given on concessionary terms to state farms and cooperatives, despite their poor performance and high levels of loan delinquency. Since this took up most of the funds, there was little left for the many smallholder producers who were, therefore, denied credit. In Nigeria and Uganda, the banks did not insist on collateral security. They usually based credit worthiness on the personal characteristics of potential borrowers. In cases where bank officials did not have sufficient information (information asymmetry) on a potential borrower, they tended to allocate credit on observable characteristics such as wealth or influence in the community. These factors screened out many potential smallholder borrowers who did not appear creditworthy or those they did not have complete information.

Contrary to the empirical evidence in Jabbar *et al.* (2002), Abedullah *et al.* (2009) indicated that credit supply enhanced the income of livestock growers by more than 100 % and it is clearly defining the role of credit in livestock sector. Credit not only helps to expand the economies of size, but also helps to increase the productivity of the livestock sector from the available resources. Hence, expansion in the livestock sector could help to absorb the unemployed and untrained rural labour, which could help to mitigate the migration process of untrained rural labour towards cities.

Lack of access to financial services by smallholders is normally seen as one of the constraints limiting their benefit from credit facilities, though in most cases, the access problem is usually created by mostly formal financial institutions through their lending policies. This is displayed in the form of approved minimum loan amounts, complicated application procedures and restrictions on credit for specific purposes (Swain, 2007). In African countries, the total loan portfolio for agricultural credit is low, for example in Zambia, Mali, Kenya, and Ghana it was 19 %, 15 %, 5 % and 6 %, respectively (Jessop *et al.*, 2012).

Smallholder farmers' access to finance has remained one of the major impediments to an agricultural revolution and the speedy eradication of poverty in Swaziland. The Government of Swaziland has endeavoured to enhance production in the sector by providing finance through the African Development Bank (ADB) to formal financial institutions for the purpose of financing agricultural activities, thus enhancing employment, consumption, rural and economic development and overall production (Msibi, 2009). Nevertheless, commercial banks are reluctant to lend to smallholder farmers because of perceived risk in the business venture.

There are indications that the agricultural sector is underfunded. This is particularly the case for agricultural (crops and livestock) production and other agro-related activities of smallholder farmers on SNL, who produce more than 80 % of maize which is Swaziland's staple food (MOA, 2012). Agricultural lending by financial institutions in the country is limited to serving large-scale corporate farms, like sugar and citrus estates, with which they have had long-standing credit relationships (Swazibank, 2011). The Swazibank is a parastatal that advocates providing targeted credit to agriculture at subsidised interest rates, and it has put in place conditions that make it difficult for small-scale farmers to access credit from the institution. One such condition is that a farmer must provide collateral security to obtain credit, which most small-scale farmers do not have (Swazibank, 2011). The small-scale farmers who do not have collateral, therefore, do not have access to credit from formal financial institutions in the country. Yet, even though they are unable to access credit from financial institutions, they are still expected to produce enough food and reduce poverty, the prevalence of which remains at 69 % (FAO, 2014). Farmers with access to credit are most likely to adopt high yield-enhancing interventions, while the shortage of credit constrains production. Dlamini (2000) observed that the important factor affecting the adoption of new technologies for the purchase of inputs is finance. Thus, the importance of agricultural credit in food production and income generating activities cannot be overemphasised.

In conclusion, agriculture and livestock farming has deep cultural roots among Swazi citizens, and has over time evolved to be the backbone of the country's economic growth and major foreign exchange earner. The uncertainties arising from the agricultural process in Swaziland, such as dependency on rainfall and poor animal husbandry systems, have been making lending facilities hesitant to disburse loans to farmers for large-scale investments to boost productivity. A land title is one of the important prerequisites for loan qualification set by formal financial institutions, but this has been denied to most smallholder farmers. Thus not having land

ownership has become a major factor limiting farmers' capacity to access finance, which is a necessary component for investment in livestock farming.

3.4 Determinants of access to credit by smallholder farmers

Many farmers cite lack of financial capital as a major reason for not adopting beneficial technologies. Research has also suggested that farmers with lower access to credit, plant fewer high-yielding crop varieties and/or invest in fewer animal breeds of high quality (Etonihu *et al.,* 2013 & Mohamed *et al.,* 2013). In many developing countries, and particularly in rural areas, access to financial services, including credit and formal saving mechanisms, is limited. Even where financial services are available, they are often highly disadvantageous to smallholder farmers due to high interest rates charged and required collateral, which these farmers usually do not possess. For example, within a single market, interest rates often vary according to the characteristics of the borrower and the activity being financed.

A study by Mohamed (2003) indicated five socio-economic factors which are important in influencing farmers to access credit from formal and quasi-formal financial sources: age, years of formal education, gender, income, and degree of awareness of available credit services. Contrary to socio-economic factors influencing access to credit, employing the logistic regression model in a study on determinants of smallholder farmers access to formal credit in Ethiopia, Yehuala (2008) indicated that participation in extension package programmes, experience in credit use from the formal sources, total cultivated land holding, number of livestock owned, collateral or group formation, and membership of farmers multipurpose cooperatives, were important factors influencing smallholder farmers' access to formal credit.

Relative to Yehuala (2008), a study by Chauke *et al.* (2013) indicated that need for credit, attitude towards risks, distance between the lender and borrower, farmers' perception of loan repayment and farmers' perception of lending procedures, total value of assets possessed and actual time spent with extension officers had significant influence on farmers' access to credit.

Mohammed *et al.* (2013), in a study in Northern Ghana on social capital and access to credit by farmer-based organisations (FBOs), also employing a logistic regression for factors affecting access to credit by members of FBOs, indicated that FBOs' homogeneity, network connections, level of trust, respect for contracts and the level of collective actions the FBOs members could undertake were significant factors. Mohammed *et al.* (2013) further concluded

that the most important determinant of access to credit by farmers who are members of FBOs is the level of social capital which their FBOs can generate.

Using a stepwise linear regression model to determine the relationship between socio-economic characteristics of the farmers and their rate of accessibility to agricultural credit in Nigeria, Etonihu *et al.* (2013) revealed that education, type of credit sources, and distance to credit source were significant factors affecting individual rate of accessibility to agricultural credit in the study area. In relation to Etonihu *et al.* (2013), Dzadze *et al.* (2012), when employing a binary logit on determinants of access to formal credit, revealed that extension contacts, education level and owning a savings account had significant influence on access to credit.

Muhongayirea *et al.* (2013) employed a binary logit regression analysis. The results reveal that the likelihood of farmers participating in formal credit markets successfully increases with education, off-farm incomes, and agricultural extension, and decreases with the presence of informal financial markets in the neighbourhood. The results by Vuong Quoc (2012) indicated that household capital endowments, family size, marital status, distance and location of the market centre affect both the probability and the amount of asking for credit in Vietnam.

The main findings of the study by Mohamed and Temu (2008) suggested that a number of socio-economic factors are important in influencing farm households' access to formal credit. These factors were the number of sources of access to credit, the possibility of keeping livestock, having a bank account, the value of productive assets owned, household income and the intensity of adoption of agricultural technologies. Masuku (2010) concluded that improving lending terms and conditions in favour of small-scale agricultural enterprises would provide an important avenue for facilitating smallholder farmers' access to credit.

3.5 Summary

This chapter reviewed literature on the role of credit in agricultural development and access to credit by smallholder and livestock farmers. A review of literature on access to credit by smallholder farmers in Swaziland and on the determinants of access to credit by smallholder farmers in developing countries was presented. The objective of the chapter was to study the international experience on access to credit and determinants of access in order to relate to Swaziland.

Therefore it maybe concluded that farmers may have access to agricultural credit under some of the following factors; the type of credit sources, distance to credit sources, off-farm income, education and being a member of associations. These factors will enable the researcher to make comparisons with the obtained results of this investigation during the discussions of the results.

CHAPTER 4
THE ROLE OF CONTRACTS IN IMPROVING ACCESS TO CREDIT

4.1 Introduction

This chapter presents a review of literature on the role of contracts in enhancing agricultural development, especially in gaining access to credit for smallholder cattle farmers. The literature review also covers the benefit and cost of contractual agreements and the determinants for participating in contracts. In developed countries, contracts are the primary method of handling sales of many livestock commodities, including dairy products, pigs, and broilers, as well as of major produce such as tobacco, fruit, and processed tomatoes (MacDonald *et al.*, 2004).

4.2 Nature and types of contracts

Contract farming is defined as constituting an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton & Shepherd, 2001). The arrangement often involves the integrator/company in providing a degree of production support through, for example, the supply of inputs, credit and the provision of technical advice and the farmer. For the success of the contract, the farmer must commit to providing a specific commodity in quantities and at quality standards determined by the company. The company, on the other hand, agrees to support the farmer's production and to purchase the commodity.

A fundamental feature of contract farming is the shifting of risk from producers to processors, since it is a form of participation in the futures market. Production and price risks are important features of beef cattle farming. Access to credit is one of the widely cited reasons for contracting. Numerous studies of contract farming emphasise access to credit as being a principal incentive for farmers to enter into contracts (Hudson, 2000). In contract farming, credit for smallholder farmers can be accessed in the form of advances (from the contracting company) or the contract may be used as collateral to access credit from a formal financial institution (Sharma, 2008; Tongchure & Hoang, 2013).

There are two forms of contracts that producers and market intermediaries are engaged in, that is, formal and informal contracts. In general, formal contracts are written contracts between an integrator company and a farmer, where the rights and obligations of each party are strictly

defined. Informal contracts are unwritten but nevertheless binding agreements between a farmer and the market intermediary, this can either be a trader for inputs or outputs, or with a cooperative where the farmer is a member of, on the provision of inputs or the marketing of output, or both (Catelo & Costales, 2014).

There are three types of agricultural contracts and these are production, resource-providing and marketing contracts (Little & Watts, 1994; Eaton & Shepherd, 2001). In production contracts, the quality and quantity of production inputs are determined and supplied by the contracting firm/contractor. The compensation that the farmer receives for services is also decided by the contractor. In resource providing contracts, the contractor provides a market for the product, but also provides key inputs at various stages of production to farmers on a credit basis. Loans have to be repaid when the products are sold, the production decisions as well as a significant part of the risk lies with the farmer. For farmers, this type of contract reduces the risk of not getting appropriate inputs on time. The buyer benefits from lower selling prices and reliable supplies of required quality and quantity at the right time. A marketing contract refers to an agreement between a contractor and a farmer that sets a price and the market outlet before the products are ready to be marketed. Most management decisions remain the responsibility of the farmer. In marketing contracts, only the price risk is shared, whereas in production contracts, both production and price risks are shared by the farmer and contractor (Little & Watts, 1994).

There are four models of contract farming arrangements, namely, centralised model, multipartite model, intermediary model, and the informal model (Eaton & Shepherd, 2001). The centralised model involves a centralised processor and/or buyer buying from a large number of small-scale farmers. The cooperation is vertically integrated and in most cases involves the provision of several services such as pre-financing of inputs, extension and transportation of produce from the farmer(s) to the processors' processing plant. A multipartite contract farming model arises when a combination of two or more organisations (private agribusiness firms, state, international aid agencies or NGOs) work together to coordinate and manage the cooperation between buyers and farmers. In the intermediary model, there is no direct linkage between the processing firm and farmers. There are middlemen having a formal contract with a processing firm and informal contracts with farmers. As a result, it has several disadvantages in vertical coordination and in providing proper incentives. The informal model occurs when small companies contract informally with farmers on a seasonal basis. The achievement of these companies depends on government support since they do not invest in

technical support. Sometimes, farmers use this method to get credit from informal credit sources.

Different contract models are available to farmers and agribusiness, ranging from simple buyback of produce to provision of inputs and services; single company model to consortium of companies (agri-input, processing, banks, etc.) including private and parastatal companies. The partnership will depend on the available institutions to support production and product markets, the commodity being produced, resource bases of producers and capacity of agribusiness firms. An example of a successful contract farming model that might be implemented in developing countries (other countries like India are practising it) in order to improve smallholder farmers access to credit, is presented in Figure 4.1.

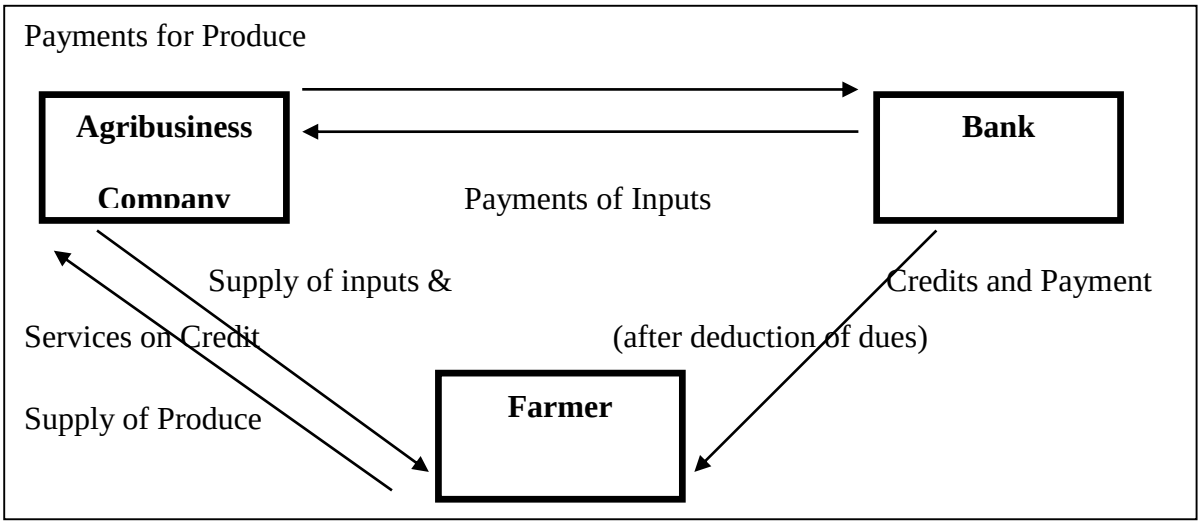

Figure 4.1: Tri-partite Agreement between farmer, company and bank

Source: Sharma (2008)

Participation in contract arrangements constitutes a choice. Choice implies the possibilities that farmers can attain, given their resources, but also symbolizes the barriers that they are confronted with, that constrain their ability to participate. Some farmers may choose to retain their independence in market transactions as they may already have the resources and linkages they need. The main potential reasons that smallholder farmers enter into contract farming may not be limited to access to credit but may include market security, skills transfer, access to technical assistance, income stability, farm family employment, access to good quality inputs and production services, mitigating production, appropriate technology, marketing and price

risks and market opportunities that would not otherwise have been available to them (Sharma, 2008). Farmers can gain access to credit directly through the contract farming scheme or indirectly from banks, using contract farming as collateral. In developing countries that seek to deepen the commercialisation of smallholder farmers, contract farming has become an attractive instrument.

4.3 The benefits of contractual agreements for smallholder farmers

Contracts can substantially reduce the income risks associated with price and production inconsistency and contract terms can be structured to tailor the degree of risk reduction offered. Livestock producers in developed countries frequently cite risk sharing as a major benefit of production and marketing contracts (Wooded, 2003). Contracts can be designed to improve incentives to lower production costs and deliver products with specific attributes. They can also facilitate coordination among stages of production, by speeding adoption of new technology; improving information flows; managing quality, uniformity, and delivery; and more importantly enhancing access to credit (Ruben et al., 2007).

Contracts can potentially change the smallholder farmer's subjective expected level of benefit in several ways. First, contracting may resolve market failures in: (i) financial markets, by providing or improving access to credit; (ii) insurance markets, by providing insurance against price risk; (iii) input markets, by providing access to the inputs necessary to produce high quality products; and (iv) information, more especially the uncertainties associated with the marketing and production of high-return, non-traditional commodities and the provision of agricultural extension services.

Wooded (2003) highlighted the point that the institutional arrangement of contract farming has reduced the transactional cost and improved market efficiency to the benefit of the smallholder farmer. In Swaziland, the vertical poultry production contracts have commercialised the broiler supply chain smallholder agriculture through the provision of critical input provision (credit), assured markets, 'favourable' producer prices and knowledge on agriculture technologies to farmers and as a tool to rural development. The contracts are creditable for playing a key role in increasing profitability of broiler farming, reducing market risk and, above all, opening new markets (Masuku, 2011). Contract farming has proved to be effective in the integration of smallholder farmers in that seasonal finance is provided to farmers, which they cannot access

through normal commercial channels, as acknowledged by Wooded (2003). This has lightened the burden of sourcing scarce and expensive inputs for rural farmers.

Masuku (2011) also observes that contract farming has given the broiler smallholder farmer the opportunity to earn income, as evidenced by the large participation of Swazi smallholder farmers in broiler production as a means of acquiring cash. Contract farming is less subjective if smallholder farmers are involved in the development of the contract, thus attaining political acceptability. As long as the farmer is not a tenant to the contractor, contract farming is less likely to be subject to criticism.

4.4 The determinants of participation in contracts by smallholder farmers

In general, participation in contract farming reflects two sides: the hurdling of physical and human capital qualification barriers put up by the contractor, and the valuing by the farmer of the services provided by the contract arrangement, as opposed to undertaking the production and marketing of the product independently. Even when options are there to engage in contracts, if the farmer deems he or she has what it takes to undertake the production and market risks on his or her own, and reap the entire fruits of the activity, he or she may prefer to operate as an independent producer (Ruben *et al.*, 2007).

In a case study by Catelo and Costales (2014), the econometric estimation of the determinants of participation in formal and informal contract farming indicated that in India, producers tend to shift back to being independent producers, possibly indicating that the terms of the contracts were too oppressive. This is after achieving a particular scale of production, gaining more experience in the production activity, and having access to non-farm income sources. In informal contracts, there are no common and uni-directional determinants of participation. The authors found that in dairy production in India, greater experience in dairy production appears to be a human capital asset appreciated by contractors.

A study by Musara *et al*. (2011) showed that land size, dependency ratio, years of schooling, age of farmer, access to other income, and duration of growing cotton were significant factors in affecting participation in contract farming for smallholder cotton farmers in Zimbabwe. However, in the case of access to other income, Musara *et al.* (2011) also stated that when smallholder farmers have higher levels of off-farm and non-farm income, farmers are less likely to participate in contract farming because they have enough to finance their farming

activities and still remain with enough for contingencies. This brings into focus the argument which this study is trying to relay, that farmers who do not have access to credit will participate in contracts in order to improve their formal credit access status.

Costales *et al.* (2007), in their study of determinants of participation in contract farming in pig production in Northern Vietnam, employed two regression models, namely, a multinomial logit model which was used to identify the factors that determine the likelihood of engagement in formal or informal contracts, and a simple probit model which was subsequently developed for the determinants of engagement in informal contract arrangements. The results of the logit model, specifically with respect to formal contracts with company integrators, indicated that older farmers, with longer formal education, with more time devoted to pig production, with larger agricultural land assets and located in a particular province, were more likely to participate in formal contract growing. The probit model results indicated that producers with longer formal education and whose main occupation is pig raising, specialisation in the full-cycle (farrow-to-finish), location of farm, access to formal credit and to commercial supply of inputs, are more likely to have informal contracts. In this study, the logic was that producers with relatively more constrained access to inputs and services (credit) were more likely to participate in formal agreements with intermediaries.

The logit results of a study conducted by Mwambi *et al*. (2013) indicated that factors, such as education, access to credit and road condition, were significant in determining farmers' participation in contract farming. Contrary to Costales *et al.* (2007), Mwambi *et al.* (2013) concluded that the significant and positive effect of access to credit was probably because farmers who can access credit are able to purchase farm inputs, as well as pay for proper storage and transport facilities. This means that farmers who have access to credit will participate in contracts because they are able to buy farm inputs for their production.

Employing a logit analysis, Tongchure and Hoang (2013) showed that contract participation is significantly influenced by gender of household head, education of household members, number of agricultural groups, input costs, machinery costs, cassava incomes and credit access. In line with Costales *et al.* (2007), Tongchure and Hoang (2013) observed that farmers who did not get credit from financial institutions had an opportunity to participate in contract farming more than the farmers who had access to credit. They further stated that sometimes the farmers obtained loans separately from an existing bank or credit agency, in which case the contract itself could serve as collateral.

A study in India by Sharma (2008), when employing a two-stage Heckman model to explain the results, indicated that education, age, farm size, access to institutional credit, source of off-farm income and membership to an organisation were the socio-economic factors that influenced participation in contract farming. In the study, it was hypothesised that farm size, human capital, and credit constraints were related to the probability of being a participant in contract farming. Indeed, the hypothesis was not rejected. Furthermore, the positively significant coefficient of credit implied that the availability of institutional credit (through contract farming) encourages farmers to engage in contract farming, as they are less dependent on informal sources, mainly money lenders, for credit requirements.

Vindicating the study by Sharma (2008), Wainaina *et al.* (2012), in their study in Kenya, indicated that among all the exogenous variables considered to influence participation in contract farming, age, education, farm income, off-farm income, gender, distance to the main road, risk attitude and education significantly influenced the probability of participation in poultry contract farming.

Swain (2012) found that large-scale farmers with better irrigation facilities and more non-farm income and access to institutional credit are more likely to be in contract modes of production. In addition, farmers with bigger family sizes are more likely to be in contract modes of production, as compared with others. Swain argued that in this scenario, contract farming practice may lead to higher inequality in the agrarian economy. These results are in line with a conclusion drawn by Simmons (2002) that smaller-scale farmers could be excluded from contracts because of selection bias by agribusiness firms in awarding contracts to larger farms, and might be adversely affected by the second-round effects of contracts on incomes and prices and suffer from narrowing of markets that lie outside of contracts.

When agribusiness firms have the power to pick and choose smallholders for contracts, there are a number of selection factors that seem to be common across contracts. These include previous farming experience of the smallholder, fertility of farms, farm size and community considerations. These were factors drawn after analysis to observe successful contract performance by farmers. All of the literature reviewed assumed that agribusiness firms selected smallholders for contracts and the possibility of self-selection by smallholders is referred to only indirectly. This reflects that contracting firms are usually perceived to hold the power in relationships with smallholders and, by implication, can pick and choose partners for contracts. The distinction between selection by the agribusiness firm and self-selection is important, since

with self-selection, smallholders with most to gain would be the ones most likely to enter contracts. That is, smaller, more constrained enterprises that were not doing well in the spot market system would have strong incentives to negotiate contracts. Alternatively, if selection is by agribusiness firms, larger, less constrained smallholders with lower unit costs and less risk exposure could be the most attractive partners.

The relationship between contract farming and access to credit, together with factors affecting participation in contracts and access to credit, is depicted in Figure 4.2.The figure shows that the relationship between contract farming and access to credit is influenced by farmer characteristics and institutional factors. Farmer characteristics include socio-demographic characteristics, asset ownership, off-farm income, gender roles, skills and knowledge, and market orientation while institutional factors are government policies, legal and institutional framework related to finance and agricultural research, extension, marketing, input supply and financial institution (access to credit is influenced by lending policies, borrowing conditions and procedures, loan portfolio size and scope).

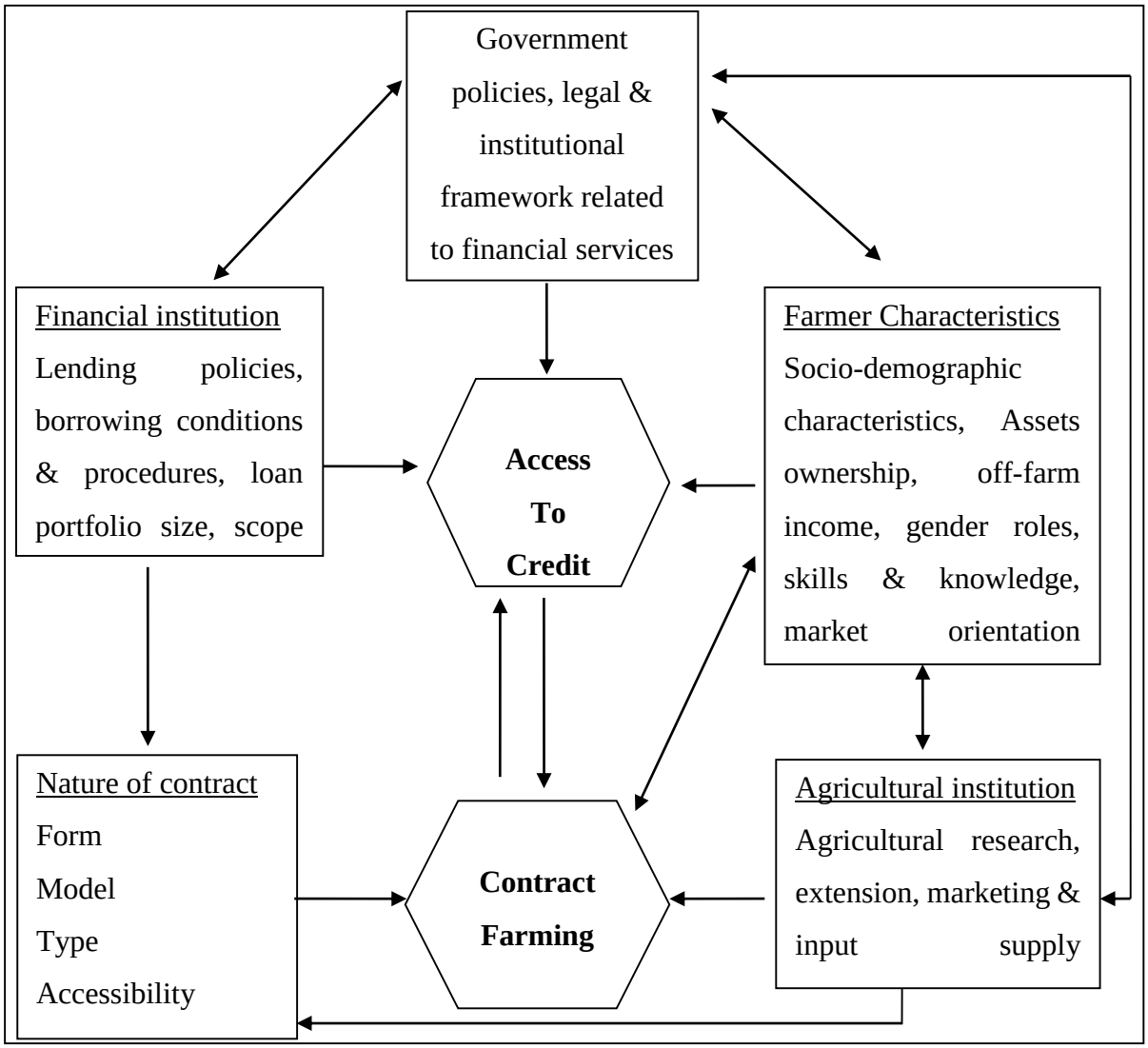

Figure 4.2: The relationship between contract farming and access to credit and their determinants

Source: Adapted from Mohamed and Temu (2008)

As shown in Figure 4.2, financial institution, farmer characteristics, government policies, legal and institutional framework related to finance and indirectly by agricultural institution influence access to credit. Further, contract farming will improve access to credit taking into consideration the nature of the contract, farmer characteristics, agricultural institution and government policies. Access to credit will influence contract participation depending on the financial institution, farmer characteristics, government policies, legal and institutional framework related to financial services.

4.5 Summary

This chapter presented a review of literature on the role of contracts in enhancing agricultural development, especially access to credit for smallholder cattle farmers. The literature reviewed also covered the benefit and cost of contractual agreements and determinants of participating in contracts. From the reviewed literature in Chapter 3 and in this chapter, this study hypothesises that certain socio-economic factors influence smallholder farmers' access to credit from formal financial institutions. The study further hypothesises that certain socio-economic factors influence smallholders' participation in contractual agreements and that farmers with contractual agreements positively enhance their access to formal credit from formal financial institutions.

CHAPTER 5
METHODS AND PROCEDURES

5.1 Introduction

The objective of this chapter is to describe the methodology and procedures used to investigate the role of contracts in promoting access to credit for smallholder cattle farmers, cattle fatteners and traders in Swaziland. The step-by-step description of the study area, the type of investigation, the sampling design, the data collection process and analysis are presented below. Under data analysis, two logistic regression models are described and presented, that is, the model for contract agreements and the model for access to credit.

5.2 The study area

5.2.1 Location

The study was conducted in SWADE development project areas in the Lubombo District, about 300 km from Mbabane, and in the Hhohho District, about 170 km from Mbabane (green colour in Figure 5.1). The study area is located in the Lowveld, which is one of the ecological zones in Swaziland. This area was chosen because the LUSIP project, LUSIP-GEF (Global Environmental Facility) and KDDP project allow smallholder rural farmers to have access to irrigated land for sugarcane farming and other agricultural activities, and being able at the same time to conserve natural resources and the environment.

5.2.2 Climate

The mean annual rainfall ranges from 440 mm to 570 mm and the mean annual evapo-transpiration is 2 057 mm. About 70 % of the annual rainfall within the hot, summer rainy season occurs from October to March. The mean annual temperature in winter ranges from a minimum of 5° C to a maximum of 20° C.

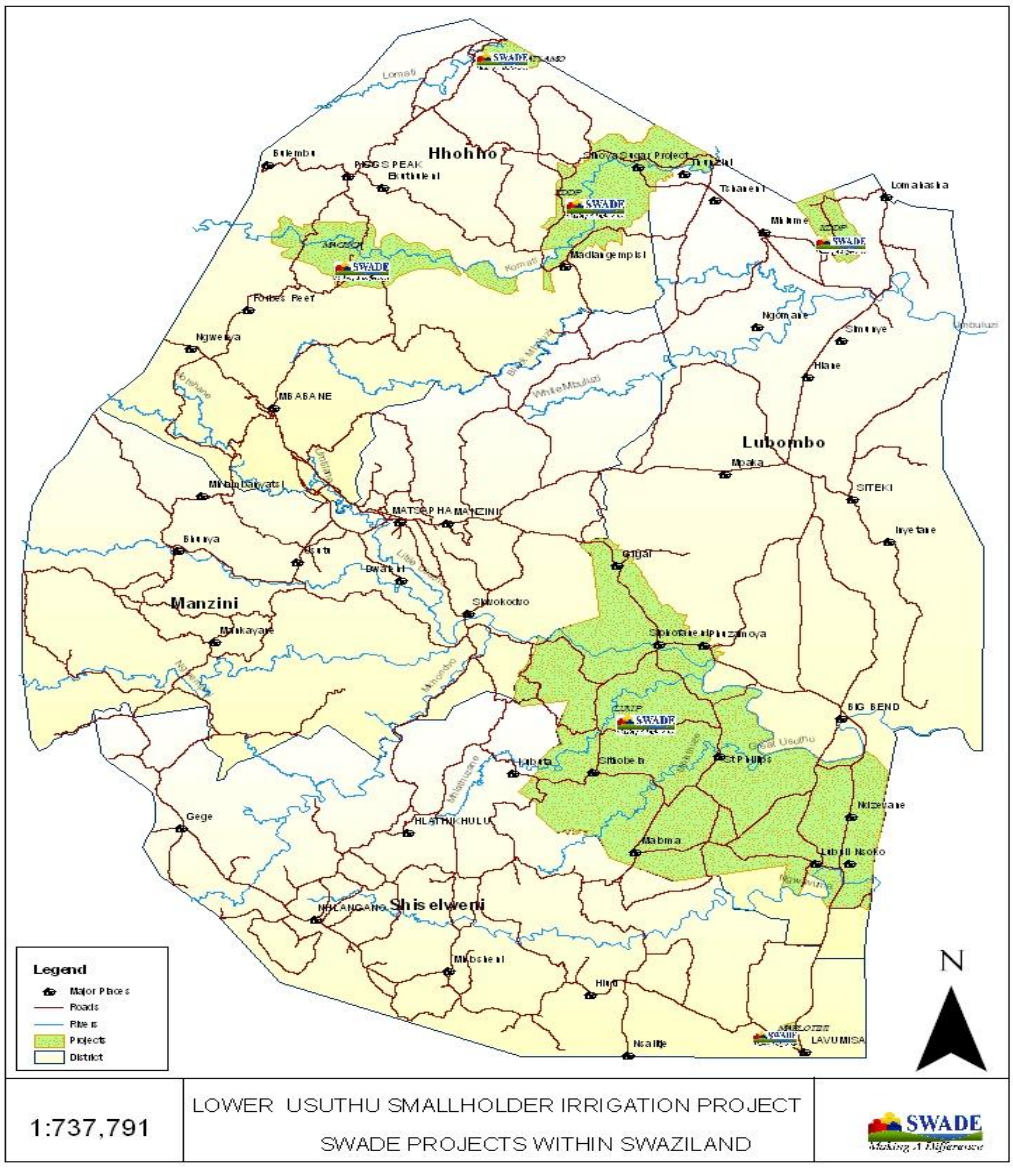

Figure 5.1: A site map showing the agricultural development area under SWADE

Source: SWADE (2013)

5.3 Sampling design and data collection

5.3.1 Sampling design

A stratified random sampling procedure was applied, using smallholder cattle farmers from the Lubombo and Hhohho Districts in the Lowveld ecological zone of Swaziland. Cattle farmers and traders under SWADE development areas, that is, LUSIP, LUSIP-GEF and KDDP, were targeted for the survey. The list of farmers and traders was sourced from SWADE database,

the GIS department. The target population, which had a population size of 892, was divided into three strata, that is, 757 cattle producers, 22 cattle traders, and 113 cattle finishers. The farmers were then randomly selected to give a total sample of 111 respondents who were then interviewed in the survey. Fifty-three cattle producers (53) were randomly selected as the sample frame from dip tanks under the different project areas under SWADE. Thirty-six (36) cattle finishers were randomly selected to form part of the sampling frame while the whole strata of 22 cattle traders were used and organised into groups. Table 5.1 presents details of the sample.

Table 5.1: Selected areas and sampled respondents

District	Study Areas	Population Number (892)	Sampled Number (111)	Stratas	% number of respondents sampled (12.4%)
Hhohho	Sihoye	20	6	Finishers	30.0
(KDDP)	Mangweni	99	8	Producers	8.1
	Tshaneni	4	4	Traders	100.0
	Nhlanguyavuka	115	7	Producers	6.1
Lubombo	Sithobela	110	8	Producers	7.3
(LUSIP)	Siphofaneni	6	6	Traders	100.0
	Madlenya	30	10	Finishers	33.3
	Ncandweni	107	10	Producers	9.3
	Ndzevane	194	11	Producers	5.7
	Lubuli	5	5	Traders	100.0
	Gamula	22	8	Finishers	36.4
	Ngoni	7	7	Traders	100.0
	Madubeni	132	9	Producers	6.8
	Siphofaneni	41	12	Finishers	29.3

5.3.2 Data collection

Data were collected from both primary and secondary data sources. In a first step, Focused Group Discussions (FGDs) were used to collect primary data. This was done between October 2013 and February 2014. In a second step, the information collected through FGDs were complemented by face-to-face interviews with the three types of stakeholders (producers, finishers and traders) during the period between April and May, 2014. Personal interviews were conducted to gather information on farmers' access to credit and involvement in contractual agreements with other stakeholders in the value chain. Secondary data were sourced from MOA, the livestock department, SWADE, Geographic Information System (GIS) unit from Lusip Information System (LIMS) department and the internet.

The study made use of primary data collected by means of structured questionnaires, from cattle producer-finishers and beef cattle traders (Appendices A and B). Data collected included stakeholders' socio-economic characteristics, cattle production and marketing, income received from cattle trading and other activities, involvement in contractual agreements, and access to credit.

The cattle producer-finisher questionnaire was divided into six sections: producers-finisher identification, farming and livestock inventory, cattle trading, market information, extension services and training, cattle fattening, and credit and loans. The cattle traders' questionnaire was divided into five sections: trader identification, cattle trading, cattle fattening, credit and loans, and risk assessment.

The survey of the population was conducted at the dip tanks for cattle producers and scheduled interviews were conducted for cattle traders and finishers. Before collecting the data, the questionnaires were reviewed by personnel from International Livestock Research Institute (ILRI), MOA (from the livestock department), and SWADE, and then pre-tested through a small number of beef producers and beef traders in the Manzini region of Swaziland in order to verify their validity and reliability prior to use.

5.4 Data analysis

The collected data were coded and entered into Excel and analysed using the Statistical Package for Social Sciences software (SPSS 20.0 for Windows). Descriptive analysis was used to visualise the demographic composition of the smallholder beef cattle producers, finishers and traders in the survey, such as average age, education, gender, non-farm income, access to credit, contract agreements, and land size. Descriptive analysis was also used to analyse the variables used in the study for cattle farmers and traders, using frequencies, averages/means and standard deviations.

Logistic regression analysis was used to analyse the influence of independent variables (age, gender, education level, income in other business per month, association member, farm size, herd size, cattle sold, cattle fattening, market information, access to training services, market access, access to extension services, bank account, and loan facility) on a binary/dichotomous dependent variable (access to credit and contract agreement).

Logit regression (logit) analysis was chosen because it is a uni/multivariate technique which allows for estimating the probability that an event occurs or not, by predicting a binary dependent outcome from a set of independent variable (stated above). The justification for using logit is its simplicity of calculation and that its probability lies between 0 and 1. Moreover, its probability approaches zero at a slower rate as the value of explanatory variable

gets smaller and smaller, and the probability approaches 1 at a slower rate as the value of the explanatory variable gets larger (Gujarati, 1995).

Therefore, the logit model takes the following functional form (Greene, 2012):

$$Prob(Y = 1|x) = \frac{e^{x,\beta}}{1 + e^{x,\beta}} = Ë(x'\beta) \quad (1)$$

Where:

Y: Dependent variable taking the values of 0 or 1

x: Vector of independent variables

β: Vector of coefficients to be estimated

Ë: Logistic cumulative distribution function

The logistic regression uses a maximum likelihood method, which maximises the probability of getting the observed results, given the fitted regression coefficients, instead of using a least squared deviations criterion used in a linear regression. Taking the natural logarithms of the odds ratio of equation 1we obtain the linearity of the logit model, that is equation 2.Therefore, the probability that a stakeholder will have access to credit and/or engage in a contractual agreement is given by:

$$In\ (ODDS) = In\left(\frac{\hat{Y}}{(1 - \hat{Y})}\right) = a + bX \quad (2)$$

Where $\hat{Y}$ =1, 1- $\hat{Y}$ = 0, and X = independents variables

That is, the log of odds ratio is not only linear in X, but also linear in the parameters. As Y goes from 0 to 1, the *Log (y)* scale ranges from negative infinity to positive infinity and is symmetrical around the *log* of 0.5 (which is zero). Relating the regression equation (a + bX …..) which is a linear formula, to the logistic regression equation, the equation 2 in an extended form may be written as:

$$Logit[y\ (x)] = \log\left[\frac{y(x)}{(1 - y(x))}\right] = a + b1X1 + b2X2 + \ldots\ldots + bnXn \quad (3)$$

Taking the error term (ε) into account, the logit model becomes:

$$logit\ (y) = \ a\ +\ b1x1\ +\ b2x2\ +\ b3x3 + \ \ldots\ldots + \varepsilon(4)$$

Hence, the above model was used in this study and was treated against the potential variables affecting smallholder farmers' access to credit and involvement in contractual agreements. The coefficient of the logit model presents the change in the log of the odds associated with a change in the explanatory variables.

5.4.1 Model estimation

One of the main objectives of the study is to measure the overall access to credit of each stakeholder. Factors and characteristics that influence availability and access to credit were identified together with factors that determine involvements in contracts. A logit regression analysis is a model which allows for estimating the probability that an event occurs or not, by predicting a binary dependent outcome from a set of independent variables. A regression analysis was conducted for the study where the probability that a farmer had access to credit and also engaged in a contract, introduced as a dummy variable (1 for yes and 0 for no), was the dependent variable. The use of the logit regression model is attributable to the fact that the dependent variable (access to credit and contract agreement) depicts the probability that a cattle farmer has access, or does not have access to credit from financial institutions or engages, or not, in contractual arrangements with other actors in the value chain. Access to credit/contract agreement takes up a dichotomous criterion variable, that is, 1 =Yes, 0 = No.

5.4.2 Model for contract agreement

The model was estimated to identify significant factors that influence a farmer to engage in contractual agreements with other actors in the value chain. The logit model was also used to further identify these factors and to attempt to answer the question "What are the chances/possibilities of smallholder farmers to be freely involved or engage in contractual arrangements?"

From a theoretical point of view, farmers engage in contractual agreements in order to improve cattle production, marketing and management practices. To identify these factors, the logit

model is estimated as in equations 6 and 7, where the dependent variables are contract agreement (yes = 1, no = 0) and access to credit (yes = 1, no = 0), respectively.

$$Logit\ (Contract\ agreement) = \alpha + \beta 1Gender + \beta 2Training + \beta 3Extension + \beta 4AM + \beta 5AMI + \beta 6FA + \beta 7Cr + \beta 8BA + \beta 9LF + \beta 10Age + \varepsilon \quad (6)$$

Contract agreement (CA): in the model as a dependent variable, is measured by whether a stakeholder was involved in a contractual agreement with other stakeholders in the value chain or not.

The independent variables are

Gender: This is expected to have a positive effect for males. Females usually do not have access to land and, thus, they are usually excluded in agricultural investments.

Age: Younger farmers are hypothesised to be more likely to participate in contract farming than their older counterparts, as they are more innovative. However, in Swaziland cattle farmers are mostly the aged and, thus, age will have a negative effect on contract farming.

Training: Training broadens farmers' knowledge, especially with respect to the use of improved production technologies, and provides farmers with current information on production, diseases, record keeping and other farm management strategies. This improves beef cattle production, as well as the use of resources, and enables farmers to make informed decisions. Training will enable farmers to know the benefits and challenges of being involved in a contract and a positive effect is expected.

Extension: Farmers who have better access to extension services are more likely to participate in contract farming and, therefore, a positive effect is expected. This is because they receive advice from extension agents on the better and latest technology to use to improve their productivity.

Access to market (AM): This is expected to have a negative effect on a farmer becoming involved in a contract agreement with other actors in the value chain. This is attributed to the fact that they may easily trade their own product in that market.

Access to market information (AMI): Access to information will influence the farmers' engagement in contracts. It is expected to have a positive influence on engagement in contracts with relevant stakeholders or value chain actors.

Farmers Association (FA): Farmers who are members of farmers' associations are more likely to participate in contract farming. This is expected to have a positive influence in contract involvement. This is because collective action enables small-scale farmers to attain better bargaining power, economies of scale and reduce transaction costs.

Credit (Cr): Farmers who have better access to credit offered by formal financial institutions are expected to be less likely to participate in contract farming. This is because if a farmer has access to credit, it is predicted that he or she will be able to produce more and sell the product in the market. Thus, it is hypothesised that farmers with low or no access to credit will willingly participate in contracts in order to gain access to credit or to use the contract as collateral for credit from formal financial institutions.

Bank Account (BA): It is hypothesised that farmers with a bank account are more likely to participate in contract farming and, thus, a positive effect is expected.

Loan Facility (LF): It is hypothesised that farmers who have received a loan for their agricultural production will be less likely to participate in contract farming. Therefore, a negative effect on participating in contract farming is expected.

Error term (ε): Error term represents the unpredicted or unexplained variation in the dependent variable. This is under the assumption that ε is normally distributed, has a zero mean, constant variance, and is not correlated with the explanatory variables.

5.4.3 Model for access to credit

The logit model was estimated to identify significant factors affecting access to credit. The model is designed to present factors that determine the probability that a financial provider will give credit to a cattle farmer.

Theoretically, when each stakeholder has access to credit they may have access to formal markets in order to improve cattle production, marketing and management practices. To identify these factors, the logit model is estimated as in equations 6 and 7, where the dependent

variables are contract agreement (yes = 1, no = 0) and access to credit (yes = 1, no = 0), respectively.

$$Logit\ (Access\ to\ Credit) = \alpha + \beta 1Age + \beta 2Herdsize + \beta 3Farmsize + \beta 4OI + \beta 5AMI + \beta 6Training + \beta 7CA + \beta 8CF + \varepsilon \quad (7)$$

The dependent variable is **Access to credit (Cr)** and in the analysis is measured by the probability of having access to credit from formal financial service providers.

The independent variables are

Age: This is expected to have a positive effect on access of credit. Older farmers are more knowledgeable and are believed to be more efficient in resource use or allocation than younger farmers are, and therefore financial institutions are able to provide finance to farmers.

Herd size (Hsize): Cattle herd size is an indication of a farmer's wealth. Cattle ownership or herd size was measured by asking respondents how many cattle they owned. Farmers with large cattle numbers are expected to easily convert cattle into cash. Hence, herd size is hypothesised to have a negative effect on access to credit from financial institutions.

Farm size (Fsize): The amount of land a farmer has is influenced by the number of cattle owned. If the size of land is large, farmers are able to engage in production activities, such as fattening, to add value to their product in readiness for the market. Farm size is expected to have a positive influence on farmers accessing loans from formal financial institutions.

Off-farm Income (OI): A steady income or income from other businesses may have a positive influence on farmers accessing loans from financial institutions, as this will enable them to service the loan, even if the intended business fails (Sharma & Zeller, 1997).

Access to market information (AMI): Access to market information is expected to have a positive influence on access to credit by cattle farmers, as this improves knowledge on prices, grades, breed, type and age of beef cattle for market specification.

Training: Training broadens farmers' knowledge, especially with respect to the use of improved production technologies, and provides farmers with current information on

production, diseases, record keeping and other farm management strategies. This improves beef cattle production, as well as the use of resources, and enables farmers to make informed decisions. A positive coefficient is expected for access to finance.

Contract agreement (CA): Contract agreements with either supplier of cattle, feeds, veterinary services and formal markets are important. This is expected to have a positive influence, as this shows that farmers have markets for their products. This is measured as a dummy, assuming a value of one if the farmer has contract agreement with other actors in the value chain, and zero otherwise.

Cattle fattening (CF): Cattle fattening is an activity where farmers add value to beef cattle in order to take advantage of higher prices. This is expected to have a positive influence on access to credit as farmers and finishers produce commercially, thus this activity is taken as a business venture.

5.5 Summary

This Chapter has described the study area, methodology and procedures used to carry out this investigation. It provided justification or supporting statements for the choice of methodology and discussed the questionnaires and models used as the main data collection instrument and data analysis, respectively. The study employed two logistic models, that is, contract participation and access to credit. The logistic model was found to be a good fit for the estimated models of the study allowing binary analysis of the results by predicting a binary dependent outcome from a set of the given explanatory variables.

CHAPTER 6
SOCIO-ECONOMIC CHARACTERISTICS OF THE SAMPLE

6.1 Introduction

This chapter presents the findings of the study. It presents the descriptive analysis of smallholder cattle farmers, finishers and traders in Swaziland in detail. Characteristics of cattle producers, finishers and traders, the types of contracts farmers are involved in, farmers' involvement in farmers' associations, and other services are presented and discussed in detail.

6.2 Respondents' socio-demographic characteristics

6.2.1 Age, gender and educational level of cattle producers, finishers and traders

Generally in Swaziland, most individuals who own cattle are males and most of them are old. This statement is in line with the results from the survey where random sampling was employed using an exhaustive list of traders, finishers and producers, as shown in Table 6. The average age of cattle producers is 50.3 years, and 51.3 years for cattle traders. This is a crucial variable in cattle production, as young farmers are considered to have a risk-taking attitude since they are willing to experience new or innovative technologies. Cattle finishers have the lowest average age (45.4 years), and the highest proportion of females (44 %), compared with the producers and traders groups. This may be attributed to the fact that most cooperatives encourage the participation of females who are generally excluded from more rewarding agricultural opportunities because they lack resources, such as land.

Table 6.1: Gender, age and education of cattle stakeholders

Variables	Definition	Cattle Producers n=53	Cattle Finishers n=36	Cattle Traders n=22
Gender (%)	Male	71.7	55.6	90.9
	Female	28.3	44.4	9.1
Age (years)	Mean*	50.3 (13.12)	45.4 (13.24)	51.32 (11.8)
	Min/Med./Max	28/53/75	21/46.5/70	29/51.5/82
Education (%)	Illiterate	32.1	25.0	0.0
	Literate	9.4	8.3	22.7
	Primary	35.9	25.0	50.0
	Secondary	22.6	36.1	13.6
	Tertiary	0.0	5.6	13.6

*Figures in parentheses are standard deviations

Table 6.1indicates that out of 22 cattle traders interviewed, 91 % were males. Cattle traders are mostly cattle producers who are also involved in cattle trading within a region, or all over Swaziland. They are called *bogalajane* in siSwati, meaning they act as agents by securing cattle markets for cattle producers and charge a commission through a mark-up on the original cattle price, thus behaving like brokers. Some have transited to engage in cattle trading formally (23 % of cattle traders are engaged in cattle trading as a formal business). From Table 6.1, it is observed that only 28 % of cattle producers are females (some were assisting their employed husbands who had migrated elsewhere to seek employment).

In addition, the level of education of cattle farmers plays an important role in decision-making and the adoption of new technologies, thus improving cattle production and marketing. Results indicate that 59 % of cattle producers had formal education and 9 % had informal education, while 32 % were illiterate (respondents older than 60 years). Cattle fatteners had the highest percentage of people with secondary school education (36 %). Out of all the cattle farmers, cattle traders (14 %) had tertiary level of education, with 6 % of cattle finishers, while cattle producers had none. On average, the level of education of cattle farmers was in between informal and primary school education level. This shows that cattle farmers are educated as cattle producers and cattle finishers were illiterate by 32 % and 25 % respectively. All cattle traders are educated as they show zero percentage illiteracy.

6.2.2 Major sources of income

Cattle farmers interviewed derived their livelihood from different activities apart from beef cattle production. Bearing in mind that the respondents were sampled from the LUSIP and KDDP areas where sugarcane and vegetable production are the main agricultural activities, 30 % of cattle producers depend on sugarcane farming (in fact, dividends from sugarcane sales are their main source of income) as indicated in Figure 6.1. Due to diversification, 30 % of cattle producers depend on other agricultural activities, such as vegetable and maize production each. It is also estimated that cattle finishers (36 %) derive their income from sugarcane farming and other agricultural activities, such as cotton farming and legume production. About 45 % of cattle traders mostly derive their income from beef cattle trading, as other livestock (goats, sheep) are in low demand in the market. Overall, 13 % of all cattle stakeholders derive their income from non-agricultural activities.

The mean level of monthly income in other business activities for cattle producers, finishers and cattle traders ranges between E1000–E2000 and E2001–E5000, respectively. The share of income from cattle trading for cattle traders is 40 % of their overall income. The high percentage of cattle producers (72 %) deriving their income from beef cattle is attributed to the fact that most cattle producers are unemployed, and they sell cattle for household income and to pay school fees. This, however, does not mean that they are commercially involved in beef cattle production. About 28 % of cattle producers interviewed had not sold cattle in the past two years. This has led to the encouragement of cattle producers to commercialise livestock production in order to derive more income from the business and improve the economic status of livestock production in the country.

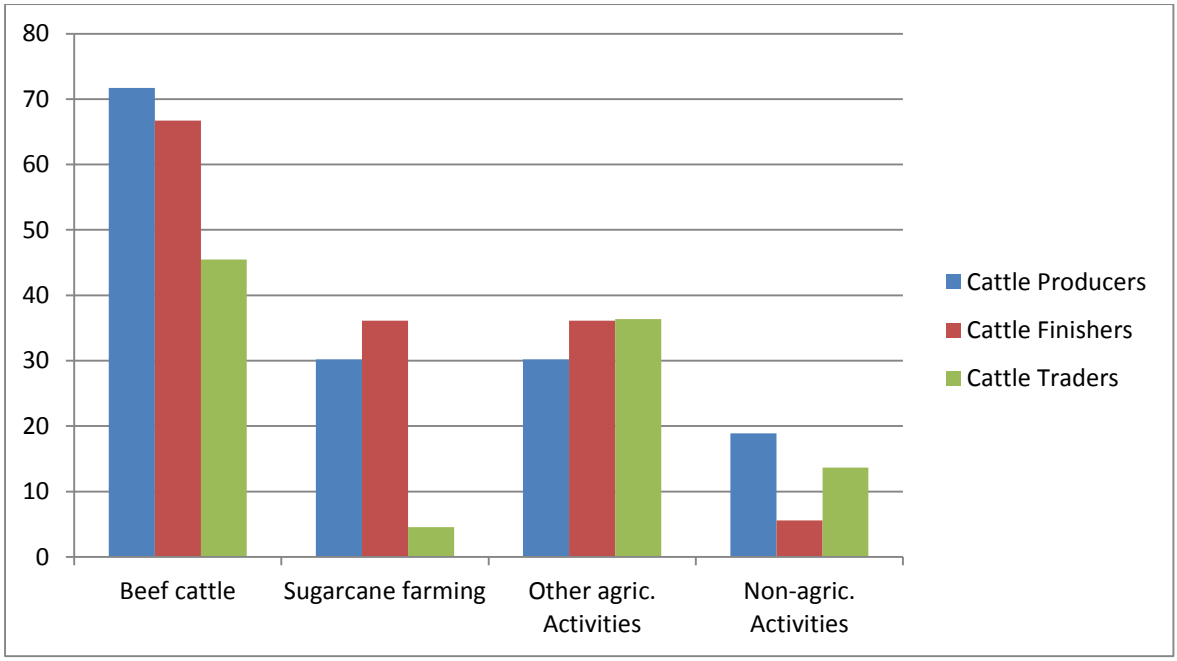

Figure 6.1: Percentage of income derived from various sources for cattle producers, finishers and traders

6.2.3 Cattle farmers' endowment

Land is the most important asset, as the majority of the respondents derived their livelihood from farm-based activities. The area surveyed falls under SNL, which is held in trust of the Swazi nation by the King through Chiefs who allocates usufruct rights to individual Swazi families, which rights may also be inherited from relatives. From the results, it can be gathered that the average land size for cattle producers, finishers and traders interviewed was 3.5, 2.3 and 3.8 hectares, respectively. This land is mainly used for vegetables, maize and cotton farming. During the off-season, cattle are allowed to graze in the fields. A minority (13.1 %) of the cattle farmers interviewed either share land with other family members or members of their association for farming (sugarcane or vegetable production).

Table 6.2 shows the asset ownership of the cattle farmers interviewed. Apart from land and cattle ownership, cattle farmers own a number of assets, such as vehicles, ploughs, and permanent homes. Only a minority (9.1% for traders and 1.9% for producers) of cattle farmers from SNL own rental buildings in urban areas. Assets play a crucial role when it comes to gaining access to credit, as they are considered as collateral. From the survey results, cattle farmers do not have assets that can be considered as collateral when taking up a loan for livestock production because their permanent houses are located in SNL (not considered as

collateral) as this land is communal, and most of their vehicles are imports (insurance companies do not insure these).

Table 6.2: Asset ownership by cattle producers, finishers and traders

Asset	Cattle Producers (%) n=53	Cattle Finishers (%) n=36	Cattle Traders (%) n=22
Rental buildings	1.9	0.0	9.1
Permanent home	98.1	91.7	100.0
Vehicle ownership	20.8	25.0	54.5
Land	86.8	72.2	77.3
Others:			
Plough	15.1	0.0	4.5
Bicycle	7.5	8.0	0.0

6.2.4 Livestock ownership

In general, livestock keeping forms part of the Swazi tradition and is still considered a source of social status. From the survey results, all the cattle farmers interviewed own livestock, such as cattle, goats, sheep and chickens. Cattle traders' ownership of livestock was not documented, but 68 % cattle traders interviewed owned cattle.

Figure 6.2 shows cattle distribution among cattle producers and finishers. Farmers interviewed owned cattle, ranging from 2 to 74 head. The numbers may not necessarily represent the actual number of cattle owned by the farmer, as farmers were reluctant to reveal their real cattle numbers. The Government of Swaziland, through the Swaziland Revenue Authority, is investigating and exploring ways of how cattle farmers might start paying tax (Times of Swaziland, 2014). Cattle ownership is skewly distributed, with 41 % of cattle producers owning less than 10 cattle, while at the other extreme, 2 % have more than 60 cattle. The rest of cattle producers fall within this continuum. For cattle finishers, livestock ownership is almost evenly distributed for herd size of up to 50 cattle. Only 3 % cattle fatteners own more than 60 animals.

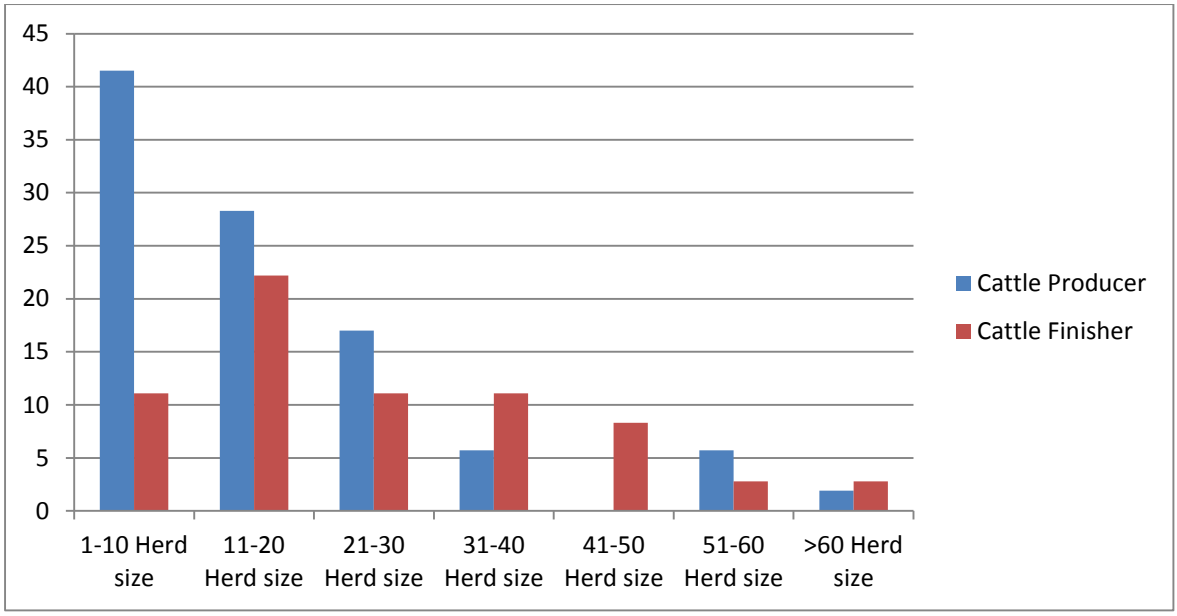

Figure 6.2: Cattle distribution among cattle producers and finishers (%)

Table 6.3 shows the composition of herd size, with the mean herd size for cattle producers and finishers being 17.4 and 18.4, respectively. It is evident from the table that more cattle producers have female cattle than male cattle. Only 40 % of cattle producers own male cattle that are aged more than four years, while 22 % of cattle finishers own this category of cattle. The table also shows that most cattle farmers own younger cattle than old cattle. This may be attributed to the impact of the training by SMI in the dip tanks about the marketing of the different types of cattle and their sale prices.

Table 6.3: Composition of herd size

Variable	Cattle Producer (%)	Cattle Finisher (%)
	n=53	n=36
Composition:		
<6 months males	62.3	52.8
<6 months females	66.0	44.4
6-24 months males	66.0	38.9
6-24 months females	67.9	38.9
2-4 years males	52.8	25.0
2-4 years females	64.2	33.3
>4 years males	39.6	22.2
>4 years females	54.7	41.7
Average herd size*	17.5 (14.6)	18.3 (18.4)

*Figures in parentheses are standard deviations

6.3 Types of contract agreements

6.3.1 Trading contract agreement

Cattle trading in Swaziland is not operated as a commercial business, which is why contract arrangements are rare, and if done, it is usually under verbal contracts. From the interviewed population, around 40 % of cattle producers, 53 % of cattle finishers, and 46 % of cattle traders are engaged in verbal purchasing contracts. Of these, 40 % and 53 % of cattle producers and cattle finishers, respectively, have verbal purchasing contracts with buyers, such as, butchers and SMI, while 27 % of cattle producers have verbal contracts with butchery owners and 33 % of cattle finishers have verbal contracts with SMI. Half of cattle traders surveyed have verbal contracts with butchers, producers or SMI. About 36 % of cattle traders have verbal contracts with butchers, and 9.1 % of them have verbal contract with SMI.

Table 6.4 shows the contents of a verbal purchasing contract that a cattle buyer may enter into with cattle suppliers. This contract shows that when cattle buyers buy cattle, they look for certain characteristics and aspects. Cattle buyers (such as butchers, SMI, abattoirs, traders and farmers) observe the following before buying: season (time of year), price, condition of animal, weight of animal, age of animal, animal regime followed, conditions and timing of payments, and transport of animals at the time of sale.

When negotiating for sale, cattle buyers rarely observe or enquire as to the following: breeding, transport of feed, supply of feed, supply of any other livestock/cropping services or inputs by buyer, agreements surrounding labour or wage, exchange of any consumer goods, and transport of animals at any time during growth. Concerning cattle farmers who sell cattle under verbal contractual agreements, 15 % cattle producers, 39 % cattle finisher and 23 % cattle traders observe whether a feeding regime is followed. In the verbal contract between traders and their suppliers, 23 % of cattle traders pay cattle suppliers on the spot, while 14 % of cattle traders pay the supplier after the sale of cattle.

Table 6.4: Contents of verbal purchasing contracts

Variable	Definition	Cattle Producers (%) n=53	Cattle Finishers (%) n=36	Cattle Traders (%) n=22
Time of purchase:	Yes	35.8	47.2	31.8
	No	3.8	5.6	13.6
Price for purchase	Yes	39.6	36.1	45.5
	No	0.0	16.7	0.0
Price/kg or price/animal	Yes	28.3	47.2	31.8
	No	11.3	5.6	13.6
Condition of animal	Yes	39.6	50.0	45.5
	No	0.0	2.8	0.0
Weight of animal	Yes	28.3	44.4	31.8
	No	11.3	8.3	13.6
Age of animal	Yes	39.6	41.7	45.5
	No	0.0	11.1	0.0
Feeding regime followed	Yes	15.1	38.9	22.7
	No	24.5	13.9	22.7
Breeding	Yes	13.2	22.2	18.2
	No	26.4	30.6	27.2
Transport of feed	Yes	1.9	30.6	0.0
	No	37.7	22.2	45.5
Animal Health regime followed	Yes	35.8	47.2	36.4
	No	3.8	5.6	9.1
Conditions and timing of payment	Yes	34.0	41.7	45.5
	No	5.7	11.1	0.0
Supply of feed	Yes	3.8	22.2	0.0
	No	35.8	30.6	45.5
Supply of any other livestock services/inputs by buyer	Yes	1.9	13.9	9.1
	No	37.7	38.9	36.4
Supply of any cropping services or inputs by buyer	Yes	0.0	11.1	4.5
	No	39.6	41.7	40.9
Agreement surrounding labour or wage	Yes	5.7	19.4	4.5
	No	34.0	33.3	40.9
Exchange of any consumer goods	Yes	3.8	13.9	9.1
	No	35.8	38.9	36.4
Transport of animals at any time during growth	Yes	5.7	16.7	0.0
	No	34.0	36.1	45.5
Transport of animals at time of sale	Yes	24.5	38.9	36.4
	No	15.1	13.9	9.1

6.4 Access to services

Table 6.5 provides information on access to extension, market information and training, all of which play a vital role in the promotion of livestock production and marketing, thereby improving farm income and human capital. According to the survey results in Table 6.5, 29 % and 42 % of sampled cattle producers and cattle finishers, respectively, have access to extension services. Access to extension services is one of the factors for successful feedlotting and cattle production, as farmers need the relevant expertise to improve their production capabilities. Results show that farmers are still unable to access these services. The provision of extension services to farmers in Swaziland is mainly the government's role. SWADE has taken over some of these services, as government extension officers have difficulties in accessing the remote areas (having limited support in terms of transport).

Table 6.5: Access to services

Variables	Definition	Cattle Producers (%) n=53	Cattle Finishers (%) n=36
Access to extension services	Yes	28.3	41.7
	No	71.7	58.3
Access to market information	Yes	64.2	80.6
	No	35.8	19.4
Source of market information	Government	26.4	44.4
	Traders	15.1	11.1
	Butchers	43.4	22.3
	Farmers	75.5	22.3
	TV/Radio	11.4	11.1
	SMI	0.0	16.7
Type of market information	Prices	90.6	80.6
	Type of animals	52.9	27.8
	Type of buyers	56.6	47.2
	Quality of animals	43.4	33.4
Access to training services	Yes	49.1	47.2
	No	50.9	52.8
Type of training	Record keeping	9.4	33.3
	Beef cattle marketing	32.1	30.5
	Beef cattle health	47.2	33.3
	General farm Mgt.	41.5	33.3
	Pasture/rangeland est. & Mgt.	37.7	33.3
	Beef cattle feeding	30.2	30.5

The survey results indicate that cattle farmers have access to market information (Table 6.5). On average, 64 % and 81 % of cattle producers and cattle finishers, respectively, had access to market information, such as market price information, type of animals to purchase/sell type of buyers and quality of animals. From the results, the main sources of information were other farmers (including traders), butchers, extension officers (government), SMI and the media.

Training is an important factor in the production and marketing of livestock in any developing country; however, a number of smallholder farmers are still unable to access training as a service. This service is mainly provided by government and non-governmental organisations. As shown in Table 6.5, 49 % and 47 % of cattle producers and cattle finishers, respectively, received training mainly on the following: record keeping, beef cattle marketing, beef cattle health, general farm management, pasture/rangeland establishment and management, and beef cattle feeding.

6.4.1 Farmers' association

Farmers' associations and/or groups in the LUSIP and KDDP areas are encouraged, owing to the fact that when in groups, a larger number of farmers benefit than do individuals. According to the survey results (Table 6.6), 55 % of cattle producers, 92 % of cattle finishers, and 64 % of cattle traders are members of an association. The main type of association that cattle farmers are involved in are the Sugarcane Farmers Association, Feedlot Farming Association, Maize Farmers Association, and Savings and Credit Cooperatives. It is evident from the results that the main benefit of being in an association or cooperative is that of improved income, access to credit, acquisition of new technologies and ideas, collective action, and access to piped water for farming and production. Although there is a farmers' association in Swaziland, called Swaziland National Agricultural Union (SNAU), cattle farmers suggested that there is a need for Beef Cattle Farmers Association, if beef cattle production is to be commercialised.

Table 6.6: Farmer association and membership benefits

Variables	Definition	Cattle Producers (%)	Cattle Finishers (%)	Cattle Traders (%)

Farmers' association member	Yes	54.7	91.7	63.6
	No	45.3	8.3	36.4
Benefits of joining	Improvement of Income	43.4	75	27.3
	Collective action	5.7	2.8	22.6
	Access to credit	11.3	44.4	27.3
	Acquisition of new technologies and ideas	28.3	27.8	27.2
	Accessibility to piped water	43.4	36.1	18.1
Type of association	Sugarcane FA	43.4	36.1	18.1
	Feedlot A	0	47.2	4.5
	Maize FA	1.9	0	0
	Savings and credit cooperatives	7.5	0	9
	Investment company	1.9	16.7	31.8

6.5 Summary

The descriptive results of the study showed that most cattle farmers were males, and the average age was about 50 years. The results further showed that, on average, cattle farmers had primary school education, which is up to seven years of schooling. The major source of income for cattle farmers is cattle farming, and since the study was conducted under SWADE developmental project areas, farmers are also involved in sugarcane farming and other crop production activities, such as maize and vegetable production.

The stakeholders were only involved in informal contracts, which mean that any party may change the terms or not abide by the contract. This may have undesirable consequences in terms of prices, grades and time of purchase. Most verbal contracts were between farmers and SMI or local butcheries. About 42 % and 28 % of cattle finishers and cattle producers had access to extension services, respectively. Less than half of the cattle farmers had access to training on beef cattle production and marketing. The majority of cattle farmers had access to information, such as prices, type of animals to sell, and quality of animals needed by buyers. It was found that a majority of the respondents were members of a farmers' association. Most farmers cited benefits as being improvements in farmers' income, access to piped water, and access to credit.

CHAPTER 7
RESULTS AND DISCUSSION

7.1 Introduction

Presentation of the statistical analysis of smallholder cattle farmers, finishers and traders in Swaziland is undertaken in this chapter. The descriptive statistics of the variables used in the study, access to credit and factors influencing credit availability and access to smallholder cattle farmers, and the factors and/or probability that a farmer will engage in a contractual arrangement with other actors in the value chain, are presented.

One of the requirements when smallholder cattle producers, finishers and or traders need to access a loan from a formal credit institution is a document (contract) showing the supply and market of the product. This contract shows that a farmer will buy a certain number of cattle, cattle feed or medication from a certain supplier and utilise a certain marketing channel. This contract arrangement is required when farmers need to access a loan, and in this chapter, a discussion is focused on identifying and comparing factors that might be used to explain differences in participation in contract farming.

7.2 Descriptive statistics of the variables used

The herd size of cattle ranged from 1 animal to 74 animals per farmer, with an average of 18 cattle (Table 7.1). The standard deviation of the average herd size is 16. From the interviewed cattle farmers, a minority (16%) of them were involved in cattle fattening (this was mainly done by cattle finishers). Almost half the population interviewed had verbal contract agreements of sale with other stakeholders in the beef value chain. Formal contracts are not used by smallholder farmers and for the beef value chain to improve this mechanism is encouraged. The average number of cattle sold in the market was 5 animals with a standard deviation of 16 animals.

The minimum number of cattle sold was 0 with a maximum of 150, this shows that some cattle producers did not sell their cattle in the previous year (2013) and the maximum of 150 animals sold was mostly by cattle fatteners who were involved in cattle fattening. The minimum of zero cattle sold is in line with the observation that Swazi farmers are reluctant to sell their cattle and the maximum of 150 cattle sold was from farmers who were operating a feedlot as an income-

generating project. From the farmers interviewed 38 % revealed that they never sold any cattle in the year 2013, while 40 % revealed that they sold less than 5 numbers of cattle.

As shown in Table 7.1, the average income level per month of cattle farmers from other businesses was 2, showing that the average income per month varies between E1 001 and E2 000. The income is derived from sugarcane farming dividends, vegetable, cotton and maize farming. Most smallholder cattle farmers in Swaziland are found on SNL, that is, communal land tenure. The average land or farm size allocated per farmer was 2 hectares (ranging from 0 ha to 15 ha). From Table 7.1, the variable, farm size show that some farmers had no land allocated to them, one of the reason maybe the age of the farmer. A minority (13.2%) of the cattle farmers interviewed either share land with other family members or with members of their association, and this land is used for farming. The land is mainly used for vegetable, maize and cotton farming. During the off-season, cattle are allowed to graze in the fields.

Table 7.1: Description of variables used in the study

Variable	Mean	Std. Dev.	Min	Max
Farmers age (years)	48.610	13.472	21	82
Education Level (Illiterate = 1; Literate = 2; Primary = 3; Secondary = 4; Tertiary = 5)	2.650	1.235	1	5
Income in other business per month (>E1000 = 1; E1001-E2000 = 2; E2001-E5000 = 3; <E5001 = 4)	2.090	1.395	1	4
Association member (Yes = 1; No = 0)	0.700	0.462	0	1
Farm size (ha/farmer)	2.140	2.998	0	15
Herd size (number)	17.910	16.505	1	74
Cattle sold (number)	4.990	16.895	0	150
Cattle fattening (Yes = 1; No = 0)	0.160	0.366	0	1
Contract arrangement (Yes = 1; No = 0)	0.440	0.499	0	1
Market information (Yes = 1; No = 0)	0.690	0.520	0	1
Access to training services (Yes = 1; No = 0)	0.480	0.503	0	1
Market access (Yes = 1; No = 0)	0.620	0.489	0	1
Access to extension services (Yes = 1; No = 0)	0.360	0.483	0	1
Bank account (Yes = 1; No = 0)	0.790	0.412	0	1
Loan Facility (Yes = 1; No = 0)	0.600	0.494	0	1
Access to credit (Yes = 1; No = 0)	0.440	0.499	0	1

Almost all the farmers interviewed were members of a farmers' association, taking into consideration that the study was conducted in SWADE development project areas where being a member of an association is encouraged, if not a must.

More than half of the cattle farmers had access to markets, as well as market information. Access to market information was mostly provided by extension officers from the Ministry of Agriculture and Livestock officers from SWADE, and/or other cattle farmers. Training and extension services were provided to cattle farmers, but only a minority of farmers interviewed had access to such services. Those who received access to training found the help and information provided by the veterinary assistant very useful in terms of cattle marketing, health issues, feeding, pasture, farm management, and market information.

Although more than half of the cattle farmers had private bank accounts and had acquired informal loans for farming and livestock production, access to credit from formal institutions was a challenge for cattle farmers, as these institutions require collateral which many smallholders do not possess. Less than half of the respondents had access to credit from banks or microfinance institutions, but money was easily available from friends and relatives.

7.3 Access to credit

Access to credit is one of the factors for successful livestock production and marketing, as farmers need credit to improve their investment in new and improved technologies and for purchasing cattle. Inability to access credit inhibits production, and hence there is a need for the improvement of credit availability. According to the survey results (Table 7.2), 36 % of cattle producers, 36 % of cattle finishers, and 50 % of cattle traders had access to credit. The main sources of credit were friends or relatives, banks, microfinance institutions, SMI and cooperatives or associations. It is observed that fewer smallholders demand credit from commercial banks than informal lenders (Friends/relatives, Cooperatives/associations, Microfinance institutions and NGO's). This is supported by Chisasa (2014) who concluded that, this is because of high interest rates, long and difficult application procedures, fear of losing collateralised assets and high transaction costs. Cattle traders had more access to credit than cattle producers and finishers did.

According to the survey results, 49 % of cattle producers, 56 % of cattle finishers, and 54 % of cattle traders (of the farmers that had access to credit) had access to a loan facility for livestock

and farming. The main source of finance was Fincorp, SIDC and Swazibank, and other sources used by farmers were Inhlanyelo fund, Standard Bank and First National bank. From the surveyed sample, 70 % of cattle producers, 92 % of cattle finishers, and 91 % of cattle traders had access to banking services, such as bank accounts. These accounts were savings, investments and transmission accounts.

Table 7.2: Access to credit

Variable	Definition	Cattle Producers (%) n=53	Cattle Finishers (%) n=36	Cattle Trader (%) n=22
Access to credit	Yes	35.8	36.1	50.0
	No	64.2	63.9	50.0
Source of credit	Friends/relatives	24.5	16.7	54.5
	Cooperatives/associations	13.2	2.8	0.0
	Banks	5.7	8.4	31.8
	Microfinance institutions	3.8	8.4	31.8
	SMI	0.0	8.4	0.0
Loan facility for livestock and farming	Yes	49.1	55.6	54.4
	No	50.9	44.4	9.1
Type of credit	Cash money in advance	1.9	0.0	0.0
	Loan	47.2	55.6	50.0
	In kind product	0.0	33.3	0.0
Name of the institution	Fincorp	34.0	27.8	13.6
	Inhlanyelo fund	1.9	5.6	9.1
	SIDC	1.9	16.7	9.1
	Standard Bank	3.8	2.8	4.5
	Swazibank	7.5	11.1	22.7
	First National Bank	0.0	2.8	4.5
Bank account	Yes	69.8	91.7	90.9
	No	30.2	8.3	9.1

7.4 Factors influencing farmers' involvement in contract arrangements

Farmers' involvement in contract agreements with other actors in the value chain depends on the set of demographic and socio-characteristic factors of farmers, as indicated in Table 7.3.

The results in Table 7.3 were obtained when the data was analysed using the contract agreement logit model. The model correctly explains 51 % of the variation in the dependent variable (contract agreement) and explanatory variables, as evidence of the Nagelkerke R square. The

Nagelkerke R square indicates a moderately strong relationship of 51 % between contract agreement and the independent variables, relating a good fit of the model to the data. Overall, a majority of the respondents (58 %) were not engaged in contract agreements. Logistic regression analysis was employed to predict the probability that a respondent would agree to be involved in a contract agreement with other value chain actors. A test of the full model versus a model with intercept only was statistically significant at 1 %, with 10 degrees of freedom and χ^2 = 39.932. This means that the model with the variables is better compared to the one with the constant only. The model is able correctly to classify 66 % of those who are involved in contract agreements with other stakeholders in the value chain and 75 % of those who did not, for an overall correctly predicted estimated model rate of 71 % sample cases.

The results of the logit model, although some coefficients are not significant, indicate that participation in contract agreement by a farmer is positively influenced by gender of the farmer, off-farm income, access to market, marketing information, extension services, loan facility from a bank for agricultural production, and being a member of a farmers' association. Participation in contracts is negatively influenced by access to credit, age of the farmer and having a bank account. With the exception of having a bank account, the other coefficients all have the expected signs.

A majority of the variables were significantly associated with farmers' involvement in contract agreement with other actors in the value chain. Three variables – bank account, loan facility for agricultural production, and gender of the farmer – were not statistically significant. Age and off-farm income were significant at the 10 % level, and access to credit, marketing information, extension services and member of a farmers' association were significant at the 5 % level, while access to market was significant at 1 % level. This shows that access to market provides a greater opportunity for farmers to become involved in contractual agreements mostly with buyers, as this will guarantee a market for their product.

A farmer who has access to formal credit is 0.05 times less likely to enter into a contract agreement with either input suppliers and or output buyers, when holding all other variables constant. Stated in another way, for every one-unit increase in farmers' access to credit, we expect a 2.9 decrease in the log-odds of a farmer to participate in contract farming. The result is similar to studies by Costales *et al.* (2007); Sharma, (2008) and Tongchure and Hoang (2013) where in their studies the logic was that producers with relatively more constrained access to credit were more likely to participate in informal or formal agreements with intermediaries in

order to benefit from the contracting firm . This contradicts the findings of Swain (2012) and Mwambi *et al.* (2013), suggesting that farmers with access to formal credit are willing to participate in contract farming because they are able to purchase farm inputs, as well as pay for proper storage and transport facilities which are requirements usually needed by contractors before entering into contract.

Table 7.3: Factors influencing farmers' involvement in contract agreements

Variable	B (coefficient)	Wald x2	P (p-value)	Odds Ratio
Age	-0.039*	2.734	0.098	0.962
Gender	0.933	1.551	0.213	2.543
Off-farm Income (OI)	0.483*	3.698	0.054	1.620
Access to credit (Cr)	-2.947**	4.478	0.034	0.052
Access to market (AM)	2.770***	11.783	0.001	15.955
Access Marketing information (AMI)	0.503**	4.975	0.026	1.654
Extension	1.482**	4.058	0.044	4.404
Bank Account (BA)	-1.835	2.599	0.107	0.160
Loan Facility (LF)	2.007	1.942	0.163	7.441
Association Member (FA)	2.576**	5.658	0.017	13.142
Constant	-3.914**	5.418	0.020	0.021

*,**,***Statistically significant at 10 %, 5 % and 1 %respectively. R^2 = 51 % and correct prediction = 71 %

Explaining the results using the odds ratio, it can be said that an older farmer is 1.0 times less likely to participate in contract farming. This finding is in line with a study by Sharma (2008) and Musara *et al.* (2011), who stated that the negative sign for the age variable might be due to the negative correlation between age and adoption decision for most technologies in dynamic economic environments. That is, younger farmers tend to be more willing to adopt new technologies than their older counterparts are. As stated earlier, older farmers tend to be risk-averse and may avoid contract farming in an attempt to avoid risks associated with the initiative. This result is contrary to findings by Costales *et al.* (2007), who found that older farmers are more likely to participate in contract farming.

Access to market was identified to have a positive and significant effect on farmers' involvement in contract agreements, implying that when a farmer has access to markets, it is more probable that he or she will be involved in a contract agreement. The variable has the largest marginal effect on a farmers' involvement in contractual agreement. A farmer with market access is 16 times more likely to be involved in contractual agreement than the one

who has no market access. Access to markets enables a farmer to obtain relevant and current information about prices, grades, weights and buyers. In the contract, these actors are able to agree on prices and different grades for cattle, allowing for information symmetry.

A farmer who is a member of a farmers' association is 13 times more likely to participate in contract farming than the one who is not a member of an association. This variable has the second-largest marginal effect in contract participation. An explanation may be that, if farmers are members of a farmers' association, they are able to pool their resources (production inputs and supplying the market), have more bargaining power, and also reduce the transaction costs of agribusiness firms. This will then decrease the chances of contractors preferring large-scale farmers in favour of smallholder farmers. Moreover, when a farmer is member of a cooperative, he or she has verbal, and sometimes written, agreements with the Cooperative in terms of product supply, prices, quality, inputs use, etc. This finding is in line with the results by Sharma (2008) and Tongchure and Hoang (2013) that farmers in farmers' or agricultural associations will participate in contract farming.

The odds ratio for off-farm income indicates that, when holding all other variables constant, a farmer with off-farm income is 1.6 times more likely to become involved in contractual agreements with buyers of cattle and input providers. These findings vindicate studies by Sharma (2008), Wainaina *et al.* (2012) and Swain (2012), who found that having other sources of income will increase the chances of farmers' participating in contract farming. On the contrary, Catelo and Costales (2014) and Musara *et al.* (2011) stated that when smallholder farmers have higher levels of off-farm and non-farm income, the farmers are less likely to participate in contract farming because they have enough to finance their farming activities and still remain with enough for contingencies.

Similarly, the odds ratio for marketing information indicates that a farmer with access to market information is 1.65 times more likely to have access to marketing information for their product when they participate in contract farming than a farmer with no access to market information.

Furthermore, a farmer who receives extension services from the government and NGOs is 4.4 times more likely to become involved in contract agreement than a farmer with no access to extension services at all. The results are in line with the study by Wainaina *et al.* (2012) in terms of significance, but contrary in the sense that their extension variable was negative, implying that farmers who obtain technical advice from government extension agents or NGOs

are likely to be more aware and informed of alternative marketing channels and also production methods, and thus are less likely to participate in contract farming.

7.5 Factors influencing farmers' access to formal credit

Farmers' access to credit from formal financial institutions depends on the set of demographic and socio-characteristic factors of farmers, as indicated in Table 7.4.

Table 7.4 presents the results of the logit regression model. The model's explained variation in the dependent variable (access to credit) is 26.2 % as evidence of the Nagelkerke R square. The Nagelkerke R square indicates that the explanatory variables explains about 26 % of the variance in access to credit, suggesting a modest fit of the model to the data. Since the data was analysed using a logistic regression model, the goodness of fit will be better tested with a χ^2 statistic due to non-linearity of the model. Overall, a majority of respondents (56 %) had no access to credit. Logistic regression analysis was employed to predict the probability that a respondent would have access to credit. The predictor variables are as described above. A test of the full model versus a model with intercept only was statistically significant at 1 %, χ^2 = 19.35 and 8 degrees of freedom, meaning the model with the variables is better than when the model only has the intercept. The model was able to correctly classify 59 % of those who had access to credit and 82 % of those who did not, for an overall correctly predicted estimated model rate of 72 % sample cases.

Table 7.4 shows the logistic regression coefficient (column B), Wald test, p-value and odds ratio for each of the variables/predictors. The odds ratio can be calculated in SPSS, it actually calculates this value of the *In* (odds ratio); these values are reported in the column Odds Ratio in Table 7.4. Employing a 0.05 criterion of statistical significance, herd size, age and training variables had significant partial effects on access to credit from formal financial institutions. Further, employing the 0.1 criterion of statistical significance, only income had significant partial effects, while the other variables (farm size, contract agreement, cattle fattening and market information) were not significant, even at 0.1 criterion.

The result corresponds with the a priori expectation, except the negative effect of marketing information and being involved in cattle fattening. These two variables were not significant for farmers' access to credit. The non-significance of contract agreement was also not expected, although it was positive.

For herd size, which was significant at 5 % level, a farmer with a larger herd size is 0.95 times less likely to access credit from a financial institution than a farmer with less herd size. The prediction was that the larger the herd size, the less likely a farmer would be willing to access credit from a financial institution as they can easily convert cattle into cash. Yehuala (2008) stated that, as the total number of animals in the household increases, the household would be less likely to go for credit, as they can also be easily converted into cash when demand arises. This can be attributed to increases in wealth and income base of farm households, which renders more money available in the households.

Age was significant at 5 % level and yielded positive results. The odds ratio for age indicates that, holding all other variables constant, an older farmer is 1.05 times more likely to gain access to credit from a financial institution than is a younger farmer. The result on age is similar to the finding by Mohamed (2003) which reveals age as being one of the five socio-economic factors that were found to influence smallholders' access to credit from formal and quasi-formal credit institutions. Chauke *et al.* (2013) stated that farmers' attitude towards risks will affect access to credit from a formal institution; generally it is perceived that older farmers are risk-averse and that young farmers are risk takers, thus credit institutions will provide credit to risk averters and less risky businesses.

Similarly, training has a positive effect on the access to credit, because this shows that the farmer has knowledge of the business and the chances of failure are less. At 5 % level of significance, the results show that trained farmers have higher probabilities of accessing credit. A farmer with training in beef cattle production and marketing is 3 times more likely to gain access to credit than is a farmer with no training. This finding vindicates studies conducted elsewhere, such as Mohamed (2003), and Etonihu *et al.* (2013). This may be attributable to the fact that educated and formally trained farmers have a better understanding of banking procedures and rules for acquiring and using formal banking financial product and services, and also attain high production in their farming activities.

Further, income yielded a positive result, but was significant at the 10 % level. Predictions stated earlier were that if a farmer has some sort of income from other businesses, there are higher chances that a financial provider will provide a loan for other endeavours. A farmer who receives income per month from other businesses is 1.4 times more likely to receive credit from a financial institution than is a farmer with no income at all. This finding vindicates a study finding by Muhongayirea *et al.* (2013) in rural Rwanda that off-farm income has significant

influence in farmers' participation in the credit market. This finding, therefore, implies that poor farmers might be excluded from accessing formal credit, perhaps because they lack appropriate collateral.

Table 7.4: Factors influencing farmers' access to formal credit

Variable	B (coefficient)	Wald x2	P (p-value)	Odds Ratio
Herd size (Hsize)	-0.048**	5.904	0.015	0.954
Age	0.045**	5.019	0.025	1.046
Training	1.144**	4.725	0.030	3.140
Farm size (Fsize)	0.070	0.613	0.434	1.073
Off-farm Income (OI)	0.335*	3.208	0.073	1.397
Contractual agreement (CA)	0.634	1.373	0.241	1.885
Access Marketing information (AMI)	-0.122	0.520	0.241	0.885
Cattle fattening (CF)	-0.634	0.716	0.397	0.530
Constant	-2.931**	6.479	0.011	0.053

*, **,***statistically significant at 10 %, 5 % and 1 % respectively. R^2 = 26 % and correct prediction = 72 %

These results suggest that the significant factors affecting farmers' access to credit include herd size, age, training and income received from other businesses. It is therefore probable that herd size, in combination with income from other businesses, age and training and/or knowledge on farm business and accounts, plays a distinctive role in gaining access to credit by the farmer. If the business plan of the farmer is good and viable, lack of income in other businesses may be a factor which may be insignificant with time.

7.6 Contract participation in improving access to credit

The assumption was that having a contractual agreement with other actors in the value chain will enhance or improve access to credit from formal financial institution for smallholder farmers. Research has shown that contract participation provides benefits to the contracted farmer, which includes amongst other things access to credit (Hudson, 2000; Costales *et al.*, 2007; Tongchure and Hoang, 2013; FAO, 2013). Sharma (2008) and Tongchure and Hoang (2013) concluded that farmers use the contracts as collateral in order to access credit from

formal financial institutions, thus encouraging farmers to participate in contract farming, as they will be less dependent on informal sources, mainly money lenders, for credit requirements.

Many smallholders are credit constrained as this study shows and other studies that have been reviewed in the literature. Hence they do not have access to farm inputs needed to improve the production and productivity of their enterprises. Agribusiness firms usually include forward payment or provision of inputs in contracts to overcome this problem (Simmons, 2002). Many studies have shown that contract farming offers clear opportunities for smallholders. Contracts enable farmers to have access to a reliable market, it provides guaranteed and fixed pricing structures and most importantly, it provides access to credit, inputs and production services (Little and Watts, 1994; Hudson, 2000; Singh, 2002; Simmons, 2002; Bijman, 2008).

In the model of factors affecting contract participation, the variable access to credit was significant but negative. This shows a negative relationship between access to credit and contract participation, meaning contract participation is negatively determined by access to credit from formal financial institution. The interpretation is that, a farmer who has access to credit from formal financial institution is less likely to participate in informal contract or formal contract. This is because farmers mostly participate in contract farming in order to benefit from contract farming, which is, having access to credit, markets, inputs and production services. Studies (Hudson, 2000; Singh, 2002; Simmons, 2002) have emphasised that farmers engage in contract in order to benefit from those contracts in terms of input services, but if a farmer already has access to credit there is no need for that farmer to participate in the contract. This is because they can simply use the money they have borrowed from the financial institution to improve their enterprises, operational cost and accessing the market.

In the model of factors affecting access to credit, the variable of contract agreement was positive but not statistically significant. The positive variable indicates that contractual agreement will increase the probability for a farmer to access credit from a formal financial institution. The insignificance of the variable, contract agreement in this model was not expected. This then contradict results of previous studies (Hudson, 2000; Singh, 2002; Simmons, 2002; Bijman, 2008). Da Silva (2005), in a study of, the growing role of contract farming in agri-food systems development: drivers, the researcher found that access to credit is enhanced under provision of a contract. The credit may be supplied in kind (input provision) by the contracting firm and/or the banking system. The banks also accept the contractual commitment as it provides a sufficient guarantee for the loan.

The author is not able to establish the cause of this relationship between contract participation and access to credit in the study. This is because previous studies show a positive and significant relationship between the two. But the following explanations are forwarded by the author, that most of the smallholders had access to informal finance (demanded credit from Friends/relatives, Cooperatives/associations, Microfinance institutions) therefore they do not require smallholders to participate in contract in order to give out loans or credit. The current study only dealt with smallholders with informal contracts (not legally binding) therefore they do not provide a sufficient guarantee for a loan in a formal financial institution.

Previous studies (Simmons, 2002; Wooded, 2003; Bijman, 2008) were mostly investigating the benefits of contract farming, advantages of contract farming and/or why smallholders engage in contract while the current study was investigating the role of contracts in improving or enhancing access to credit for smallholder farmers. Therefore the current study was specific to contract and access to credit only not other benefits or advantages of contracting. The study was also specific to access of credit from formal financial institution while previous studies (Singh, 2002; Ruben et al., 2007; Catelo and Costales, 2014), the results were from investigation of access to credit from contracting firms

7.7 Summary

It can be gathered from both the descriptive and empirical analyses that farmers in SNL who are involved in beef cattle farming are rarely involved in formal contract agreements. They are mostly involved in informal contracts or verbal agreements which may not be as legally enforceable as a formal or written contract. From the empirical results, the probability that smallholder farmers will participate in formal contract farming is positively and significantly influenced by off-farm income, better access to extension services, being a member of a farmers' association, having access to assured market, and access to marketing information. Factors that negatively and significantly influence chances of a farmer to be involved in contract agreement willingly are age of the farmer, and having access to formal credit from a financial institution. Variables which had no significance but positive influence in contract farming were gender of the farmer and having a loan facility from a financial institution for agricultural production, while having a bank account had a negative influence on a farmer participating in contract farming. The non-significance of these variables implied that gender, having a loan, and having a bank account were not effective in contract participation.

Access to credit by smallholder cattle farmers in Swaziland is low, but can be positively and significantly influenced by a farmer's income which is received from other business activities, the age of the farmer (meaning the older the farmer is, the higher the chances are that a financial provider might offer credit) and training either formally or informal, that is, training in good husbandry practices, record keeping, and overall farm management. Access to credit is negatively but significantly influenced by herd size, implying that farmers with larger herd sizes will be less likely to want to access credit, as they may easily convert cattle into cash, thus having enough to finance their farming activities and still remain with enough for contingencies.

Although not significant, access to credit was positively influenced by farm size and contract agreement. The non-significance of these variables implies that having land, more especially on SNL where smallholder farmers are located, has no effect on smallholders' access to credit, as this cannot be treated as collateral because the land has no title since it is land held in trust for the Swazi nation by the Swazi king. Similarly, the interviewed farmers were mostly involved in informal contracts or verbal agreements, which a formal institution may not recognise as legally binding for farmers to access a loan. Access to marketing information and being involved in cattle fattening affected access to credit negatively, but were not significant, implying that having information on markets and being involved in cattle fattening were not effective or sufficient for a farmer to gain access to credit.

From the empirical results of factors influencing farmers' involvement in contract agreement, access to formal credit was significant but negative. The conclusion is that farmers who have access to formal credit are less likely to participate in contract farming, as they will be able to finance their farming activities. This means that farmers participate in contract farming in order to gain access to a wide range of services, including access to credit, and research have indicated that the contracts may be used as collateral when farmers need to obtain credit from formal financial institutions. Having a contract may enable a smallholder farmer to have access to credit from the contracting firm to buy production inputs and invest in new technologies thus improving production and productivity. From the results of the factors that affect access to credit where the variable contract agreement was not significant, the study concludes that participation in contracts does not lead to improvement in access to credit for smallholder farmers from formal financial institutions. This unexpected finding emanates from the fact that the respondents that were interviewed were mostly involved in informal contract agreements which may not be considered by formal financial institutions as collateral.

CHAPTER 8
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This chapter provides a summary and the conclusion of the study. It also provides some recommendations arising from the study. The chapter is structured into six sections. After the introduction, aim of the study and methods and procedures are presented in the second and third section, respectively. Findings of the study are presented in the fourth section. The fifth section presents the conclusions, and the last section makes recommendation on how to improve credit access through contracts, on policy and future research.

8.2 Aim of the study

The aim of this study was to investigate the role of contracts in promoting access to credit for smallholder cattle farmers, cattle fatteners and traders in Swaziland. Specifically, the study determined the credit access status of smallholder cattle farmers, fatteners and traders, identified factors that determine smallholder cattle farmers', fatteners' and traders' access to credit from formal financial institutions and further determined whether participating in contracts leads to improved access to credit. In addition, the study also determined factors that may lead cattle farmers to become involved in contract agreements with other actors in the value chain.

8.3 Methods and procedures

A sample of 111 cattle farmers (53 cattle producers, 36 cattle finishers and 22 cattle traders) was randomly selected and interviewed, using a face-to-face questionnaire. Data on farmers' access to finance, socio-economic characteristics, and participation in contractual agreements were collected and analysed. Both descriptive and econometric analyses were performed.

8.4 Findings

Cattle farmers keep cattle for a wide range of services. The principal contribution of cattle to rural households is the provision of family income. During focus group discussions, farmers revealed that keeping cattle is traditionally not only as a source of family income, but also for indicating social status (prestige), *lobola* (dowry), draught power for crop farming, and the provision of food consumption items, such as milk and meat (during celebrations and funerals). They also provide sources of employment in rural areas. Cattle farmers differ in terms of their operations, that is, operating as cattle producers, cattle finishers and cattle traders.

8.4.1 Characteristics of respondents

The results from this study showed that most cattle farmers were males, that is, 72 % of producers, 56 % of finishers, and 91 % of traders. The average age was 50.3 years for producers, 45.4 years for finishers, and 51.3 years for traders. The results further showed that, on average, cattle farmers had received primary school education, which is up to seven years of schooling.

As stated above, the major source of income for cattle farmers is cattle farming. Since the study was conducted in SWADE developmental project areas, farmers are also involved in sugarcane farming and other crop production activities, such as maize and vegetable production. The average range of gross income in other businesses which cattle farmers were involved in ranged between E2 001 and E5 000 per month.

The descriptive analysis also revealed that 38 % of cattle producers, 53 % of cattle finishers, and 46 % of cattle traders are engaged in verbal purchasing contracts. During focus group discussions, it was revealed that cattle farmers were only involved in informal contracts, and not formal ones, which means that any party may change the terms or not abide by the contract. This may have undesirable consequences in terms of prices, grades and time of purchase. Most verbal contracts were either with SMI or local butcheries. When farmers were asked if they would like to be involved in formal contracts, 66 % of cattle producers, 81 % of cattle finishers, and 73 % of cattle traders revealed that they would like to be involved in formal contracts with the relevant actors in the beef value chain. The reasons cited were access to finance, guaranteed markets, access to production inputs, and access to market information.

It was found that a majority of the respondents were members of farmers' association (55 % for producers, 92 % for finishers, and 64 % for traders). Farmers who were members of a farmers' association cited the following benefits: improvements in farmers' income, access to piped water, and access to credit (mostly for those involved in feedlotting).

8.4.2 Factors that determine participation in contracts

The logistic regression model predicted that 58 % of the respondents were not involved in contract arrangements with other value chain actors. The results of the logistic regression model on factors that determine participation in contracts revealed that cattle farmers are positively and significantly influenced by off-farm income, better access to extension services, being a member of a farmers' association, having access to assured market, and access to marketing information in order for them to engage in contract arrangements with other actors in the value chain. Participation in contract farming by smallholder farmers was further influenced negatively and significantly by age of the farmer and having access to formal credit.

Contract farming, or having a contract, has an impact on a smallholder cattle farmer by improving the chances for them to have access to formal credit and other inputs and services that are necessary for production and marketing of beef cattle in Swaziland. The hypothesis was that, smallholder farmers' involvement in contract farming is enhanced by age of the farmer, off-farm income, access to credit, access to extension services and markets. Therefore the hypothesis is accepted.

8.4.3 Factors affecting access to credit

As it is the case in other developing countries, access to funding for smallholder cattle actors in Swaziland is mainly realised through 'informal' channels. Relatives and friends represent the major source for such funding. This is a missed opportunity for formal credit providers, whose regulations and prerequisites are too strict for attracting this category of borrowers.

The magnitude of access to credit showed that 64 % of cattle producers and fatteners had no access to credit, while half of the traders interviewed had access. The mostly utilised source of

credit was friends and relatives. The logistic regression model predicted that 56 % of the respondents had no access to credit from formal institutions.

The results of the logistic regression model on farmers' access to credit revealed that formal credit providers would provide finance to cattle farmers if they have relevant training on livestock production and marketing, and have access to income from other business activities that they are involved in. They also consider the numbers of livestock owned and the age of the cattle farmer. The hypothesis stated was that, access to credit is enhanced by age of the farmer, herd size, income received from other businesses and farmer training. Therefore, the hypothesis is true, thus accepted.

8.4.4 Contractual agreement in improving access to credit

In this study contractual agreement was in the form of informal contractual agreements, that is, having a verbal contract with traders to buy cattle from the farmer or with SMI to buy cattle and provide feed on credit. Thus smallholder farmers that were interviewed were mostly involved in informal or verbal contract agreements.

Access to credit negatively affects farmers to engage in contractual agreement as evidence of the contract agreement model. Further exploring the access to credit model, the results revealed that contract agreement does not determine access to credit. This means that being involved in contractual agreement, in this case informal contracts, does not lead to improvement in access to credit for smallholder farmers from formal financial institution. The hypothesis tested was that, participation in contracts leads to improved access to credit for smallholder cattle farmers. The researcher therefore rejects the hypothesis because the results revealed that contract agreement does not determine access to credit.

8.5 Conclusion

This study has shown that, despite the high proportion of farmers who have private bank accounts, access to credit is still limited among cattle producers and cattle fatteners, and half of cattle traders have never contracted a loan from a financial institution. This is mainly attributable to farmers' lack of collateral which is required by the banks and microfinance

institutions. In Swaziland, the majority of smallholder farmers practise subsistence farming on SNL which is held in trust for the Swazi Nation by the King, and thus they lack the title deeds that might be used as collateral. The hypothesis formulated was that smallholder cattle farmers have limited credit access from financial institutions. The researcher therefore accepts the hypothesis.

This study has concentrated on contract farming as an institutional arrangement for improving or enhancing access to formal credit from formal financial institutions for smallholder cattle farmers involved in beef cattle production. Contract farming is expected to enable smallholder farmers to access better quality inputs, such as seeds, fertilisers, pesticides, extension services, and more especially credit from the commercial sector. Contract farming has also the potential to reduce the market, price and production risks which farmers face. However, it all depends on the nature of contracts, legislation for regulation of contract farming, enforcement, the role of government, dispute resolution mechanisms, etc.

8.5.1 Contract participation

This study has shown that participation in contract farming by smallholder farmers was affected by off-farm income, access to assured markets, marketing information, extension services, age of the farmer, being a member of farmers' association, and access to credit. There is a need to assist farmers to receive better education, gain access to timely and quality inputs such as extension services, markets, and institutional/formal credit, and receive better opportunities for off-farm income to improve financial status. There is a need to promote non-political farmers' organisations to improve smallholders' bargaining power, as well as reduce transaction costs with agribusiness companies.

The conclusion drawn from above is that, while participation in contractual agreements is significantly influenced by off-farm income, access to assured market, marketing information, extension services, age of the farmer, being a member of a farmers' association and access to credit, there is at present limited potential for implementing successful contracts because of the lack of appropriate institutional arrangements and incentives to support such innovations. Some of these incentives include the provision of adequate numbers of diversified markets and marketing channels, and subsidised cattle feed and veterinary medication prices. The study has

shown that gaining access to credit is an important reason for participating in contractual arrangements and that participating in these contracts improves access to credit.

8.5.2 Access to credit

This study has also shown that access to credit from formal institutions was affected by herd size, age of the farmer, training of farmers, and income derived from other business activities. From the government perspective, improving farmers' skills through training and capacity building in topics related to animal feeding, and the use of alternative non-grain feeding systems is an important issue. The availability of irrigation in specific areas of the country would allow farmers to gain access to fodder and crop residues (such as sugarcane tops) with very low costs. Animal health issues and market information are also of crucial importance for cattle producers and fatteners.

The study concludes that, while access to credit maybe affected by herd size, age of farmer, training and being involved in other income generating projects, there is at present limitation in accessing credit attributable to the strict requirements for accessing loans and the limited regulation of formal financial institutions' interest rates by the Central Bank of Swaziland. The physical absence of regulatory enforcement in the financial market seriously militates against farmers' chances of accessing credit from formal institutions.

8.5.3 Contract participation in improving access to credit

The study has revealed through the contract participation model that having access to credit is essential in integrating smallholder cattle farmers into the overall economy, in that financial institution either formal or informal provide seasonal credit to farmers, thus enabling them to invest in new and/or improved agricultural enterprises and technologies. This study has shown that smallholder farmers have credit constraints but if they have access to credit from formal financial institution there is no need for farmers to be involved in contractual agreements. Credit access enables them to access credit for working or fixed capital, operational costs and access to markets for improve agricultural production and productivity.

In the model, access to credit where the variable contract agreement was not significant the conclusion is that participation in contracts does not lead to improvement in access to credit from formal financial institution. This is because contract agreements were in the form of informal contractual agreement, therefore informal contractual agreement thus do not play an important role in improving access to credit of smallholder farmers from formal financial institutions. This is because informal contracts do not address the loan collateral problem and/or strengthen the creditability of future cash flows for loan repayments.

8.6 Recommendations

Based on the results of this study and the conclusions drawn above, the following are recommended:

8.6.1 Policy recommendations

- ***Participation of smallholder cattle farmers in formal contracts should be enhanced***

The study found that smallholder livestock farmers in study area only engage in informal contracts which may not be recognised by formal institutions for granting credit. Therefore, efforts should be made to encourage smallholder livestock producers to participate in formal contracts and this can be achieved through the promotion of access to markets and marketing information, promoting farmers' involvement in farmers' association, enhancing access to extension services and promoting access to credit through contract farming.

The Government of Swaziland, through the MOA and NGOs responsible for the improvement and commercialisation of cattle farming in Swaziland, should prioritise and sequence reforms, such as contract farming and investments in the livestock industry, including infrastructural development in order to unleash the growth potential of the industry. In doing so, it is important that the policies to promote diversification, credit lending and farmers' training be brought together within a coherent strategy, rather than being implemented as a series of ad-hoc interventions.

There is need for government to put incentives in place that will encourage cattle farmers to become involved in contractual agreements through the provision of adequate numbers of

diversified markets and marketing channels, and subsidised cattle feed prices and veterinary medication. From the study, it was observed that farmers were mostly involved in verbal or informal contracts, and thus there is a need to formalise the mechanisms so that farmers are able to commercialise their production.

The study, however, argues that these policy recommendations create the necessary conditions to support the existing regulatory policy framework on financial markets and vertical coordination in Swaziland. It further acknowledges that the mere implementation of formal voluntary contract agreements and financial instruments for farmer lending will not necessarily combat the problem of lack of vertical coordination and the financial exclusion of farmers in total. The best overall results are to be expected when existing policy instruments in a policy-mix approach are implemented together with the recommended initiatives.

- ***Access to credit for smallholder cattle farmers should be enhanced***

The study found that smallholder cattle farmers have low access to credit from financial institutions. Access to credit from formal institutions, could be enhanced by encouraging beef cattle farmers to diversify their economic activities, thus receiving income from other businesses, and the provision of producer training (and trader training) on marketing and production activities is highly encouraged.

The success of smallholder beef cattle farming depends on access to credit (for acquisition of inputs), institutional support, improvement in government policies, and socio-economic initiatives. The innovative beef value chain development scheme is one of the support programmes supported by government and other stakeholders to help motivate individual farmers and strengthen the beef value chain for better promotion of production and productivity of smallholder farmers. However, there is still a need for support programmes, such as a more supportive policy environment to reduce the obstacles inhibiting the effective access to financial and credit services, and to produce a conducive environment for contractual agreements, infrastructure development (cattle sales yards), improvement of markets and dynamic opportunities for smallholder beef cattle development in Swaziland.

There is need for government to put incentives in place that will encourage formal financial institutions to make credit available so that cattle farmers might have access to credit through the provision of adequate numbers of diversified credit markets and credit marketing channels,

subsidised loans and/or guaranteed loans. As previously stated, farmers mostly gained access to credit from informal institutions or microfinance institutions, and thus there is a need to formalise and increase the loan amounts so that farmers are able to commercialise their production.

8.6.2 Recommendations for future research

The study findings are specifically relevant to SWADE developmental areas in the Lowveld ecological zone of the country, which may not be representative of beef cattle production and marketing in terms of gaining access to credit. Therefore, it is suggested that a similar study be undertaken in all other areas.

The non-significance of the contract agreement variable in the access to credit model may emanate from the fact that smallholder farmers interviewed in the study were only involved in informal contractual agreement or verbal contracts. This indicates the need to predict by statistical analysis, for example the propensity score matching analysis to investigate the casual effect of contract participation in improving access to credit for smallholder farmers from formal financial institution from formal contract participants and non-contract participants.

Another alternative is to conduct in the future a study that involves both smallholders with formal contractual agreements which are legally binding, and smallholders with informal agreements, and compare the results from both groups in terms of access to credit from financial institutions. Formal contract may be used by smallholder farmers as collateral during loan application from formal financial institutions.

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APPENDIX A

INNOVATIVE BEEF VALUE CHAIN DEVELOPMENT SCHEMES IN SOUTHERN AFRICA

ILRI-IFAD-MOA-SWADE

Cattle Producers -Finishers' Survey

1. Producer identification

1.1. Name_____ **1.2.** Gender [1=male; 2= female] _____

1.3. Age_____ **1.4.** Educational Level _____

[1= illiterate; 2=literate; 3=primary; 4=secondary; 5=college; 6=university]

1.5. Cell phone number:_____ **1.6.** Year when you started working as cattle producer_____

1.7. Is cattle producing your main business activity? [1=yes; 2= no]_____

1.8. Are you involved in other business activities? [1=yes; 2= no]_____

1.8.1. If yes, specify: _____

1.9. Indicate the level of gross income per month that you make in the other business activity: code___
[1= Less than E1 000; 2=E1 001 – E2 000; 3=E2 001 – E5 000; 4=Over E5 000]

1.10. Which of the following business activities do you engage in (getting money from these activities)? (Tick as many)

Cropping [ ] Livestock production [ ] Livestock transport [ ]

Livestock fattening [ ] Slaughtering [ ] Meat processing [ ]

Meat retailing [ ] Feed services [ ] Breeding services [ ]

Credit services [ ] Veterinary and animal health services [ ] other (specify) [_____]

1.11. Specify and rank the main type (as share of income) of livestock production you are concerned with: (1st = most important)

1st [_____] 2nd [_____] 3rd [_____] [1=cattle; 2=pig; 3=sheep; 4=goats; 5=poultry; 6=other (specify___)]

1.12. Do you belong to an association or a formal group of farmers? [1=yes; 2= no]_____

1.12.1. If yes, what's the name of the association? _____

1.12.2. If yes, when have you joined the association? _____

1.12.3. What are the main benefits of joining it? _____

_____

2. Farming and livestock inventory

2.1. Agricultural plots

Plot No.	Location (code a)	Size (Ha)	Ownership (code b)	Production type (code c)	Water source (code d)	Cattle standing on the land (code e)
1						
2						
3						
4						
5						
6						

Codes

Location (code a)		Ownership (code b)	Production type (code c)	Water source (code d)	Cattle standing (code e)
1 =Sihoye 2 = Madlenya 3 = Siphofaneni 4 = Gamula 5=Lubuli	6 = Ndzevane 7= Mangweni 8 = Sithobela 9 = Tshaneni 10= Other (specify)	1 = Owned 2 = Rented in 3 = Rented out 4 = Shared in 5 = Shared out 6 = Communal area 7 = Other (specify)	1 = Food crops 2 = Fodder crops 3 = Pasture 4 = Sugar cane 5 = Vegetables 6 = Fruits 7 = Other (specify)	1 = River/streams 2 = Dams 3 = Piped water 4 = Borehole 5 = Other (specify)	1 = No 2 = All year around 3 = Short periods of the year 4 = Other (specify)

2.2. Number and type of cattle owned or managed

Age category	Males			Females			Total
	1	2	3	1	2	3	
age ≤6 months							
6 months < age ≤ 2years							
2 years < age ≤ 4years							
4years< age							

Codes

1 = Owned and managed by the HH ; 2 = Owned but not managed by the HH ; 3 = Managed but not owned by the HH

2.3. Specify and rank the main type of **cattle production** systems used: (1st = most important)

1st [_____] 2nd [_____] 3rd [_____] [1=zero grazing; 2=grazing; 3=mixed]

2.4. Type of grazing (tick as many)

Communal [ ] Private [ ] Rangeland [ ] Zero [ ]

2.5. Specify and rank the main type of feed used for **cattle production**: (1st = most important)

1st [_____] 2nd [_____] 3rd [_____] 4th [_____]

[1=pasture; 2=crops residues; 3= Sugarcane residues; 4=Hay; 5=conserved fodder; 6=industrial feed; 7=other (specify_____)]

3. Cattle trading

3.1. Specify and rank your main **cattle customers/buyers**?

1st [_____] 2nd [_____] 3rd [_____] 4th [_____]

[1=SMI; 2=Butchers; 3=Processors/abattoirs; 4=Traders/brokers; 5=Farmers; 6=Fatteners; 7=other (specify_____)]

3.2. Do you have written contracts or verbal agreements with these **customers/buyers**? [1=yes; 2= no]__

3.2.1. If yes, specify with whom (use the same codes as above):_____

3.2.2. If yes, what is the number of these customers/buyers you have a written contract/formal agreement with? _____

3.2.3. If yes, what is included in these purchasing contracts or verbal agreements?

Arrangement	1=yes; 2= no	Arrangement	1=yes; 2= no
Time of purchase		Animal Health regime followed	
Price for purchase		Conditions and timing of payment	
Price/kg or price/animal		Supply of feed by the buyer	
Condition of animal		Supply of any other livestock services/inputs by buyer	
Weight of animal		Supply of any cropping services or inputs by buyer	
Age of animal		Agreement surrounding labour or wage	
Feeding regime followed		Exchange of any consumer goods	
Breeding		Transport of animals at any time during growth	
Transport of feed		Transport of animals at time of sale	

3.3. Indicate the number and type of cattle sold during **last year**

Type of cattle (code a)	Number	Price (L/kg)	Market channels (code b)	Location (code c)	Transportation mode (code d)	Payment form (code e)

Codes

Type of cattle (code a)	Market channels (code b)	Location (code c)	Transportation mode (code d)	Payment form (code e)
1 = Weaners 2 = 1-2 year old steers/ bulls 3 = 3-5 year male cattle 4 = Old cows 5=Other (specify)	1 = SMI 2 = Butchers 3 = processors/abattoirs 4 = Traders/brokers 5= Farmers 6= Cattle fatteners 7 = Other (specify)	1 = Farm gate 2 = Dip-tanks 3 = Livestock market 4 = Buyer's location 5 = Fattening ranches auction sale 6 = Other (specify)	1 = Own transport 2 = On foot 3 = Public transport 4 = Private transport 5 = Buyers' transport 6 = Other (specify)	1= cash on delivery 2= cash in advance 3= cash with delay 4= part payment 5= in kind on delivery 6= in kind in advance 7= in kind with delay 8= Other (specify)

4. Market information, extensions services and training

4.1. Who provides with market information? (Tick as many)

Government [ ] Traders/brokers [ ] Butchers [ ] Farmers [ ] TV/Radio [ ] other [ ] _____

4.2. Which kind of market information are you looking for? (Tick as many)

Prices [ ] Type of animals [ ] Type of buyers [ ] Quality of animals [ ] other [ ] _____

4.3. Have you participated in cattle production training during the last three years? [1=yes; 2= no]___

4.3.1. If no, why? _____

4.3.2. If yes, filling the table below:

Type of training	**Duration (days)**	**Organiser**
Record keeping		
Beef cattle marketing		
Beef cattle health		
General farm management		
Pasture/rangeland establishment and Management		
Beef cattle feeding		
Other_____		

4.4. Do you have a cattle extension officer operating in the area? [1=yes; 2= no]____

4.4.1. If yes, how many times/year does he visit your farm? (Code) _____

[1=Less than 3 times; 2=between 3 and 5 times; 3=between 6 and 10 times; 4=more than 10 times]

4.4.2. If yes, have the visits been helpful and how? [1=yes; 2= no]____

_____

4.5. Do you have a crop extension officer operating in the area? [1=yes; 2= no]____

4.5.1. If yes, how many times/year does he visit your farm? (Code) _____

[1=Less than 3 times; 2=between 3 and 5 times; 3=Between 6 and 10 times; 4=more than 10 times]

4.5.2. If yes, have the visits been helpful and how? [1=yes; 2= no]_____

_____

4.6. Please state the support provider and type of support provided

Support provider	**Type of support**									
	1	2	3	4	5	6	7	8	9	10
SDB										
NGOs										
SWADE										
MOA										
Microfinance I.										
Other_____										

Codes

1 = Training 2 = Advisory services 3 = Credit provision 4 = Provision of all services 5 = Provision of bull services	6 = Veterinary services 7 = Concentrated feed 8 = Fodder seed 9 = Breeding 10 = Other (specify)

5. Cattle fattening

5.1. Are you/have you been involved in cattle fattening activities? [1=yes; 2= no]___ (if no go to question 5.5)

5.2. When have you started the cattle fattening activity? _____

5.3. Do you have feedlot premises? [1=yes; 2= no] _____

5.3.1 If yes, how many standing cattle? _____

5.4. During the last year (or last year before stopping the fattening activity), how many animals have you fattened and sold? _____ Animals

5.5. What do you consider to be the best **weight** for starting to fatten a weaner/animal? ___kg

5.6. What do you consider to be the best **age** for starting to fatten a weaner/animal? __months

5.7. What could be approximately the market **price** of such weaner/animal? _____ Lilangeni

5.8. What do you consider to be the best weight for selling fattened cattle? _____kg

5.9. Starting at your ideal weight, how long does it take you to achieve this weigh? ____days

5.10. What could be approximately the selling **price** of such animal? _____Lilangeni

5.11. Would you consider working with cattle trader who will buy the animal to fatten on a contract scheme? [1=yes; 2= no]_____ (if no go to section 6 on credits and loans)

5.12. If the response is yes:

5.12.1. How many animals would you do this with? _____

5.12.2. What type of animals (code)? _____

[1=weaners; 2=1-2 year old steers or bulls; 3=3-5 year male cattle; 4=old cows;5=other (specify_____)]

5.12.3. Would you be prepared to pay the costs of feed/animal health/transport? [1=yes; 2= no]_____

5.12.4. When the animal is sold, the amount of money already advanced to pay production costs would be deducted. From the amount left over, what share would you accept or what amount of money? _____% or _____ Lilangeni

5.12.5. Do you prefer to be paid on the basis of per Kg of weight gained or as a share of the final price?

[1=per kg of weight gained; 2= share of the final price]_____

5.12.6. Which items would you want to monitor?

5.12.6.1. Growth rate via weighing? [1=yes; 2= no]_____

5.12.6.2. Feed levels and type on hand? [1=yes; 2= no]_____

5.12.6.3. Feed levels and type actually being fed? [1=yes; 2= no]_____

5.12.6.4. Animal health generally? [1=yes; 2= no]_____

5.12.6.5. Animal health interventions taken (e.g. vaccination or dipping)? [1=yes; 2= no]_____

5.12.7. Who is responsible if the animal dies within 1 month? _____

5.12.8. Who is responsible if the animal dies after 1 month? _____

5.12.9. Who is responsible is the animal is stolen? _____

5.12.10. If the fattening and sale activity is unsuccessful, are you willing to share in repaying the loan with the trader?[1=yes; 2= no]_____

5.12.10.1. If yes, how? (Code) _____

Codes

1 = cash payment of an agreed amount
2 = cash payment amounting to all the feed and input costs advanced
3 = contribution of some % of other animals which you would be required to sell
4 = provision of an animal to replace the one that died/other
5 = Other (specify)_____

5.12.11. If you had a contract for sale of animals, but another buyer offered you a better price or a better sales arrangement, what would you do (code)?_____

Codes

1 = stick with the contract
2 = renegotiate the contract
3 = buy other animals in addition to the ones under the contract
4 = abandon the contract and just sell to the one offering the best price
5=Other (specify) _____

6. Credits and loans

6.1. Do you or have you borrowed money? [1=yes; 2= no]_____

6.1.1. If yes, from whom? (Tick as many)

Friends/relatives [ ] Cooperatives/associations [ ] Banks [ ] Microfinance institutions [ ] Traders [ ] Farmers [ ] Input providers [ ] other [ ] _____

6.2. For your **livestock and farming activities,** have you received credits, loans or services from other stakeholders? ? [1=yes; 2= no]_____ (if yes please fill in the table)

Type of credit or service (code a)	From whom (code b)	Frequency (code c)

Codes

Type of credit or service (code a)	From whom (code b)		Frequency (code c)
1 = Cash money in advance 2 = Loan 3 = In kind product 4 = Veterinary service 5= Other (specify)	1 = Feed retailers 2 = Beef trader 3 = Farmer 4 = SMI 5= Butcher 6= Cattle fatteners	7 = Commercial bank 8 = Microfinance institution 9= Sugarcane company 10 = Input provider 11 = Other (specify)	1 = Only once 2 = Once a year 3 = 2 times a year 4 = Many times during the year 5 = At the beginning of the season 6 = Other (specify)

6.3. Do you have a bank account? [1=yes; 2= no]_____

6.4. Have you ever received any loan facility from a bank or a financial institution? [1=yes; 2= no]_____

6.4.1. If yes, specify the name of the institution/s: _____

6.5. Does your household own the following assets?

Type of asset		Does the Farmer own the asset? Y/N	Number owned/area	Current value
Rental buildings		[____]		
Permanent home		[____]		
Land		[____]		
Vehicles		[____]		
		[____]		
		[____]		
		[____]		
Other assets (specify)		[____]		
		[____]		
		[____]		
		[____]		

APPENDIX B

INNOVATIVE BEEF VALUE CHAIN DEVELOPMENT SCHEMES IN SOUTHERN AFRICA

ILRI-IFAD-MOA

Beef Traders' Survey

1. Trader identification

1.1. Name_____ **1.2.** Gender [1=male; 2=female]_____

1.3. Age_____ **1.4.** Educational Level _____
[1= illiterate; 2=literate; 3=primary; 4=secondary; 5=college; 6=university]

1.5. Cell phone number: _____ **1.6.** Year when you started working as cattle trader _____

1.7. Are you registered as a formal business? [1=yes; 2= no]_____

1.8. Is cattle trading your main business activity? [1=yes; 2= no]_____

1.9. What share of your income comes from cattle trading? _____%

1.10. What share of your income come from cattle trading during the last year? _____%

1.11. Is this share more than the previous year? [1=more; 2= equal; 3=less]_____

1.12. Are you involved in other business activities? [1=yes; 2= no]_____

1.12.1. If yes, specify: _____

1.13. Indicate the level of gross income per month that you make in the other business activity: code__
[1= Less than E1 000; 2=E1 001 – E2 000; 3=E2 001 – E5 000; 4=Over E5 000]

1.14. Which of the following business activities do you engage in (getting money from these activities)? (Tick as many)

Livestock production [ ] Livestock transport [ ] Livestock fattening [ ] Slaughtering [ ] Meat processing [ ] Meat retailing [ ]

Feed services [ ] Breeding services [ ] Credit services [ ]

Buying to sell to Farmers (Brokers) [ ] Buying on Tender (response to an advert/ project) [ ]

Veterinary and animal health services [ ] Cropping [ ] other (specify) [_____]

1.15. Specify and rank the main type of livestock you are concerned with: (1st = most important)

1st [_____] 2nd [_____] 3rd [_____] [1=cattle; 2=pig; 3=sheep; 4=goats; 5=poultry; 6=other (specify___)]

1.16. Do you belong to an association or a formal group of traders/farmers? [1=yes; 2= no]_____

1.16.1. If yes, what's the name of the association? _____

1.16.2. If yes, when have you joined the association? _____

1.16.3. What are the main benefits of joining it? _____

2. Cattle trading

2.1. Main region/district of **cattle** trading activities:_____

2.2. Specify and rank your main **cattle suppliers**?

1st [_____] 2nd [_____] 3rd [_____] 4th [_____]

[1=producers/farmers; 2=collectors/traders; 3=brokers; 4=other (specify_____)]

2.3. Do you have written contracts or verbal agreements with some of these **suppliers**? [1=yes; 2= no]_____ (if no go to Q. 2.4)

2.3.1. If yes, specify with whom (use the same codes as above):_____

2.3.2. If yes, what number of these suppliers you have a contract with? _____

2.3.3. If yes, what is included in these purchasing contracts or arrangements?

2.3.3.1. Time of purchase [1=yes; 2= no] _____

2.3.3.2. Price for purchase [1=yes; 2= no] _____ **2.3.3.3.** Per kg or per animal? _____

2.3.3.4. Condition of animal [1=yes; 2= no] _____

2.3.3.5. Weight of animal [1=yes; 2= no] _____

2.3.3.6. Age of animal [1=yes; 2= no] _____

2.3.3.7. Feeding regime followed [1=yes; 2= no] _____

2.3.3.8. Animal Health regime followed [1=yes; 2= no] _____

2.3.3.9. Breeding [1=yes; 2= no] _____

2.3.3.10. Conditions and timing of payment [1=yes; 2= no] _____

2.3.3.11. If yes, specify conditions (code):_____ [1=advance payment; 2=always pay cash on a spot; 3=always pa supplier after sales; 4always pay suppliers after a time period of …… weeks; 4=other (specify_____)]

2.3.3.12. Supply of feed by you to the farmer [1=yes; 2= no] _____

2.3.3.13. Supply of any other livestock services or inputs by you [1=yes; 2= no] _____

2.3.3.14. Supply of any cropping services or inputs by you [1=yes; 2= no] _____

2.3.3.15. Any agreement surrounding labour or wages in connection with the livestock purchase? [1=yes; 2= no] ___

2.3.3.16. Exchange of any consumer goods [1=yes; 2= no] _____

2.3.3.17. Transport of feed [1=yes; 2= no] _____

2.3.3.18. Transport of animals at any time during growth [1=yes; 2= no] _____

2.3.3.19. Transport of animals at time of sale [1=yes; 2= no] _____

2.4. Indicate the number and type of cattle purchased during **last year**

Type of cattle (code a)	Number	Reasons for purchase (code b)	What changes in these numbers or purposes over the last few years?	Main reasons for these changes (code c)

Codes

Type of cattle (code a)	Reasons for purchase (code b)	Main reasons for these changes (code c)
1 = Weaners 2 = 1-2 year old steers or bulls 3 = 3-5 year male cattle 4 = Old cows 5=Other (specify)	1 = Fattening for later sale 2 = Sale soon after purchase 3 = Slaughtering and sale soon after purchase 4 = To build up breeding stock 5 = Other (specify)	1 = Feed 2 = Credit 3 = Pricing issues 4 = Market situation 5 = International management issues 6 = Other (specify)

2.5. Specify and rank your main **cattle customers/buyers**?

1st [_____] 2nd [_____] 3rd [_____] 4th [_____]

[1=SMI; 2=supermarkets/hypermarkets; 3=butcheries; 4=processors/abattoirs; 5=traders; 6=producers, 7=other (specify_____)]

2.6. Do you have written contracts or verbal agreements with these **customers/buyers**? [1=yes; 2= no]_____ (if no go to Q. 2.7)

2.6.1. If yes, specify with whom (use the same codes as above):_____

2.6.2. If yes, what's the number of these customers/buyers you have a contract with? _____

2.7. Indicate the number and type of cattle purchased during **last year**

Type of cattle (code a)	Number	Market channels (code b)	Type of agreement (code c)	Payment form (code d)

Codes

Type of cattle (code a)	Market channels (code b)	Type of agreement (code c)	Payment form (code d)
1 = Weaners 2 = 1-2 year old steers/ bulls 3 = 3-5 year male cattle 4 = Old cows 5=Other (specify)	1 = SMI 2 = supermarket/hypermarket 3 = butcheries 4 = processors/abattoirs 5 = Traders 6= Producers 7= Cattle fatteners 8 = Other (specify)	1 = Written contract 2 = Verbal agreement	1= cash on delivery 2= cash in advance 3= cash with delay 4= part payment 5= in kind on delivery 6= in kind in advance 7= in kind with delay 8= Other (specify)

3. Cattle fattening

3.1. What do you consider to be the best **weight** for buying a weaner to fatten? _____kg

3.2. What do you consider to be the best **age** for buying a weaner to fatten? _____months

3.3. What could be approximately the buying **price** of such animal? _____Lilangeni

3.4. What do you consider to be the best weight for selling fattened cattle? _____kg

3.5. How long does it take to achieve this weight? _____days

3.6. What could be approximately the selling **price** of such animal? _____ Lilangeni

3.7. Do you buy weaners to fatten then sell? [1=yes; 2= no]____

3.8. Would you consider working with cattle on a contract scheme? [1=yes; 2= no]_____ (if no go to Q. 4.1)

3.9. If the response is yes:

3.9.1. How many animals would you do this with? _____

3.9.2. What type of animals (code)? _____

[1=weaners; 2=1-2 year old steers or bulls; 3=3-5 year male cattle; 4=old cows; 5=other (specify_____)]

3.9.3. Would you be prepared to pay the costs of feed/animal health/transport? [1=yes; 2= no]_____

3.9.3.1. If yes, would you pay this in advance? [1=yes; 2= no]_____

3.9.3.2. If yes, would you provide the feed and the inputs yourself or give the farmer the cash (code)? [1=provide the feed and the inputs; 2= give the farmer the cash]_____

3.9.4. What share of the sales price of the animal would then go to the producer, minus any costs already paid? _____%

3.9.5. Would you pay the farmer per Kg of weight gained or as a share of the final price?

[1=per kg of weight gained; 2= share of the final price]_____

3.9.6. Which items would you want to monitor?

3.9.6.1. Growth rate via weighing? [1=yes; 2= no]_____

3.9.6.2. Feed levels and type on hand? [1=yes; 2= no]_____

3.9.6.3. Feed levels and type actually being fed? [1=yes; 2= no]_____

3.9.6.4. Animal health generally? [1=yes; 2= no]_____

3.9.6.5. Animal health interventions taken (e.g. vaccination or dipping)? [1=yes; 2= no]_____

3.10. Who is responsible if the animal dies within 1 month? _____

3.11. Who is responsible if the animal dies after 1 month? _____

3.12. Who is responsible is the animal is stolen? _____

3.13. If the fattening and sale activity is unsuccessful, how would you want the farmer to share in repaying the loan code)? _____

Codes

1 = cash payment of an agreed amount 2 = cash payment amounting to all the feed and input costs advanced 3 = contribution of some % of other animals which the fattener would be required to sell 4 = provision of an animal to replace the one that died/other 5=Other (specify)_____

3.14. What would you do if feed ran out, such as in a drought? _____

3.15. What would you do if the period of loan expired and the animal was not ready for slaughter? _____

3.16. What would you do if the farmer was doing a good job but the animal was simply not growing fast enough? _____

3.17. If you had a contract for purchase of animals, but better or cheaper animals became available, what would you do (code)? _____

Codes

1 = stick with the contract 2 = renegotiate the contract 3 = buy the cheaper animals in addition to the ones under the contract

4 = abandon the contract and just buy the cheaper animals
5=Other (specify)_____

3.18. If you had a contract for sale of animals, but another buyer offered you a better price or a better sales arrangement, what would you do (code)? _____

Codes

1 = stick with the contract
2 = renegotiate the contract
3 = buy other animals in addition to the ones under the contract
4 = abandon the contract and just sell to the one offering the best price
5=Other (specify)_____

3.19. If you had a contract that were in general happy with and confident that it would work, what interest rate would you be prepared to pay for a loan to buy the animal and a set of inputs?_____%

3.20. If you had a contract that were in general happy with and confident that it would work, what amount of money would borrow if the interest rate is 25 %?_____

4. Credits and loans

4.1. Do you have a bank account? [1=yes; 2= no]_____

4.2. If yes, please fill in:

Type of account (code a)	**Name of the bank**	**Active?** [1=yes; 2= no]

Code a: [1=savings; 2=cheque; 3=investment; 4=transmission; 5=other (specify_____)]

4.3. Have you ever received any loan facility from a bank or a financial institution?[1=yes; 2= no]_____

4.4. If yes, please fill in this table:

Name of the financial institution	Name of financial product	Date	Loan requirements (code a)	Purpose (code b)	Amount in Lilangeni	Repayment Period (months)	Loan paid back? (code c)	If partially or not at all, why?

Codes

Loan requirements (code a)	Purpose (code b)	Loan paid back (code c)
1 = Financial statements 2 = Pay-slip or proof of income 3 = Deposit as collateral 4=Fixed assets as collateral 5=Other (Specify)	1 = Cattle trading 2 = Other agricultural purposes 3 = Non-agricultural purposes	1 = Yes, totally 2 = Partially 3 = Not at all

4.5. Do you prefer to get an individual loan from a bank/financial institution or a loan that is allocated to an association of beef traders and then you'll get the loan from the association? [1=individual loan; 2=from the association]

4.5.1. Why:

_____

_____

4.6. Does your household own the following assets?

Type of asset	Does the trader own the asset? Y/N	Number owned/area	Current value
Rental buildings	[____]		
Permanent home	[____]		
Plots	[____]		
Vehicles	[____]		
Other assets (specify)	[____]		

5. Risk assessment

5.1. Which of the following would you choose: (tick only one)

- <[List Paragraph1]>A payment of $100 that you were 100 % sure to get? ☐
- <[List Paragraph1]>A coin flips with $200 for your choice of heads and $0 for tails? ☐
- <[List Paragraph1]>A dice role with $600 for your choice of "6" and $0 for any other result? ☐

5.2. Fill the following table in terms of main sources of risks?

Source of risk	Intensity (code a)	How often the risk is faced (code b)	How do you manage the risk (code c)
Price fluctuation			
Animal losses			
Grade uncertainty			
Feed availability			
Animal health			

Codes

Intensity (code a)	How often (code b)	Manage the risk (code c)
1 = Very high 2 = High 3 = Normal 4= Low	1 = Very often 2 = Often 3 = Not often 4 = Rare	1 = Insurance 2 = buying/selling contracts/agreements 3 = check-off services 4= other (specify)

5.3. Do you consider yourself a risk taker? [1=yes; 2= no]_____