ANALYSING FACTORS AFFECTING THE PARTICIPATION OF SMALL-SCALE CATTLE FARMERS IN LIVESTOCK AUCTIONS IN CAPRICORN DISTRICT OF LIMPOPO PROVINCE

BY

MASHAPHU MAMPA PETER

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SUPERVISOR: PROF. J.J. HLONGWANE

CO-SUPERVISOR: DR. L.S. GIDI

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ABSTRACT

Raising cattle in South Africa and any other developing country in the Southern African region as part of livestock production, is one of the important means through which people sustain their livelihood. Inadequate efforts have been taken by the government to improve the marketing system of cattle, particularly to develop small-scale farming in the Limpopo Province and South Africa as a whole. With that being said, the small-scale sector has not been developed to the extent it is expected to.

This study examined the factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province. The study had three objectives, namely; (i) To describe the socio-economic characteristics of the small-scale cattle farmers in the Capricorn District of the Limpopo Province; (ii) To assess the perception of small-scale cattle farmers in the Capricorn District of the Limpopo Province towards livestock auction; (iii) To identify and analyse factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province.

The Multi-stage sampling procedure was used in the selection of the representative sample. Three locations (Lepelle-Nkumpi, Molemole and Polokwane local municipalities) were selected purposively because a large number of small-scale cattle farmers in the Capricorn District rely on the agricultural sector economically. The Logistic Regression Model was used to analyse factors affecting the participation of small-scale cattle farmers in livestock auctions.

The results showed that, out of the 120 sample size, 42% of small-scale cattle farmers were auction participants and 58% of small-scale cattle farmers were non-participants. There were 43 male-headed households of the participants and 61 female-headed households of the non-participants. An analysis of the farmers' socio-economic characteristics further showed that in order for the farmers to cut the costs of production, the majority of the small-scale cattle farmers preferred using family labourers or household labourers in their cattle farming. Farmers were asked a set of Likert type scale questions about their perceptions on the auctions. The Perception Index score

was skewed to the left and therefore revealed that the small-scale cattle farmers had a negative perception towards the auction. Farmers who had a positive perception, on the other hand, often sold their cattle at a higher price compared to the non-participants who had a negative perception. Furthermore, small-scale cattle farmers who are participants tend to use the market avenue and through that, their cattle productivity is higher, resulting in a total revenue compared to the non-participants. Consequently, small-scale farmers who participate in auctions acquire valuable production information at the very auctions.

Descriptive statistics such as means, minimum and maximum values, frequencies, percentages and standard deviations were used to describe the socioeconomic characteristics of the small-scale cattle farmers in the Capricorn District of the Limpopo Province. The results revealed that only 4 variables were significant. The total herd size, distance to the market, gender of the household head and market information were significant at 1%, 5%, 1%, 5%, respectively and all had a positive effect towards auction participation.

The study suggested that the government and other policy makers should increase the marketing information and abilities of small-scale cattle farmers through avenues like mass media, extension service and other means of capacity building. This will help the farmers to minimise transaction costs. Furthermore, farmers will not incur more costs when they participate in the markets, considering that market facilities such as auctions are often hosted far from the farmers, which results in farmers incurring more costs.

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DECLARATION

I, **Mashaphu Mampa Peter**, declare that the research report entitled: **Analysing factors affecting the participation of small-scale cattle farmers in livestock auctions in Capricorn district of Limpopo Province,** South Africa, submitted to the University of Limpopo in partial fulfilment of the requirement of the degree in Agricultural Economics, has not been submitted before and that all sources or materials used have been duly acknowledged.

Student: …… date:……

Mashaphu M.P.

DEDICATION

This research is dedicated to my father: N.J. Mashapu and the small-scale cattle farmers around Ga-Mamabolo.

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LIST OF ABBREVIATIONS AND ACRONYMS

DAFF - Department of agriculture forestry and fishery

GDP - Gross Domestic Product

Freq- Frequency

SAFA - South African Feedlot Association

FAO- Food Agriculture Organisation

DoA- Department of Agriculture

WFO- World Farmers Organization

STATS SA- Statistics South Africa

SPSS- Statistical Package for Social Science

USAID- United States Agency for International Development

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

In South Africa, just like in other developing countries particularly in the Southern African region, raising cattle as part of livestock production is one of the important means through which people seek and sustain their livelihoods. According to Nkonki-Mandleni *et al.* (2019), livestock provides 50 percent of the value of agricultural output globally and one-third of the value in developing countries. For the underprivileged, i.e. poor and rural women, this has shown to be a good commodity for providing a steady and growing income. Delgado, *et al*. (1999) proffer that the poor earn a higher income from livestock than the wealthy. For households affected by poverty, livestock products remain one of the few rapidly growing markets within the agricultural sector. In South Africa, studies have shown that small-scale farmers in some areas have better production efficiency in certain commodities such as livestock, which if properly supported by targeted public investments, could result in multiplied income and employment benefits for the rural poor (Sotsha *et al*. 2018).

In addition, livestock auction as part of the marketing channels available for farmers represents a key aspect in any system of livestock production because it provides a mechanism that allows the farmers to trade livestock and its products for money. Bekure *et al*. (1982) argued that with the sales made through auctions, farmers are then able to use this money to obtain the goods and services that they do not produce themselves in order to meet their needs, such as food, clothing, education, medication and also to buy stock for breeding in addition to other supplies and inputs needed for livestock production. In South Africa, the production of livestock is a significant agricultural enterprise. It has been said that almost eighty percent of South Africa's agricultural land is largely appropriated for farming extensively in livestock production; while other farming businesses equally combine livestock production (DAFF, 2017). However, the livestock number varies in accordance with conditions of the climate; consequently, producers concentrate mostly on breeds that are developed, as they are more adaptable to different weathers and environments. According to DAFF (2017), it has been noted that forty-nine percent of agricultural outputs are contributed by this sector

in South Africa. Up to eighty-five percent of meat requirements are usually produced in South Africa, while just fifteen percent are imported from Europe and other countries such as Botswana, Namibia, Swaziland, New Zealand and Australia.

Nearly three quarters of the extremely poor people, that is, approximately 1 billion people, live in rural areas (World Bank, 2008) and 90 percent of them are small-scale farmers depending directly on agriculture as part of their livelihoods (Lipton, 2005). The Limpopo Province contributes about 8.5% of cattle towards the South African economy and about 13% as both beef and dual purpose from communal production (DAFF, 2019). However, in most developing countries, rural agrarian populations continue to expand while land for sustainable agricultural production is not expanding at the same rate. Thornton *et al*. (2002) suggested that one of the essential strategies in raising rural income and food security is diversification into livestock and increasing livestock productivity because a large share of the rural poor (communal farmers) already keep livestock and mainly cattle as contributors to their livelihoods.

Hence, small-scale farmers account for 40% of the cattle herd and only account for 5% share of the formal market (cattle) participation in the country. With livestock being the biggest enterprise in South Africa's agricultural sector, it is important to take a closer look at beef (as part of the red meat). South Africa's cattle herd increased from 7.9 million cattle in 1970 to about 13.7 in 2015. However, there are years that saw decreases in numbers such as 1979/80, 1984/85 and 1993/94. On the slaughter side, from 2010/11 to 2015/16, the country slaughtered about 3.7 million cattle per annum. In terms of South African agriculture's contribution to GDP compared to Sub-Saharan Africa, one would state that agriculture is less important in South Africa when compared to other countries. A recent report from the World Bank indicates that agriculture contributes an average of 15% of the total GDP. This figure ranges from below 3% in South Africa and to more than 50% in Chad. However, agriculture and particularly livestock, contribute significantly to South Africa's GDPs because it is the primary occupation. This makes South Africa to be significantly different from the economies of the rest of Sub-Saharan Africa in the afore-mentioned terms. This means that

agriculture in general and livestock in particular, is not becoming any less important in the economy of the country, including rural areas.

1.2 PROBLEM STATEMENT

Livestock production in the Limpopo Province and in other South African rural communities is one of the major ways employed to seek livelihood and generate income to support families. Livestock farming provides diverse outputs such as food and acts as an important investment tool that generates cash for socio-economic needs (Abdow, 2014). In a context where there is fertile land for agriculture and the attendant potential to raise livestock in the country, agriculture can then be seen as the cornerstone of local and national economic development. In this sense, agriculture enhances economic growth, and also contributes to poverty reduction in rural areas (Montshwe, 2006). Moreover, most small-scale cattle farmers and rural households have the potential to participate in vibrant livestock markets to raise their incomes but are often restricted by factors such as lack of access to marketing channels, smaller herd size and risks associated with animal diseases and theft.

Inadequate efforts have been taken by the government to improve the marketing system of cattle, particularly to develop small-scale farming in the Limpopo Province and South Africa as whole. These inadequate efforts persist irrespective of the awareness that most studies and literature have reviewed and ascribed the success of developed European countries and the commercial sector to cattle production, among other aspects. De Lange (2004) argues that very little has changed over the last decade in terms of positioning the small-scale livestock sector to act as a tool for alleviating poverty, improving household food security and contributing to economic growth in South Africa. With that being said, the small-scale sector in South Africa has not been developed to the extent it is expected to. This study seeks to analyse factors affecting the participation of small-scale cattle farmers in livestock auction in the Capricorn District of the Limpopo Province.

1.3 RATIONALE

According to Oni *et al*. (2003), agriculture is still recognised as the backbone of most rural communities in South Africa, with the Limpopo Province being one of the poorest provinces in the country. Small-scale and commercial farming contributes to poverty reduction and job creation, and therefore enable people to seek their livelihood, sustain their lives and grow their families (Marandure, 2015). The study analysed the factors affecting the participation of small-scale cattle farmers in livestock auctions.

Musemwa *et al*. (2010) mentioned that there are five major channels for livestock that are currently available to small-scale farmers: auctions, speculators, butcheries, abattoirs and private buyers. A study by Ndoro *et al*. (2015) indicated that access to agricultural markets has considerable potential for rural development in developing and transitioning countries. However, agricultural markets in Southern Africa continue to be characterised by multiple equilibria, with a high-level equilibrium associated with technological advance and access to private and public goods, coexisting with low-level equilibrium pertaining to small-scale farmers (Barrett, 2008). A recent report on the beef value chain profile published by the Department of Agriculture, Forestry and Fisheries (Republic of South Africa, 2013) shows that 66% of the country's agricultural land is under extensive grazing by commercial, emerging and small-scale beef cattle farmers.

According to the International Livestock Research Institute (2010), consumers in developing countries are becoming more cognisant of health-related hazards in the animal products they buy; their awareness and desires for better quality and safer products are increasingly translated into an effective demand because of higher income and increased urbanisation. Proper production methods and following of the marketing channels will enhance production and effectiveness. This has the potential to improve the incomes and livelihoods of small-scales and other market participants and to be an avenue for the overall development of the livestock sector. The marketing environment in which small-scales operate is primarily comprised of informal distribution channels where safety and quality standards are either lacking or inadequately defined.

Musemwa *et al*. (2007) highlighted that the majority of cattle farmers in the Eastern Cape are mainly attracted by accessibility and reliability to sell at auctions. The costs associated with such frictions in market exchanges can have profound implications for poverty alleviation in rural areas.

The study is beneficial to several stakeholders, including the Department of Agriculture, small-scale and commercial farmers, and other aspiring entrepreneurs wishing to engage in cattle farming. It also helps the policy makers and the government to identify the relevant and most profitable market avenues for cattle farmers in South Africa.

1.4 SCOPE OF THE STUDY

1.4.1 The aim of the study

The study aimed at analysing factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province.

1.4.2 The objectives of the study were to:

i. Describe the socio-economic characteristics of the small-scale cattle farmers in the Capricorn District of the Limpopo Province.

ii. Asses the perception of small-scale cattle farmers in the Capricorn District of the Limpopo Province towards livestock auction.

iii. Identify and analyse factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province.

1.4.3 Research Hypotheses

The study foregrounded the following hypotheses:

1. The perception of small-scale cattle farmers in the Capricorn District of the Limpopo Province does not influence livestock auction participation.

2. There are no significant factors affecting the participation of small-scale cattle farmers in livestock auction in the Capricorn District of the Limpopo Province.

CHAPTER 2: LITERATURE REVIEW

Definition of key concepts

Market participation refers to any market related activity that promotes the sale of produce.

Socioeconomic factors entail factors that influence both the social and economic wellbeing of an individual.

Market factors constitute any external factors that affect the demand for or the price of a good or service.

Small-scale farmers are cattle farmers who are characterised by landholding that is less than five acres.

2.1 Introduction

Access to agricultural markets has significant potential for rural development in developing and transitioning countries. The participation of cattle producers in vibrant and efficient markets remains a challenge in South Africa (Montshwe, 2006). According to Ndoro *et al.* (2015), quite a few cattle farmers participate actively in well-organised markets such as cattle auction markets. Most of the farmers who are active and take a larger share of the auction market are commercial farmers mainly because of being more resourceful. Small-scale livestock husbandry remains a primary land use option in most communal areas of Southern Africa. A study by Mathebula and Kirsten (2000) revealed that the production of cattle is a major economic sector in communal areas.

2.2 Background of the South African Cattle industry

It is estimated that approximately 8.2 million cattle are owned by 50 000 commercial farmers, whereas the remainder (5.6 million cattle) is owned by 240 000 small-scale farmers and 3 million subsistence farmers (DAFF, 2011). The department also published a statement on the beef value chain profile, which shows that 69% of the country's agricultural land is under extensive grazing by commercial, emerging and small-scale beef cattle farmers.

Ndoro *et al*. (2015) argued that an auction is viewed as the most advanced institutional form of cattle marketing for small-scales in South Africa. It is also known as a dip tank sale and is scheduled by the livestock extension office. Cattle in auction pens often fetch better prices compared to those sold elsewhere. Musemwa *et al*. (2007) highlighted that the majority of cattle farmers are mainly attracted by accessibility and reliability to sell at auctions.

A study by Montshwe (2006) revealed that access to assets and market information in combination with particular household characteristics are important determinants of market participation. Furthermore, Jooste and Van Rooyen (1996) emphasised that the transition of the small-scale livestock sector towards commercial production will ultimately be determined by its access to markets.

According to fornari *et al*. (2016), the trade of the livestock market occurs mainly either by direct sales between buyers and sellers or through auctions, in which buyers compete for the desired lot by bidding. Furthermore, the price of a cow/calf is affected by conditional factors of supply and demand, including physical characteristics such as (sex, breed, live weight, frame, and handling) and market conditions including (lot size, number and uniformity of animals in the lot, feed, and future prices).

The study by Burdine (2011) indicated that the beef marketing system is one of the most complex in agriculture. Although many livestock marketing systems have moved towards vertical integration, with entities owning multiple industries within the sector, this type of system is much less prominent in beef cattle. There is an increasing number of livestock farmers globally wherein approximately 75% of these farmers live in the rural areas (Enkono, 2013). This implies that livestock is an important part of agricultural development. It also shows that the increase in incomes, the increase in the number of consumers, their purchasing power and technological advancement dictate the need to expand market opportunities for small-scale livestock producers in communal areas.

The contribution of agriculture in South Africa towards the GDP leads one to assert that agriculture is less important in South Africa when compared to other Sub-Saharan (African) countries. There are two ways of production used in South Africa, namely, the

primary production which involves grazing animals on pastures and secondary production which requires the finishing off of animals in the feedlot (Oduniyi, *et al*. 2020). The growth of the agricultural industry was able to make a good recovery by making a downturn from the drought experienced in 2016 and had a good comeback in 2017. The World Bank (2018) report indicates that agriculture contributes an average of 15% of the total GDP. This figure ranges from below 3% in South Africa and to more than 50% in Chad. This highlights the fact that the primary livelihood of agriculture and more especially, livestock, has a significant contribution towards South Africa's GDP.

This makes South Africa to be significantly different from the economies of the rest of Sub-Saharan Africa, which means that agriculture, and particularly livestock, is not becoming any less important in the economy of the country, including its rural areas. Moderately, a small share of agriculture in South Africa's national income and the studies showing the importance of remittances and non-farm activities for rural households in South Africa, hide the potential contribution of agricultural (and particularly livestock) income in providing self-driven livelihoods for the poor (Ngqangweni and Delgado, 2002).

This is especially true for poor and vulnerable groups who live in the marginalised rural areas within an otherwise advanced industry-based national economy. Stosha *et al*. (2018) argue that rural households ' move away from dependence on agriculture is influenced by issues such as lack of opportunities in agriculture rather than increasing opportunities outside agriculture in South Africa. Ngqangweni and Delgado (2002), in a study based in the Limpopo Province of South Africa, found that poorer households faced more hurdles when participating in the livestock value chain than their well-endowed counterparts in the communal areas. The relatively wealthier households also tended to own more livestock than poorer ones. The study showed that the state of being poor affected the ability of households to make investment decisions that might be useful in achieving positive livelihood outcomes. The constraining factors included lack of access to financial services and infrastructure. However, communal small-scale farmers in rural areas face many challenges that constrain them from generating income from their livestock. These challenges include lack of access to land and water,

lack of access to marketing channels, smaller herd size, risks associated with animal diseases, draught and theft (Montshwe, 2006). This part of the study looks into and reviews literature related to the study.

2.3 Marketing systems

According to Marandure (2015), small-scale cattle producers use cattle marketing channels of their own choice depending on the availability of markets, prevailing market prices, distance to the market and the extent of relationships developed in previous transactions, among other reasons. Montshwe (2006) argued that marketing provides the set-up and platform where producers exchange their livestock for cash. Market access reflects an important part of providing greater income for livestock producers through various channels. Farmers in South Africa use two options to sell their livestock; informal and formal marketing systems. The choice of the marketing channel depends on a number of issues, which include availability of markets, prices offered in the market, distance to the market and the potential of the market to absorb the stock on sale (Montshwe, 2006).

2.3.1 Auctions (formal market)

Livestock auctions are the most important marketing channel for livestock in any area of production. Auctions offer a fair share of value for the produced livestock for most farmers who benefit from it. Livestock auctions are market places where producers bring their livestock to sell through public bidding to buyers who offer the highest price per animal (Nkosi and Kirsten, 1993). Auctions as a market place are available to any individual who wants to take part in them and are organised by auctioneers on specific dates at which buyers and sellers participate by bidding. According to Nkosi and Kirsten (1993), auctioneers in developing areas experience a number of problems of which lack of a reasonably saleable number of cattle is the main problem.

2.3.2 Private sales (informal market)

Private sales refer to the informal market used by the small-scale livestock farmers through which the market is heavily controlled by the seasonality and the size of the

animal. The older the animal is, the easier it is for the farmers to determine the price for the sale. These private sales are highly run with poor market information characterised by a lack of knowledge on the prices and the quality requirements of the animals. Nkosi and Kirsten (1993) found that, irrespective of all the drawbacks, small-scale farmers mostly prefer the private sales in the informal market. During the periods prior to Christmas and Easter, USAID (2003) confirmed that very few farmers sold their livestock at auctions. Normally, during such festive seasons, there is an increase in demand for traditional livestock because such livestock are needed for ceremonies such as weddings, parties and for slaughtering.

2.3.3 Speculators

Coetzee *et al.* (2005) found that small-scale farmers have to, amongst others; rely on speculators to sell their animals to meet the need for more than normal amounts of cash during certain critical periods of the year. Poor negotiating skills and bad timing often lead farmers to sell animals below market value and thus get a lower price for their produce. A perception exists in some instances, with good reason, that the speculators are exploiting the poor bargaining power of the farmers. On the other hand, poor infrastructure and/or a lack of infrastructure do not influence these buyers as they provide their own loading and transport services.

2.4 Factors influencing auction participation

Auction participation as a market for small-scale farmers is affected by several factors, including socioeconomic factors, institutional factors, market factors and external factors such as the political stability of the nation, natural disaster and misfortunes. Taking into consideration these factors, there could be either improvements or a decline in the income and production of livestock for the farmers (Sigei, 2014). Socio-economic factors include age, gender, education, experience, household size and land size.

Age of the household head may have a negative or positive impact on market participation. Age impact market participation negatively because young farmers might have a longer planning prospect and might be willing to take risks but due to lack of capital and fewer stock, they become reluctant (Zegeye *et al*., 2001). The positive

impact resulting from the fact that older farmers may take their decision more easily than the young farmers as a result of the contacts and relationships that they have built in their life of farming or because the older people might have gathered enough capital, have enough land for production that can be used as collateral, have access to credit due to age and low risk or family size (Sall *et al*., 2000).

Market participation can be influenced by market factors that have been found to have a positive and negative impact (Montshwe, 2006; Sigei, 2014). Distance from the farm to the point of sale, and market information were found in a couple of studies to be the major constraints to the intensity of market participation (Bahta and Bauer, 2007; Omiti *et al*. 2009). Poor access to market information results in information-related problems, namely moral hazards and adverse selections which in turn increase transaction costs and consequently discourage some farmers' participation in the market (Shiferaw *et al*., 2009). Jari (2009) stated that the availability of market information boosts the confidence of the households who are willing to participate in the market. The price factor positively influences market participation. According to Alene *et al*. (2008), output price is an incentive for sellers to supply more in the market and therefore boosts the household income of the farmers.

Sigei (2014) argued that farmer's educational level has a positive effect on market participation as it advances, because it enhances the skill and ability to better utilise market information, which may in turn reduce marketing costs and make it more profitable to participate in the market due to a better understanding of the pros and cons. The household size explains the family labour supply for production and household consumption levels. A positive sign suggests that a larger household provides cheaper labour and produces more output in absolute terms such that the proportion sold remains higher than the proportion consumed (Alene *et al*., 2008). A negative sign, on the other hand, means that a larger household is likely to consume more output, leaving smaller and decreasing proportion for sale. A study by Key *et al*. (2000) suggested that land holding is directly linked to the ability to produce a marketable surplus. This can be explained by the fact that a farmer produces more output when the land is larger than when it is small.

The market participation decision is largely influenced by the gender of the head of the household. Guiterrez (2003) stated that male-headed households are expected to have a positive impact on market participation because they are more resourceful and experienced in farming than their female counterparts. Jagwe *et al*. (2010) found that, female-headed households are more negatively affected by the transaction costs of searching for buyers, contracting and enforcing a sale transaction as opposed to male-headed households. Likewise, a female-headed household is more likely to be resource constrained, hence affecting the production of marketable surplus.

Movable assets, i.e. physical resources like having a mode of transport and communication equipment have an impact on market participants. Having a consistent and reliable ownership of communication equipment such as mobiles, radios and televisions has a positive impact on the market participation by facilitating marketing information to the farmers (Ehui *et al*., 2009). Ownership of transport equipment such as motorcycles and trucks have a positive impact on market participation because it reduces the cost of transporting output from the farm to the market (Key *et al*., 2000).

Institutional factors like having access to extension services, being a member in a group such as a marketing cooperative or a livestock theft unit, and infrastructure have an influence on market participation. Makhura *et al*. (2001) argues that marketing produce in a group can help reduce transport costs and also lower risks of losing. Poor infrastructure has a negative effect on market participation because the majority of small-scale farmers in developing countries is located in remote areas with poor infrastructure and often fails to participate in the market due to the high transaction cost involved (Goetz, 1992; Key *et al*., 2002). Membership to the group has both a positive and a negative impact on market participants. It positively influences market participation because it increases the household 's access to information that is crucial to production and marketing decisions (Olwande and Mathenge, 2012). On the other hand, it can negatively influence market participation when disagreements emerge among group members, distorting marketing decision. Extension service is expected to impact positively on market participation because it is through extension services that

farmers are able to acquire better skills and knowledge on marketing and production skills to meet those market requirements.

2.5 Constraints faced by small-scale cattle farmers to the market

2.5.1 Poor body condition

Montshwe (2006) stated that, although a lack of buyers is frequently given as a reason why small-scale farmers are unable to access the market, the fact is that when such buyers wish to buy from small-scale farmers, the poor condition of livestock results in lower farm gate prices, especially during dry spells. Animal nutrition plays a vital role in ensuring quality production of livestock, which ensures good prices for the market and value for money. Cattle body conditions are positively affected by well-managed natural pastures with good soil fertility and high levels of biodiversity through provision of higher nutrient quality natural pasture. According to Moorosi (1999), cattle body conditions lead to increased cattle productivity, which may ultimately increase the probability of small-scale producers to sell their cattle in viable and vibrant livestock markets. This includes profitable formal livestock markets such as auctions. As much as the poor body condition of the cattle affects the rate of sales for the livestock, the age of the livestock, particularly being too old at the time of processing the sale, has a negative impact on the price that the farmer receives.

2.5.2 Shortage of important agricultural infrastructure

Having adequate infrastructure to run a farm project automatically increases the chances of improved production and better sales. The shortcomings of infrastructure seriously impede the physical flow of animals ultimately creating barriers to domestic trade (Bailey *et al*., 1999). Moreover, a study by Coetzee *et al*. (2005) stated that the distance between the area of production and well-established markets demand the transportation or “trekking” of livestock. According to Bailey *et al*. (1999), amongst all other physical infrastructures necessary for the facilitation of the marketing system, transport is the most important weakness in livestock marketing. Adding value to the above-mentioned statements, a report by NDA (2005), stated that a majority of the farmers that benefited from the Nguni Cattle Programme in the Limpopo Province are

situated in remote areas, far away from main market places and the infrastructure facilities are seriously insufficient.

Furthermore, the supplies of livestock by small-scale producers to formal market places are very low, which accounts for the issue of inadequate infrastructure (USAID, 2003). Small-scale farmers are often located in the marginal areas characterised by poor communication infrastructure such as inability to access roads to markets, which limits cattle farmers' capacity to transport cattle to the minimally available slaughter facilities (Coetzee *et al*., 2005).

2.5.3 Reluctance to livestock identification adoption

Formal livestock markets strictly require registration and identification of livestock mainly through the proof of the farmers' brand mark. This also helps to reduce the level of stock theft which hinders the development of small-scale farmers. A study by Coetzee *et al*. (2005) stated that an individual livestock brand mark registration only costs R100, including the costs of brand marking equipment. However, farmers are very reluctant to register and get their unique brand of their livestock. Unfortunately, such delays and inability to cooperate in terms of livestock branding results in failure for the cattle being formally marketable.

Coetzee *et al*. (2005) further indicated that registered animals that are left astray and eventually make their way to the roads and causing accidents can be easily identified and necessary claims can be lodged against the owners to cover the costs of injuries of humans and damages to the vehicles. As a result, those who have registered their animals will be held liable and those who did not will then be able to escape the responsibility. The ARC Annual Beef Bulletin (2016) reports that a lack of facilities to brand animals and farmers' reluctance to take action and register for unique brand marks has a negative impact on future marketing options as it reduces the traceability of animals.

2.5.4 Poor access to market information

According to Fenyes and Groenewald (1985), insufficient market information is common due to the large number of small producers, inefficient communication systems and low levels of literacy as well as information administration. In developing areas, the bulk of literature on market information is founded on the assumption that there is a role for public market information services because market information is a 'public good'. The provision of information to small-scale farmers is one way of maintaining transparency and completeness. According to Schubert (1993), this will make markets to be more accessible. Bailey *et al*. (1999) agree that there is evidence that market information reduces risk and allows farmers to make informed decisions.

2.6 MARKETING STRATEGIES TO IMPROVE THE SALES OF LIVESTOCK TO MEET AUCTION REQUIREMENTS

Farmer education plays a vital role in small-scale farming done in rural areas where they are commonly subject to high illiteracy (Kumar *et al*., 2000). Reducing illiteracy levels is, to a large extent, a challenge faced by all stakeholders. Put specifically, training programmes should be focused on visual aid materials and adequate illustration by weighing animals and applying current market information (prices per kilogram) to determine the current market value. Among other things, training the farmers should be very simple, that is, it should be done in such a way that they can easily grasp the necessary information. Training should also be directed to developing farmers' negotiating skills during the settlement of transactions.

Market infrastructure such as livestock branding, weighing scales and pans will help farmers to easily understand the dynamics that go into selling the stock. In addition, improved market access, as a result good roads and reliable transportation, results in the production of marketable livestock. In this way, farmers gain income and higher revenues from agriculture, which they can save and/or invest into productivity enhancing technologies.

According to Matungul *et al*. (2002), apart from the key environmental constraints, such as the lack of fencing and stock water, the efficient participation of small-scale farmers in the marketing of livestock is impeded by the fragmented and discrepant infrastructure

available in rural areas. The roads are mainly gravel and severely eroded, rendering access to the livestock production areas difficult. Kgantsi and Mokoene (1997) stated that the lack of properly maintained roads, telephones, fencing, water and electricity makes it very costly for farmers to run their farming operations. Investment in public goods such as telecommunication, a road, an efficient legal system, and farmer support service (extension, marketing information, and research) would raise farm and non-farm income by reducing transaction costs.

Access to market information is by far the best tool leading to small-scale farmers getting a chance to sell their livestock. Coetzee *et al*. (2005) stresses that farmers cannot graduate to become fully fledged farmers without access to the necessary sources of information. Acquiring sufficient marketing information and accessing the opportunities that can empower them to be independent decision makers and adopters of appropriate technologies can prosper their farming business. In less developed areas of South Africa such as the remote areas in the Limpopo Province, the problem of inadequate information provision is extensive. USAID (2003) found that the use of radio in rural areas is still common. This can still be used as the best and most efficient tool to disseminate information to the remote areas of the province regarding the market for their livestock. However, market information such as current beef price per kilogram live weight cannot delivered through platforms such as radio broadcasts, since some farmers may not be able to interpret the total value of their animals.

2.7 Chapter summary

This chapter reviewed literature on the general background of the cattle industry, trends and marketing of the livestock. The chapter also looked at how small-scale farmers seek to market their livestock and the channels which they use to do the marketing. Many of the challenges fall beyond the scope of direct intervention by small-scale cattle farmers themselves and require interventions by the government and the private sector. Noteworthy is that the literature did not address the factors that the small-scale farmers faces in their attempts to participate in livestock auction. It was for this reason that this the study aimed at analysing factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province.

2.8 Diagrammatic representation of the conceptual framework.

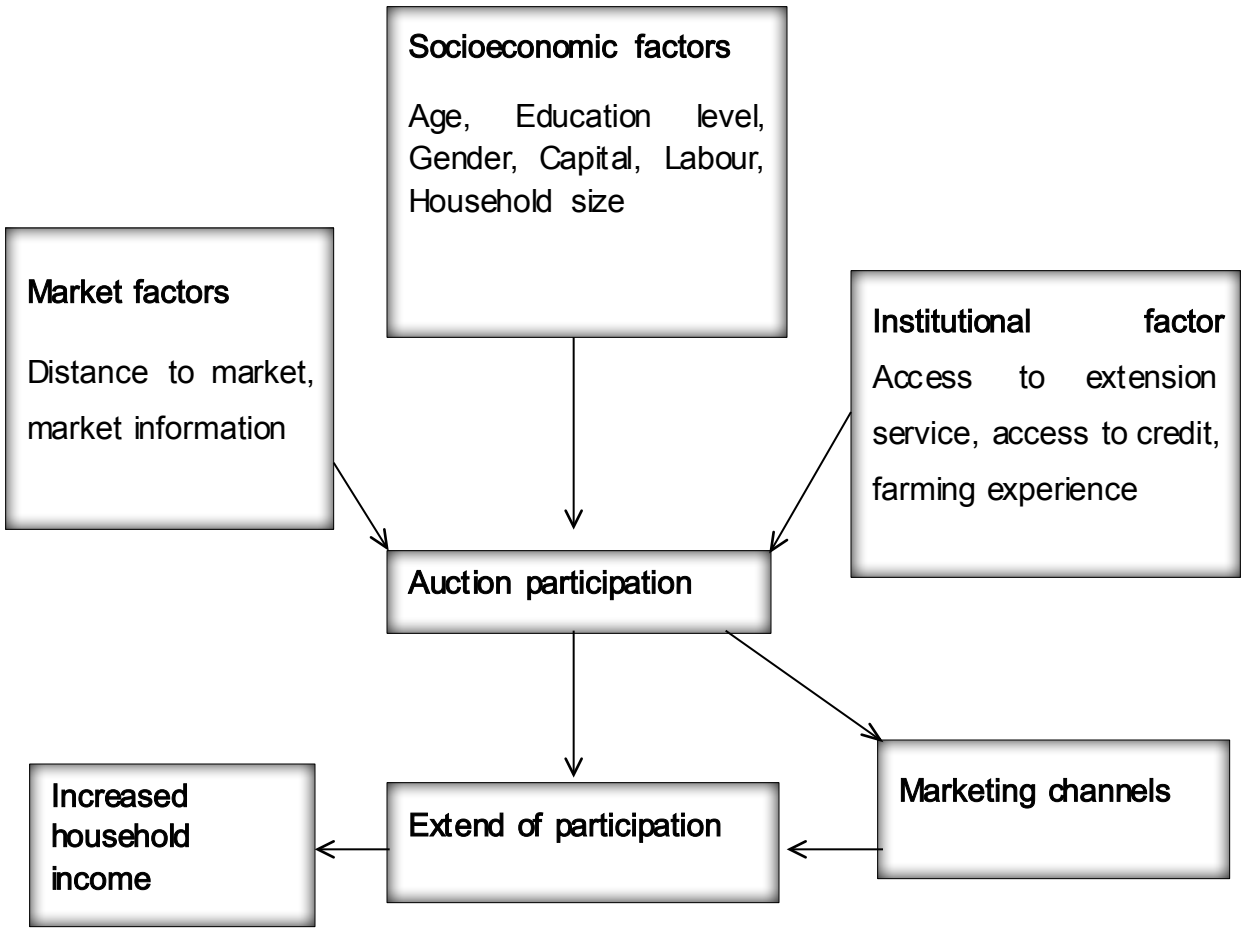

Figure 2.1 Diagrammatic representation of the conceptual framework

The conceptual framework in Figure 2.1 illustrates the interrelationships in the study, the key variables involved and how they are interrelated. Socioeconomic characteristics are the background factors like (age, education level, gender, household income, occupation and household income), institutional factors like (access to extension service, access to credit, and road infrastructure) and market factors like (prices of output, price information, marketing experience, and distance to the market) which normally have an

influence on market participation. The participation leads to the extent of participation and choice of marketing outlets. The extent of participation in the auction as a market in turn increased the household income.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Study area

The study area is the Capricorn District Municipality. The Capricorn District Municipality is a Category C Municipality situated in the Limpopo Province which has a population size of 1 330 436. The municipality is situated as a stopover between Gauteng and the Northern areas of the Limpopo Province, and between the North-Western areas and Kruger National Park. It forms a gateway to Botswana, Zimbabwe and Mozambique. It consists of the following four local municipalities: Blouberg, Lepelle-Nkumpi, Molemole and Polokwane.

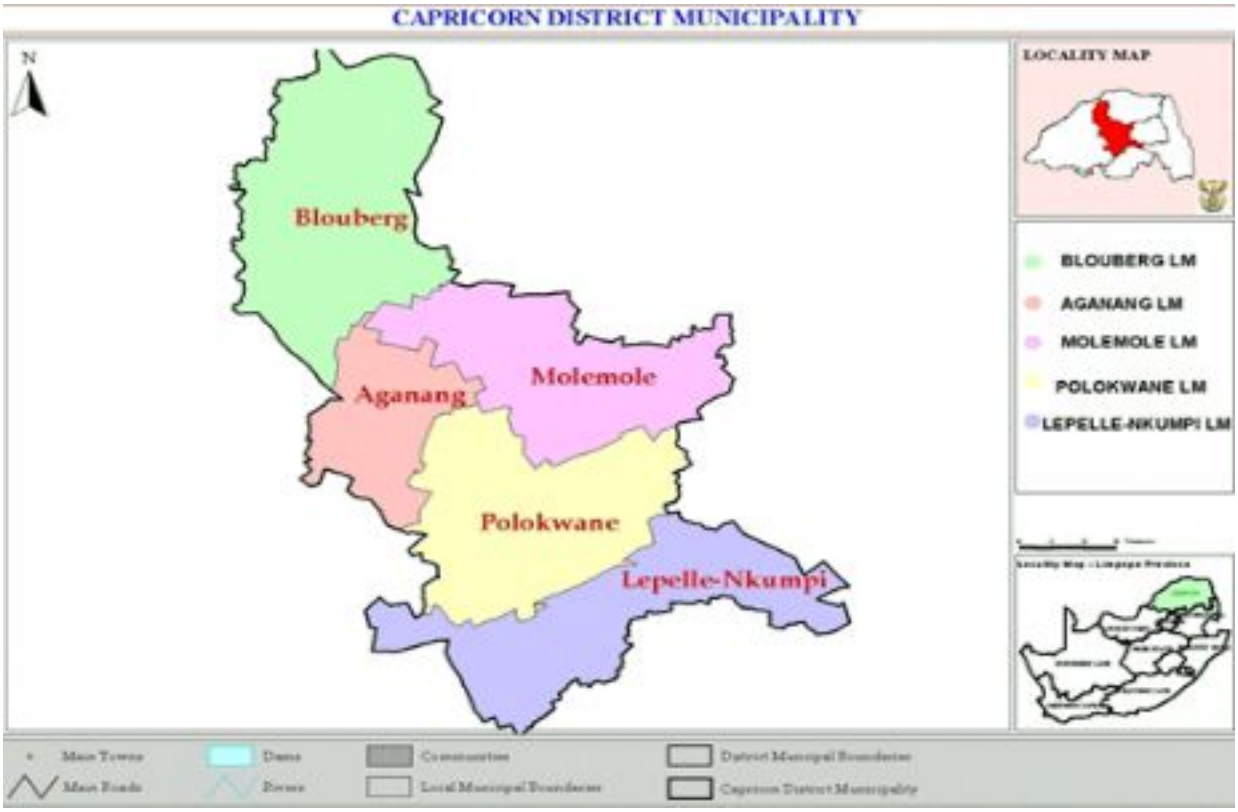

Figure 3.1 Map of the Capricorn District Municipality

Source: Google maps (2020)

3.2 Data collection and Sampling method

The study used primary data, which was collected through interviews. The method that was adopted to collect information was face-to-face interviews using structured questionnaires designed to collect both qualitative and quantitative data. The structured questionnaire was designed to collect information on farmers' socio-economic characteristics, asses the perception of small-scale cattle farmers in the Capricorn District of the Limpopo Province towards livestock auction and lastly, to identify and analyse factors affecting the participation of small-scale cattle farmers in livestock auction in the Capricorn District of the Limpopo Province.

The target population of the study was the small-scale cattle farmers in the Capricorn District Municipality. The Multi-stage sampling procedure was used in the selection of representative sample. Three locations (Lepelle-Nkumpi, Molemole and Polokwane local municipalities) were purposively selected because of the large number of small-scale cattle farmers in the Capricorn District and also because their main economic sector is agriculture. Forty farmers in each location were selected randomly for interviews using simple random sampling to give a total sample of 120 farmers. The required sample size was determined by Cochran's proportionate to size sampling methodology (Mugenda and Mugenda, 2003).

$$n = \frac{z^2 qp}{e^2}$$

Where; n = Sample size; Z= confidence level (α = 0.05); p = proportion of the population containing the major interest, q = 1-p and e = allowable error. Hence, Z = 1.96

p = 0.088 $= \frac{116599}{1330436}$, q = 0.89 and e = 0.05. This resulted in a sample population of

120 respondents.

$$\frac{1.96^2 \; x0.89 \; x0.088}{0.05^2} = 120{,}33$$

3.3 Analytical procedure

3.3.1 Data analysis

Descriptive statistics such as means, minimum and maximum values, frequencies, percentages and standard deviations were used to describe the socioeconomic characteristics of the small-scale cattle farmers in the Capricorn District of the Limpopo Province as the first objective of the study. The second objective of the study was addressed using the Likert scale. The Likert scale is a series of questions that the researcher asked the small-scale cattle farmers about their perception towards livestock auction. Small-scale cattle farmers were given an opportunity to select a rating on a scale that ranges from one extreme to another, such as “strongly agree” to “strongly disagree”.

The Logistic Regression Model was used to analyse factors affecting the participation of small-scale cattle farmers in livestock auction. The farmers’ participation was the dependent variable for the model through which the relationship between the dependent variables and independent variables were measured:

$$Y = \ln\left(\frac{pi}{1-pi}\right) = \beta_0 + \beta_1 X_{1+\cdots} \beta_K X_K$$

The estimated regression equation is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \cdots\cdots\cdots\cdots . \beta_K X_K + U_I$$

$$\ln\left(\frac{pi}{1-pi}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + U_I$$

Where

Y = dependent variable

Ln = natural logarithm function

β_0 = intercept

$\beta_1, \beta_2, \ldots \beta_K$ = coefficients of independent variables

$X_1, X_2, \ldots X_K$ = independent variables

U = disturbance term

The SPSS statistical package was used to test the significance of each variable included in the model.

Model specification: Participation= $\beta_0 + \beta_1$ Age + β_2 Gender + β_3 Farming experience + β_4 Extension services + β_5 Distance to market + β_6 Farm size+ β_7 Household size + β_8 credit access + β_9 Education + β_{10} Labour + β_{11} Capital

Table 3.1: Description of variables

Variables	Description	Units of measurement
Dependent variable		
Participation	1, if farmer is participating, 0 otherwise.	Dummy
Independent variables		
Age	The number of years a farmer has	Years
Gender	1, If farmer is male,0 otherwise	Dummy
Farming experience	Farming experience in years	Years
Extension service	1,if farmer have access to extension services, 0 otherwise	Dummy
Distance to	Distance travelled	Kilometres

markets		
Market information	1, if farmers receive market information prior to sales, 0 otherwise	Dummy
Farm size	Land size	Hectares
Household size	Family size	Number
Credit access	1, if famer have access to credit facilities, 0 otherwise	Dummy
Education	1, if farmer have formal education, 0 otherwise	Dummy
Labour	Total number of labour hired during production	Number
Capital	Amount of money invested in the farm	Rands

CHAPTER 4: RESULTS AND DISCUSSIONS

4.1 Introduction

The aim of the study was to examine the factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province. This chapter presents and discusses the empirical results found when the data collected was analysed to achieve the set objectives. Forty farmers in each location were selected randomly using simple random sampling to give a total sample of 120 farmers who were interviewed.

4.2 Descriptive results

4.2.1 Table 4.1: Socio-economic characteristic in relation to market participation

	Participants (50)				Non-participants (70)			
	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
Age of the farmer	22	78	48.61	1.53	31	87	53.13	1.26
Household size	2	9	4.62	0.15	3	10	4.46	0.22
Total herd size	9	57	14.47	1.12	2	20	6.90	0.61

Source: SPSS (2020)

The study was composed of 120 small-scale cattle farmers, 50 of whom participated in the auctions while 70 were non-participants. Table 4.1 above shows that the youngest auction participant among small-scale cattle farmers was 22 years old while the maximum age was 78 years. The average was 48.61 for those who took part in the livestock auction. Also, the non-participants ' minimum age was 31 years, the maximum age was 87 years and the average age was 53.13.

In terms of household size, the smallest household size among auction participants was found to be 2 members, the highest was found to be 9 members and the average was 4.62. Among non-auction participants, the smallest household size was found to be 3 members, the highest was found to be 10 members and the average was 4.46. In most African countries, particularly in the rural areas, household size plays a vital role in terms of farm labour (Kibiridge, 2018).

The minimum total herd size of the small-scale cattle farmers participating in the auction was found to be 9 cattle and the maximum was 57, resulting in an average of 14.47. The non-participants had 2 as a minimum number of cattle, the maximum number of cattle was 20 and the average number of the total herd size was 6.90.

4.2.2 Demographic characteristics of small-scale farmers in the study area

Table 4.2: Gender characteristics of the household head

Gender	Auction participants(50)		Non-auction participants(70)		Overall Freq	Sig
	Freq	%	Freq	%		
Male	43	86	61	87.14	104	0.011**
Female	7	14	9	12.86	16	
Total	50	100	70	100	120	

Source: SPSS (2020)

The results in Table 4.2 show that 86% of market participants were male, while 14% were female. On the other hand, 87.14% of non-auction participants were male while 12.86% were female. The results showed that gender was statistically significant at 1% indicating that the male households who participate in the cattle market were more than those who did not participate. The findings from Matungul *et al*. (2002), which were based on a study conducted in the Kwa-Zulu Natal Province revealed that there were more males in cattle farming than females.

Table 4.3: Marital status of the household head

Marital status	Auction participants(50)		Non-auction participants(70)		Overall Freq	Sig
	Freq	%	Freq	%		
Single	33	66	26	37.14	59	
Married	15	30	38	54.29	53	0.**
Widowed	2	4	6	8.57	8	
Total	50	100	70	100	120	

Source: SPSS (2020)

The results shown on Table 4.3 indicate that a large proportion of the sample were single, which was accounted for by 66%, with the married being 30% and the widowed being only 4% of the small-scale cattle farmers who were auction participants. With regard to the non-participants, the married ones took a larger portion of the population with 54.29%, whereas the single constituted 37.14% while the widowed took only 8.57%.

Table 4.4: Market information

Market info	Auction participants(50)		Non-auction participants(70)		Overall Freq	Sig
	Freq	%	Freq	%		
Yes	38	76	13	18.57	51	
No	12	24	57	81.43	69	0.028**

Total	50	100	70	100	120	

Source: SPSS (2020)

Regarding access to market information, as shown on table 4.4, 76% of the market participants received market information while 24% did not. Amongst non-market participants, 18.57% received market information while 81.43% did not. This implies that market participants received more market information compared to non-market participants. In his study, Montshwe (2006), indicated that the more farmers have market information which they can use, the more they will be able to sell and profitably market their livestock. Keeping all other variables constant, market information is positively and significantly related to the probability of participating in the vibrant cattle markets and thus receivers of market information are likely to sell more cattle than non-receivers.

Table 4.5: Educational level of the household head

Educational level	Auction participants(50)		Non-auction participants(70)		Overall Freq	Sig
	Freq	%	Freq	%		
Primary	6	12	37	52.86	43	0.513
Secondary	27	54	26	37.14	53	
Tertiary	17	34	7	10	24	
Total	50	100	70	100	120	

Source: SPSS (2020)

Table 4.5 above represents the status of the small-scale cattle farmer's education. The results indicate that only 12% of the market participants had primary education and 52.86% of the non-participants had primary education. 54% of the participants had secondary education while 37.14% of the non-participants had secondary education and finally, 34% of the participants had tertiary education while only 10% of the non-

participants had tertiary education. The results therefore show education plays a vital role in the ability of the small-scale cattle farmers to take advantage of the livestock market as it exerts a positive effect. The education level of the household head influences market participation because household heads with a high level of education may have better abilities to negotiate and to acquire more information than those with a low level of education (Kyaw *et al*. 2018).

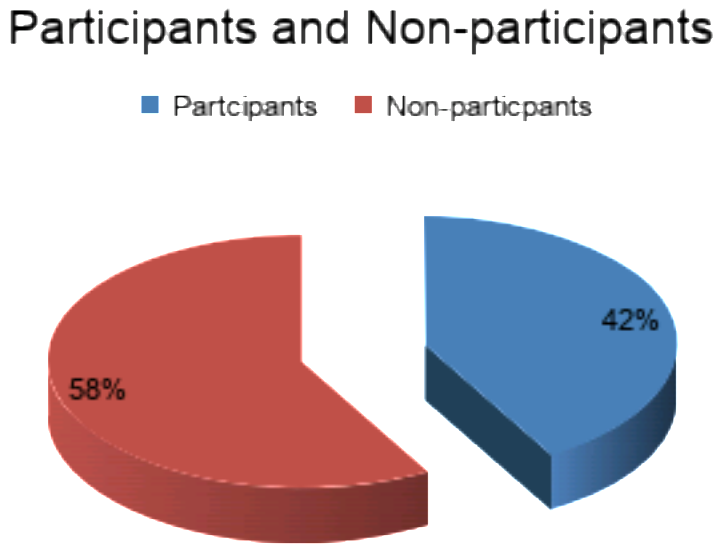

Figure 4.1

Source: From survey data

The results in figure 4.1 reveal that a majority of the small-scale cattle farmers interviewed were not partaking in the auction with a percentage of 58% while the percentage of those taking part is 42%. Taking part in the auction can help small-scale cattle farmers to sell their stock good prices, get more information on cattle farming and also create more contacts. Auction facilities have the ability to allow the farmers to understand the value of their products because such products are often weighed to give a better price and therefore help the farmers to better their production and improve their income.

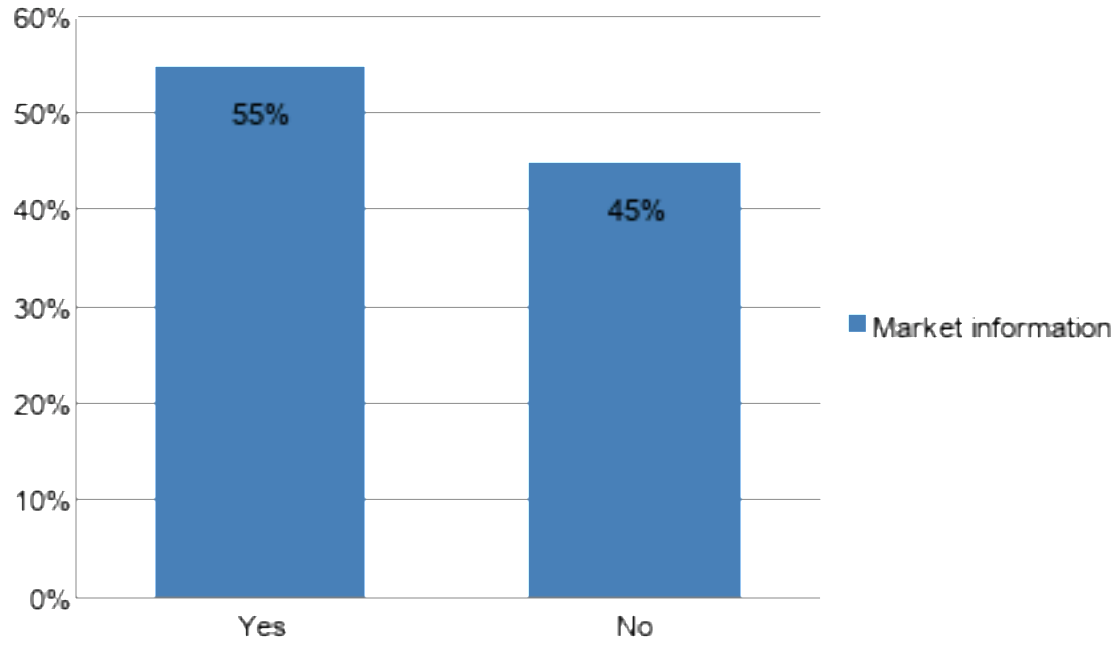

Figure 4.2

Source: From survey data

The results in Figure 4.2 indicate that 55% of the farmers had market information while 45% did not have. Therefore, having information about auctions does not necessarily guarantee participation. This can be due to issues such as high costs of production or less stock. Market information includes factors such as having information with regard to the location of the auction, price information and the requirements needed to be able to participate. Market information plays the crucial role of informing the farmers on market condition (Montshwe, 2006). Thus, the farmers with market information are likely to participate in the auction than those without.

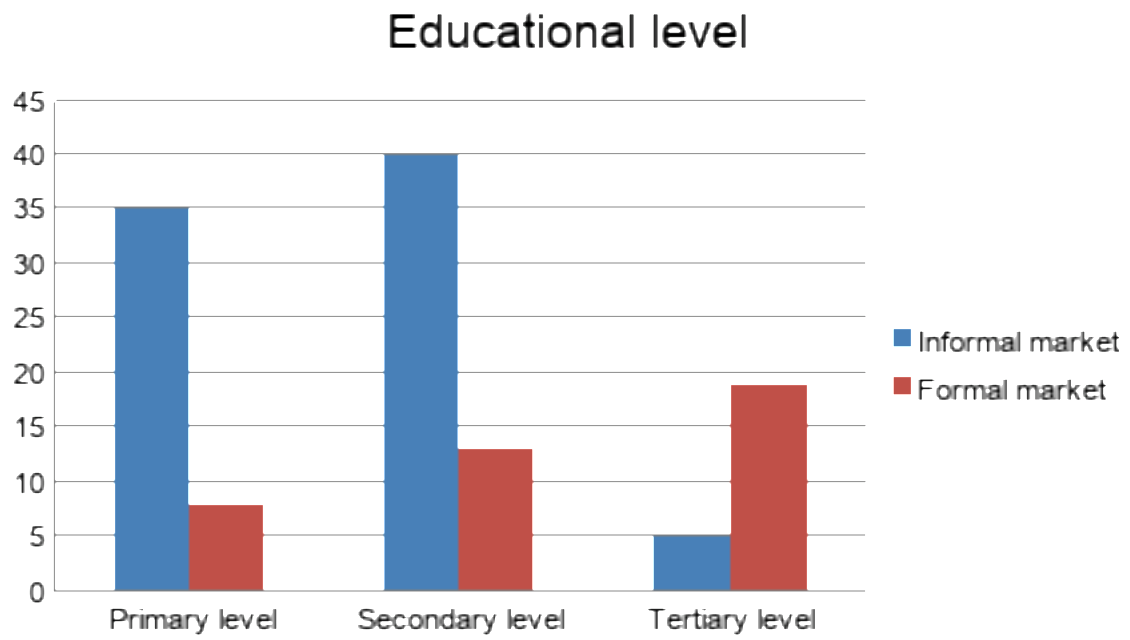

Figure 4.3

Source: From survey data

The result in Figure 4.3 shows the level of education of market participants in relation to marketing outlets. It is evident that the market participants who sold at formal markets had higher levels of education than those who sold using the informal market technique. The higher the farmers advance in education, the greater the chances of formal market participation becoming a norm. This is because the farmers are arguably able to integrate marketing information that can lead to an informed choice of the markets with a high level of returns.

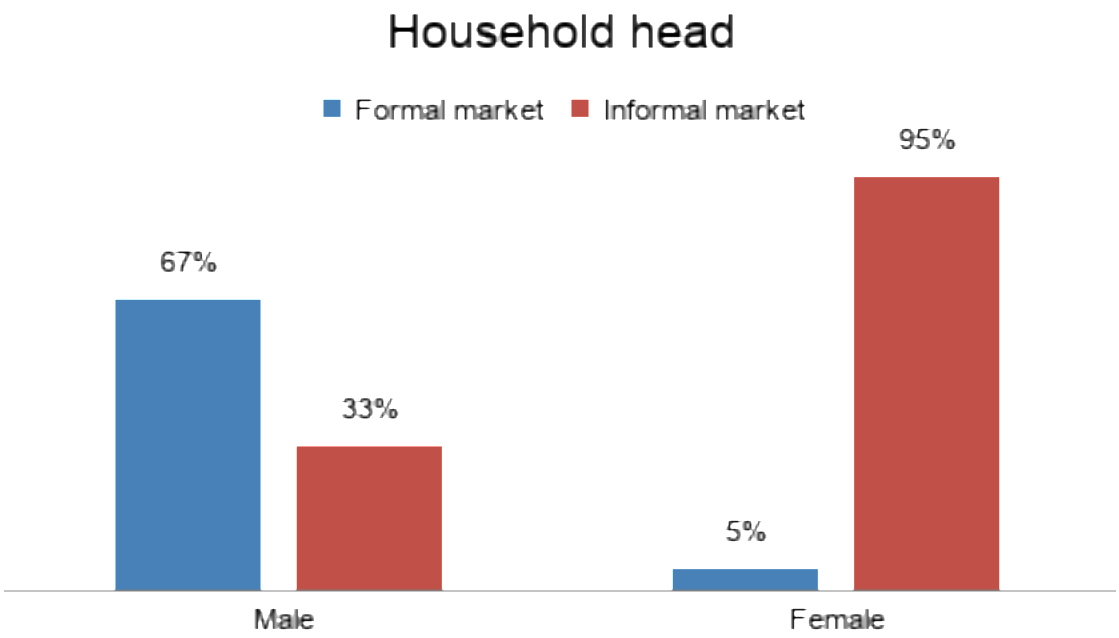

Figure 4.4

Source: From survey data

Figure 4.4 shows that 66.7% of male-headed households used the formal market as a way for marketing their livestock while only 33.3% of the male-headed households used the informal market. In terms of the female-headed households, the results show that more women use the informal market as a way to market their livestock with a percentage of 95% while only five 5% of the female-headed household use the formal market. The study by Musemwa *et al*. (2007) revealed that the livestock market and farming is still male-dominated with more men taking part, taking more risks and selling in the formal markets.

4.2.3 Table 4.6: Logistic regression results

variables	Coefficients	Std. Error	Wald statistics	Exp (B)
(Constant)	-3.15341			
Age of the farmer	-0.0887	0.0415	-2.1384	0.243
Gender	0.011**	0.1821	0.0604	0.021
Household size	0.6971	0.3353	2.1365	1.324
Farming experience	-0.4416	0.4793	-0.9214	0.125
Distance to the market	0.023*	0.0056	4.9132	0.001
Total herd size	0.007**	0.0042	1.6995	0.000
Access to extension services	-0.1675	0.2527	-0.6629	1.068
Access to credit	1.2183	0.3318	3.6717	1.641
Market info	0.0288*	0.0106	2.7288	0.000
Farmer training	2.3876	0.4786	4.9891	3.112
Education level	0.5134	0.8291	0.6192	0.971

The * represents the significance level:

1%=**; 5%=* and 10%=***

4.3 Discussion of significant variable

4.3.1 Total herd size

Total herd size of the farmers was found to be at 1% significant level and therefore exerting a positive effect on the level of participation of the farmers in the livestock auction. The total herd size of the farmer and the level of participation in the livestock auction by the farmer have a positive relationship. This implies that the more the farmers' total herd size increases, the more they are likely to participate in livestock auction as a result of a unit increase in the livestock. This is similar to the findings by

Barrett (2008) in Kenya and Nkhori (2004) in Botswana. The results suggest that the more farmers increase their total herds, the more they become more profitable, efficient and willing to gain more knowledge in terms of management practices that will reduce mortalities and improve production.

4.3.2 Market information

Information regarding the market is very vital in any business. Consequently, market information was found to be at a 5% significant level. This shows that there is a positive effect on the level of participation of the farmers in the livestock auction. This implies that a unit increase in the rate of access to the market information will most likely be able to increase the level of participation by the small-scale cattle farmers in the livestock auction. The results of this study are in line with those found by Nkhori (2004). Farmers who have a better access to market information always have better chances to make more profitable sales than those who lack the relevant information.

4.3.3 Distance to the market

Market distance was found to be at a 5% significant level and therefore exerting a positive effect on the level of participation of the farmers in the livestock auction. This result implies that the longer the distance to the market, the more farmers are likely to participate in the auction. This finding are similar to the study by Montswhe, Jooste and Alemu (2006). Small-scale cattle farmers in the study of Capricorn Municipality practically avoid transactional costs associated with going to the auctions by making local informal sales in their respective villages, for which they get instant cash and mostly less than the value of their livestock.

4.3.4 Gender

Cattle farming is globally recognised as a male-dominated industry. Hence, the results of this study show that a male-headed family is significant at 1%. This imposes a positive influence to the market participation by the small-scale cattle farmers. Being a male-headed household increases the probability of participating in the livestock auction by 1.11%. These results are in line with the study by Sigei, Bert and Kibet (2014) which

suggested that male-headed households are more market-oriented than female-headed one, hence they participate more in the market for livelihood and for income.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarises the discussion of the results of the study and further gives the conclusion. It summarises the empirical results of the Logistic Regression Model. This chapter also discusses the policy recommendation that would be suitable for the small-scale cattle farmers in the Capricorn District of the Limpopo Province as well as other small-scale cattle farmers throughout the country to enhance their production, marketing and profitability. Concerning marketing challenges revealed by the empirical results, policy recommendations are directly suggested to help in enhancing market participation as well as the choice of marketing outlets among small-scale cattle farmers.

5.2 Summary of the results

The study used different analytical techniques to address the objectives. The study had three objectives which were: to describe the socio-economic characteristics of the small -scale cattle farmers in the Capricorn District of the Limpopo Province; to assess the perception of small-scale cattle farmers in the Capricorn District of the Limpopo Province towards livestock auction, and to identify and analyse factors affecting the participation of small-scale cattle farmers in livestock auction in the Capricorn District of the Limpopo Province. The aim of the study was to analyse factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province.

Descriptive statistics such as means, minimum and maximum values, frequencies, percentages and standard deviations were used to describe the socioeconomic characteristics of the small-scale cattle farmers in the Capricorn District of the Limpopo Province as the first objective. The second objective of the study was addressed using the Likert scale whereas for the last objective, the Logistic Regression Model was used to analyse factors affecting the participation of small-scale cattle farmers in livestock auction

The target population of the study was the small-scale cattle farmers in the Capricorn District Municipality. The Multi-stage sampling procedure was used in the selection of representative sample. Three locations (Lepelle-Nkumpi, Molemole and Polokwane local municipalities) were purposively selected because of the large number of small-scale cattle farmers in the Capricorn District and also because their main economic sector is agriculture. Forty farmers in each location were selected randomly using simple random sampling to give a total sample of 120 farmers who were interviewed.

Socio-economic characteristics like the age of the farmer, household size, total herd size, gender, education level and marital status were described. The results showed that the mean age of market participants was about 48 years while the mean age for non-market participants was about 53 years. The household size mean of the market participants was found to be 4.62 and 4.46 for the non-participants. The results also showed that the total herd size mean of the small-scale farmers for the market participants is 15 and for the non-participants is 6.90. Gender shows that 86% of market participants were male while 14% were female. On the other hand, 87% of non-market participants were male while 13% were female. Marital status shows that 66% of the market participants were single, 30% married and 4% widowed. 37% of the non-participants were found to be single, 54% married and only 10% widowed. Education level shows that 12% of the market participants had primary education, 54% attained secondary level and 34% attained tertiary level. On the other hand, 53% attained primary level, 37% attained secondary level and only 10% attained tertiary education.

The results have revealed that a majority (58%) of small-scale cattle farmers interviewed were not partaking in the auction while those who took part comprised 42%. This means that only those who were more resourceful had an opportunity to reap the benefits from the sales. The results with regard to market information indicate that 55% of the farmers had market information while 45% did not have. This indicated that having information with regard to the auction does not necessarily guarantee participation.

The level of education with regard to market participation in relation to marketing outlets plays a crucial role. It is evident that the market participants who sold at formal markets

had higher levels of education than those who sold using the informal market technique. It was also found that 66.7% of the male-headed households used the formal market as a way for marketing their livestock while only 33.3% of the male-headed households used the informal market. In terms of the female-headed households, the results showed that more women use the informal market as a way to market their livestock with a percentage of 95% and only five 5% of the female using the formal market.

The Logistic Regression Model was used to analyse factors affecting the participation of small-scale cattle farmers in livestock auction in the study area. The results revealed that only 4 variables were significant. The total herd size was significant at 1% and had a positive effect towards the auction participation. The market information was also found to be significant at 5% and had a positive effect towards auction participation. Market distance was found to be at a 5% significant level and therefore exerting a positive effect on the level of the farmers' participation in the livestock auction. The gender of the household head was found to be significant at 1% implying that the industry can still be seen as male-dominated and exerting a positive effect on the level of farmers' participation in the livestock auction. This means that a marginal increase in these four significant variables will yield a marginal positive change on the level of auction participation and thus increase farm income. Other variables such as the age of the farmer, gender, level of experience, type of labourer, access to extension and educational level of the farmer were insignificant, although they had a positive relationship towards livestock auction participation. Such variables like the household size and the marital status of the farmer were also insignificant and their relationship towards the auction participation was negative.

5.3 Conclusion

The study only had two hypotheses. The first hypothesis was, the perception of small-scale cattle farmers in the Capricorn District of the Limpopo Province does not influence livestock auction participation and the second hypothesis was that there are no significant factors affecting the participation of small-scale cattle farmers in livestock auction in the Capricorn District of the Limpopo Province.

Hypothesis 1: The perception of small-scale cattle farmers in the Capricorn District of the Limpopo Province does not influence livestock auction participation. The hypothesis was therefore rejected since the Logistic Regression Model revealed results that show that factors such as age and the educational level of the farmers have an influence in the level of perception towards livestock auction.

Hypothesis 2: There are no significant factors affecting the participation of small-scale cattle farmers in livestock auction in the Capricorn District of the Limpopo Province. The hypothesis was therefore rejected since the Logistic Regression Model revealed results that show that factors such as the total herd size, market information, gender and distance to the market had a significant effect towards the participation of livestock cattle farmers in the auction. Farmers' gender, age of the farmer, household size, marital status of the farmer, educational level, access to extension, level of experience in cattle farming and type of labourer were statistically insignificant.

5.4 Policy Recommendations

- As it has been found that the total herd size, market information, gender, distance to the market and the farmer's age have influence on auction participation, the study recommends that to ensure complete market participation amongst small-scale cattle farmers, proper marketing infrastructure like group marketing must be put in place.
- The government and other policy makers should also increase the marketing information and abilities of small-scale cattle farmers through avenues like mass media, extension service and other means of capacity building. This will help the farmers in minimising transaction costs. When costs are minimised, small-scale cattle farmers will be keen on participating in auctions.
- As it has been shown that the cattle industry is male dominated, affirmative action should also be considered for gender awareness. This can be done by empowering more women to engage in livestock farming and to reap the same benefits as men.

- The study recommends that they should be more training programmes that are geared towards the efficient use of cattle infrastructural facilities such as branding so that farmers can take a lucrative part in the auctions like commercial farmers.
- The government should subsidise small-scale farmers with inputs such as feeds and vaccinations so that they can produce high quality outputs. Policies on comprehensive producer support should also be effectively implemented.

5.5 Further research

- The factors that influence the choice of marketing channels among the small-scale cattle farmers are numerous. This study merely studied the factors affecting the participation of small-scale cattle farmers in livestock auctions, but did not elucidate marketing channels, which start from the point of production, and the path that farmers use until the process reaches the point of consumption. This is an area that is fertile for future research.

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Appendix A: Questionnaire

ANALYSING FACTORS AFFECTING THE PARTICIPATION OF SMALL-SCALE CATTLE FARMERS IN LIVESTOCK AUCTIONS IN CAPRICORN DISTRICT OF LIMPOPO PROVINCE

The questionnaire is part of a Master's dissertation on analysing factors affecting the participation of small-scale cattle farmers in livestock auctions in the Capricorn District of the Limpopo Province. All the information you provide in this questionnaire is confidential. The information will be used for research purposes only.

Researcher: Mashaphu Mampa Peter (201211917)
University of Limpopo
Department of Agricultural Economics and Animal Production
Sovenga
0727

Questionnaire No: ……..

Name of Enumerator: …….

Village of cattle farmer: …….

Date of Interview: ……...

SECTION 1: SOCIO-ECONOMIC CHARACTERISTICS

1. Gender of the farmer

Male	Female
1	0

2. Age of the farmer (Indicate in years) …….
3. Marital status of the household head

Single	1
Married	2
Widowed	3
Divorced	4

4. Number of household members …….
5. How many household members are dependent on you? ……
6. How many household members assist with cattle farming? …….
7. Number of years involved in cattle production ……
8. How would you rate your health status?

Excellent	1
Good	2
Average	3
Poor	4
Very poor	5

9. How would you rate the health status of your herdsman?

Excellent	1
Good	2

Average	3
Poor	4
Very poor	5

10. Level of education obtained by farmer

Primary education	Secondary education	Tertiary education
1	2	3

11. Main occupation of farmer

Full-time farmer	Part-time farmer	Pensioner
1	2	3

12. Are you a member of any agricultural cooperative?

Yes	No
1	0

13. Household income per month

Less than R1500	Above R3000	More than R5000
1	2	3

SECTION 2: CATTLE PRODUCTION

1. How many cattle do you own? ……

2. Type of farming

Cattle	1
Mixed livestock (incl. cattle)	2
Crop and livestock (incl. cattle)	3

3. Do you keep farm records?

Yes	1
No	0

4. How long have you been farming (nearest year)?

5. How many days in a month do you spend with your cattle?

6. Why do you keep cattle?

Household consumption	Not important	Less important	Important	Very important
Ritual	1	2	3	4
slaughter	1	2	3	4
Sales	1	2	3	4
Savings	1	2	3	4

7. What is the number of hectares that you use for cattle herding? ……..

8. Do you have a herdsman?

Yes	1
No	0

9. If yes, how many are they? …….

10. What is his/her educational level?

Informal	1
Formal	2

11. How much is the herdsman paid per month?

12. How do you rate his knowledge on the following?

	Good	Fair	Poor

Mating	1	2	3
Gestation	1	2	3
Weaning	1	2	3
Handling	1	2	3
Pasture management	1	2	3

13. What changes took place in your herd over the last 12 months?

	Number
Birth	
Death	
Sales	
Theft	
Slaughtering	

14. What is the main factor creating risks when producing livestock?

Drought	1
Theft	2
Predators	3
Other	

15. How many times over the last ten years has the factor that you regard as the main cause increased production risk?……..

16. How long do your cattle walk to reach a water point? (km or m) …….

17. Do you dip your cattle?

Yes	1
No	0

If yes, how often?……..

18. Do you apply vaccines to you animals?

Yes	1
No	0

If yes, how often?……

19. Do you use supplement to feed your cattle?

Fodder	
Licks	
Bone meal	

If not, what is the main reason?

……

……

……..

20. Which of the following production equipment do you have?

Castrator	
Dehorner	
Feedlot	
AI	
Other	

21. Do you have access to credit?

Yes	No
1	0

22. If no, how do you fund the production of cattle on your farm?

….……

……..……..

23. Do you have access to extension officers?

Yes	No
1	0

24. If yes, how many times per month? …….

SECTION 3: MARKETING OF THE CATTLE

1. What is the main reason for selling cattle?

Drought	1
need cash for home consumption	2
need cash for cattle purchases	3
need money to pay school fees	4
I want to repay a loan	5
Other (specify)	

2. Which channel do you use to sell your livestock?

Speculators	1
Private sales	2
Butchers	3
Open markets	4
Co-operatives	5
Abattoirs	6
Auction	7
Other (specify)	

3. Are you satisfied with the channel through which cattle are marketed?

	Satisfied	Less satisfied	Not
Speculators	1	2	3
Private sales	1	2	3
Butchers	1	2	3
Open markets	1	2	3
Co-operatives	1	2	3
Abattoirs	1	2	3
Auction	1	2	3
Other (specify)			

4. Which of the channels do you regard as the most rewarding?

Speculators	1
Private sales	2
Butchers	3
Open markets	4
Co-operatives	5
Abattoirs	6
Auction	7
Other (specify)	

5. In terms of the channel you use regularly, what are the main benefits?

Receive high price	
Understand the contract	
Nearer	
Other	

6. Do you slaughter and sell carcass?

Yes	1
No	0

7. If yes, where do you sell it?

Consumers	1
Butchers	2
Other	

8. How many live cattle did you sell in the past 12 months?

Category	**Period**	**units Price**
Calves at foot (< 1 year)		
Heifers (1-3 years)		
Breeding females 3-6 yrs.		
Old cows > 6		
Bulls younger than 3 years		
Bulls over 5 years		

9. What type of transport mode do you use?

Bakkie	1
Truck	2
Trekking	3
Tractor	4
Other	

10. What general problems do you experience when moving your cattle?

Small size of transport	1
Lack of transport	2
High transport costs	3
Other (Specify	

11. When selling, do you combine your cattle with those of other farmers?

Yes	1
No	0

12. If no, state the main reason?

You do not sell at the same time	1
You do not sell at the same market	2
They will make your herd unproductive	3
You have a conflict with them	4
Other (Specify)	

13. Do you mainly travel on a

Gravel road?	1
Tarred road?	2
Both?	3

14. Do you have access to any of the following (indicate more than one)?

Sales pen	1
Loading ramps	2
Off-loading ramps	3
Good roads	4

Value adding	5
Market info	6

15. Do you receive market information prior to sales?

Yes	1
No	0

16. If yes, what is/are your source(s) of information?

Radio	1
Television	2
Extension publications	3
Co-farmer	4
Government extension officers	5
Cooperate extension officer	6
Other (Specify)	

17. What type of information is provided?

Market information	1
Production information	2
Financial management	3
Animal husbandry	4
Other (Specify)	