MARKETING INFORMATION NEEDS OF CATTLE FARMERS IN NGAKAMODIRI MOLEMA DISTRICT, NORTH WEST PROVINCE, SOUTH AFRICA

By

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DECLARATION

I, Keitumetse Patience Mompuisi, declare that the dissertation entitled “Marketing information needs of cattle farmers in Ngaka Modiri Molema District, North West Province, South Africa”, hereby submitted for the degree of Master of Science (MSc) in Agricultural Extension, has not previously been submitted by me for a degree at this or any other university. I further declare that this is my work in design and execution and that all materials contained herein have been duly acknowledged.

……. ……..

K.P. MOMPUISI DATE

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I take full responsibility for any errors or inadequacies that may remain in this study.

Most importantly, I would like to thank the Almighty God for the wisdom, strength and guidance during my academic journey.

ABSTRACT

The objectives of this study were to: determined the socio-economic characteristics of cattle farmers; investigate the sources of information available to cattle farmers; determine the preferred sources of information of cattle farmers; and determine the information needs of cattle farmers in the study area. The study was conducted in the NgakaModiriMolema District of the North West Province of South Africa. Two hundred and forty respondents were randomly sampled from a total number of 2270 cattle farmers in the District. Data was largely quantitative in line with the specific objectives of the study. A questionnaire was used to collect data for the study. Descriptive and inferential statistics such as, percentages, means and multiple regression were used for the interpretation of results. From the study, it was revealed that majority of cattle farmers were males (70%)and 30% females. In terms of education, 40% of respondents completed primary level of education, 37.5%completed high school and 0.4% university studies. In terms of farming and agricultural experience, 26.8% of respondents had more than 10 years of farming experience 14.6% had 21-30 years of farming experience while 47.6% had less than 10 years of farming experience. In terms of sources of information used by farmers, the major sources of information used by farmers were television with 83.3%, C5ll phone (85%), and Radio (93.3%). Critical marketing information needsidentified in the study include; Procurement (supply) (83.3), Product Launch (85), Market Segments (90.4) and Market framework (88.3).The indicator variables measured revealed very high levels of significance to information needs with the test statistics (t-test) at $p<0.05$ such as gender (t= 2.622), religion (t= 2.868), highest education level attained (t= 1.554), number of dependents (t= -2.492), size (t= 2.235), number of workers (t=-2.238), contact with state vet or extension officers (t=2.305), internet (t=1.624) and cell-phone (t=2.082).From the study, it can be concluded that marketing information needs are critical to the sustainable production of cattle in the NgakaModiriMolema District of the North West Province. It is recommended that more sensitisation on the needs and benefits of information to sustain cattle rearing be done by the Department of Agriculture and the meat company of South Africa.

LIST OF ABBREVIATIONS AND ACRONYMS

AESC	Agricultural Economics Standing Committee
AGDP	Agricultural Gross Domestic Products
DOA	Department of Agriculture
DSS	Decision Support System
GDP	Gross Domestic Products
GNSS	Global Navigation Satellite Systems
ICT	Information Communication Technology
ISRDS	Integrated Sustainable Rural Development Strategy
LDC	Local Development Centre
LWCC	Livestock Welfare Coordinating Committee
MIS	Marketing Information System
NDA	National Department of Agriculture
NEPRO	National Emergent Red Meat Producers Organisation
NSSO	National Sample Survey Organisation
NWDA	North West Department of Agriculture
RMAA	Red Meat Abattoir Association
SAFA	South African Feedlot Association
SAMIC	South African Meat Industry Company
USAID	United State Agency For International Development

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The agriculture sector in developing countries is increasingly becoming knowledge-intensive. Researchers at the global, regional and national levels continue to generate new information. Yet, as agriculture systems become more complex, farmers' access to a reliable, timely and relevant source of information is critical to farmers' competitiveness. Information must be relevant and meaningful to farmers, in addition to being packaged and delivered in a manner that they would prefer (Diekmann*et al*., 2009).Specific information could have higher impacts on the adoption of technologies and increase farm productivity for marginal and small agricultural landholders (Sammadar, 2006). Information need assessments give programme designers, the ability to develop interventions that target users with specific information needs.

Cattle farming are a tradition within South Africa's rural system. It is, therefore, not a coincidence that the Integrated Sustainable Rural Development Strategy (ISRDS, 2004) identifies cattle farming as the agricultural enterprise with the most likely chance of improving household food security and addressing poverty alleviation in communal farming areas of South Africa (*Coetzee et al*., 2005). In South Africa, cattle, sheep, goats and pigs are marketed through a number of channels and broadly divided into two categories as follows: informal and formal markets. Musemwa et al 2007 reported that auctions, private sales, speculators and abattoirs are informal and formal markets.

Livestock farming, and more specifically cattle farming in South Africa, has multiple dimensions and objectives. The cattle sub-sector is the most important red meat sub-sector in South Africa. It has contributed an estimated 8 per cent to the total agricultural Gross domestic Products in South Africa over the last 5 years (DOA, 2005).

The importance of cattle to the rural poor can, therefore, not be overemphasised.A cattle plays a very important role in rural systems, economic growth and has a strong human dimension (Birner, 1999; Kumar, Chander, and Harbola, 2000).

In addition, cattle, sheep, goats and pigs are often the main ways in which livestock farmers can acquire real assets.

Market opportunities for cattle farmers do exist in the country. The issues that need to be addressed are practical in nature and would require a joint effort by government, cattle farmers, producer organisations and private sector role players. There is aneed for government to provide extension officers with the capacity, support and physical means to expose cattle farmers to markets and by so doing, efficiency in production and marketing of cattle is achieved and huge profits realised. It can be concluded that marketing of cattle is probably one of the most complex policy issues to be addressed for improving household food security in communal areas of NgakaModiriMolema District Municipality of the North West Province since cattle production is themain source of income.

Markets can be a powerful vehicle for rural development. In most developing countries, however, markets are usually poorly developed or are missing (Dixon *et al*., 2001; Rola-Rubzen, Hardaker and Dillon 2001). Rural markets in Local Development centre, in particular, are fraught with weaknesses. Rural infrastructure such as roads and bridges are poorly developed; communication facilities are lacking, if at all present. Due to the inherent problematic conditions in many rural areas, transaction costs are often high. It is not surprising, therefore, that, the terms of trade of farmers are unfavourable.

For years, increasing agricultural production, particularly crop production, has been an underlying goal of the government. More recently, however, the government has also pushed for improving livestock productivity and increasing livestock production. Several government programmes to enhance livestock production have been introduced. These included spersal programmes, livestock vaccination programmes, and other production-enhancing programmes. For these programmes to be successful, however, developments in the production side must be accompanied by parallel developments in the marketing side.

Currently, there is a range of marketing systems in place for cattle produce marketing and associated input delivery in South Africa. It is likely that there is scope for the efficiency of these systems to be improved (Fay *et al*., 2002).

1.2. PROBLEM STATEMENT

Bernard et al 2014 reported that farmer's information needs change from time to time due to changing technologies, markets demands, policies, innovations and environmental changes. According to Oladeji *et al*. (2011), information is one of the resources required for the improvement of agricultural production that must be acquired and used to make informed decisions. Considering the roles played by farmers, it is important to provide information to them in order to boost their production and ensure their economic role in the South African economy. Moagi&Oladele (2012) reported that there is high Information need among land redistribution for agricultural development beneficiaries in the area of the Waterberg District, Limpopo Province, South Africa. Qas *et al*. (2013) also reported that sources of information and types of information determine the participation in mainstream beef markets by emerging farmers in Kenneth Kaunda District Municipality of the North West Province, South Africa. The efficiency of marketing information systems, especially through effective extension services and other media, will enhance the price of access to information by farmers in the province and the country as a whole. The understanding of farmers marketing information needs could help guide extension on other interventions to be well focussed and suited to the specific needs of farmers. Hence, it is imperative to ascertain and analyse the marketing information needs of cattle farmers in NgakaModiriMolema District Municipality of the North West Province, South Africa.

1.3. RESEARCH QUESTIONS

The following research questions were asked:

- What are the socio-economic characteristics of cattle farmers in the Ngaka Modiri Molema District Municipality?
- Identify the sources of information are preferred by cattle farmers in the Ngaka Modiri Molema District Municipality?
- What are the preferred sources of information by cattle farmers?
- What are the specific information needs by cattle farmers?

1.4. OBJECTIVES OF THE STUDY

The main objective of the study was to analyse marketing information needs of cattle farmers in Ngaka Modiri Molema District, North West Province, South Africa

Specific objectives of the study

The specific objectives of the study were to:

- Determine the socio-economic characteristics of cattle farmers in the Ngaka Modiri Molema District Municipality?
- Identify the sources of information used to cattle farmers in the Ngaka Modiri Molema District Municipality?
- Determine the preferred sources of information by cattle farmers; and
- What are the specific information needs of cattle farmers?

1.5. HYPOTHESIS

The hypothesis set for this study was:

There is no significant relationship between socio-economic characteristics and marketing information needs of cattle farmers.

1.6. SIGNIFICANCE OF THE STUDY

The findings of the study will be the basis for decision-making regarding issues of marketing information of cattle farmers in the Province, as well as access to information by farmers. The availability and accessibility of market information into the general activity and layout of the Department of Agriculture of the North West Province will be important as an output of this study. It will also assist in the fulfilment of certification requirements of the researcher apart from contributing to general scientific knowledge.

1.7. CHAPTER SUMMARY

This chapter has presented the introduction, the problem statement, the objectives of the study, the research questions as well the rationale or significance of the study. The chapter has laid the foundation for the study.

CHAPTER TWO

LITERATURE REVIEW

2. Introduction

This chapter examines relevant literature based on the objectives of the study. The literature review covered sections on livestock in rural livelihoods, information needs of farmers, cattle marketing information systems in rural areas of South Africa, information on livestock distribution channels, marketing challenges faced by cattle farmers, communication channels used by farmers (mass media).

2.1 Livestock in rural livelihoods

Livestock can be described as all domesticated animals, especially sheep, goats, cattle and pigs, intentionally reared in an agricultural setting for food and fibre or for breeding purposes. Cattle may be raised for profit or subsistence. Raising animals (animal husbandry) is an important activity in modern agriculture (and is currently practised in many societies). The South African livestock industry accounts for nearly 50% of the Agricultural Gross Domestic Product (Statistics South Africa, 2002).

According to Nkosi and Kirsten (1993), Montshwe, Jooste and Alemu (2005), cattle farming holds a position of great significance in developing areas of South Africa (SA) and has been considered as a major agricultural activity in the past ten years. The potential significance of cattle in the development of rural livelihoods is undisputedly substantiated by the enormous contribution of the livestock sector at a macroeconomic level. The contribution of the livestock sub-sector to the total agricultural gross domestic product (GDP) is the largest of all the agricultural sub-sectors in South Africa.

The agricultural sector in developing countries is increasingly becoming knowledge-intensive. Researchers at the global, regional and national levels continue to generate new information. Yet, as agricultural systems become more complex, farmers' access to a reliable, timely and relevant sources of information is critical to farmers' competitiveness. Information must be relevant and meaningful to farmers, in addition to being packaged and delivered in a manner that is preferable to farmers (Diekmann*et al*., 2009).

Cattle farming are a tradition within South Africa's rural systems. It is, therefore, not a coincidence that the Integrated Sustainable Rural Development Strategy (ISRDS, 2004) identifies cattle farming as the agricultural enterprise with the most likely chance of improving household food security and addressing poverty alleviation in communal farming areas of South Africa (Coetzee *et al*., 2005). In South Africa, cattle are marketed through a number of channels divided into two broad categories as follows: informal and formal markets. The former consists of individuals buying cattle for various reasons (slaughtering, as an investment or for social functions such as funerals, customary celebrations, weddings and religious celebrations). The latter is to sell directly to butcheries, auctions, and abattoirs.

In terms of access to markets, Jooste (2001) maintains that the transition to the small scale sector towards commercial production will ultimately be determined by its access to markets. According to Stroebel, (2004), several constraints affect the efficient marketing of cattle in the Eastern Cape Province of South Africa. These constraints include poor marketing infrastructure, lack of marketing herd size, high transaction costs and low purchasing power of buyers. This implies that marketing of cattle is probably one of the most complex policy issues to be addressed for enhancing sustainable smallholder agriculture (Jooste, 2001).

Historically, small-scale communal cattle producers have found themselves in a difficult market position because individually, they lack sufficient volumes of uniform cattle to attract buyers to their farms (Jooste, 2001). Although a number of market outlets do exist in the province. (Nkosi and Kirstern (1993) point out that small-scale communal farmer sell their cattle through informal marketing channels, which in most cases, have low purchasing power.

This leads to farmers getting relatively low prices for their animals. Thus, the challenge to cattle farming in communal areas is making use of marketing channels that offer the best cattle prices and the highest returns. Benson *et a*l. (2001) maintain that these decisions require reliable information about cattle prices, the right selling time, the channels available, cattle breeds and the age of cattle that give the highest returns.

There is an estimated 1.816 million herd of cattle in the North West Province (approximately 12% of the national herd).

Approximately 30% of this herd is in the hands of smallholder farmers. The off-take rate from this sector is estimated to be between 5-8%, which is extremely low (North West Department of Agriculture, 2003). Furthermore, the North West Province has 9% of the goat population (approximately 586 000) of South Africa. Approximately 86% of this goat population is in the hands of smallholder farmers (AESC, 2006).

2.2 Information needs of farmers

Agricultural extension, or agricultural advisory services, comprises of the entire set of organisations that support people engaged in agricultural production and facilitate their efforts to solve problems; link to markets and other players in the agricultural value chain; and obtain information, skills, and technologies to improve their livelihoods (Birner*et al*., 2009; Davis, 2009). This definition has evolved since the T&V programme, where the focus of extension was the transfer of technology to improve productivity, especially for staple food crops. While transfer of technology still has relevance, agricultural extension is now seen as playing a wider role by developing human and social capital, enhancing skills and knowledge for production and processing, facilitating access to markets and trade, organising farmers and producer groups and working with farmers towards sustainable natural resource management practices (Swanson, 2008). Within this expanded role, the breadth of information that agricultural extension can support through the provision and facilitation of access and sharing is much larger. In addition, since the agricultural sector scenario has become more complex, farmers' access to reliable and relevant sources of information has become increasingly important.

In his broad review of the contributions of the economics of information, Stiglitz, (2000) suggests that only limited progress has been made in understanding how societies and communities (such as farmer groups) absorb and adapt to using new information. Furthermore, he predicted that advances will be made on understanding how different organisational designs influence the nature of information generation, transmission, absorption and use (Stiglitz, 2000). Understanding the information needs of farmers help in designing appropriate policies, programmes, and organisational innovations.

At least three strands of literature that highlight the importance of information search and use are useful in the context of the economics of information in agriculture.

Farmers require a diverse range of information to support their farm enterprises. Information is needed not only on best practices and technologies for crop production (which the traditional public-sector extension system provided during the Green Revolution), but also about postharvest aspects, including processing, marketing, storage and handling. Farmers require information related to the following (Van den Ban, (1998): It helps in enhancing management of technologies for optimal use, changing farming system options and sourcing of input suppliers for farming. It also helps in the collection action drive of farmers and other members in the agricultural value chain. According to Van den Ban (1998), information also useful in terms of consumer demands for market information, timeliness, off-farm income generations, accessing farm credits and loans.

The information required will differ according to the categories of farmers and can be targeted to specific groups, based, for example, on landholding size or agro-climatic region (Rivera, 1996). In addition to needing different types of information and using different sources of information, different farmers will have different information seeking behaviours.

Factors such as literacy or access to resources related to livestock will have a large impact on information needs, searching behaviour, access, and use (Swanson, 2008). This is more useful when members (livestock farmers) are together and share information.

After making public the role of social capital in sharing and use of information by members of a community by Putman (1993), modelling the factors that contribute to the accumulation of social capital has gained importance (Glaeser*et al*., 2002). Within the context of farmers' information search and behaviour regarding its use, social capital can play a crucial role. Progressive farmers, for example, could have a higher propensity to invest in accumulating social capital by joining farmers' clubs and associations which may enhance their access to current information.

Farmers' interaction with other farmers, private input dealers, extension works and long-standing relationships with government officials can be captured by their level of social capital. Individual characteristics of farmers and their investments in nurturing relationships in developing relationships determine their social capital.

Thus, understanding the factors that affect social capital formation could be helpful in understanding farmers' information seeking behaviours.

Farmers are clearly not a homogenous group, and understanding the specific factors that influence their sources of information, access and use, is the first step towards better targeting of extension programmes and advisory services that facilitate information sharing. However, a majority of published literature that examine the factors that affect farmers information search behaviours, and factors that influence farmers' use of different information sources are from studies conducted in developed countries.

Factors that influence the use of information by farmers include their personal characteristics such as age (Carter and Batte, 1993), education (Waller *et al*., 1992), experience in farming (Schnitkey*et al*., 1992); business characteristic such as market orientation of farming (Ngathou*et al*., 2002), farm size (Solano*et al.*, 2003; Alvarez and Nuthall, 2005; Llewellyn, 2007), type of farm enterprise (Carter and Batte, 1993), debt level (Tucker and Napier, 2002), ownership of farm (Ngathou*et al*., 2002), and geographical characteristics such as distance to market centres (Solano*et al*., 2003) as well as distance to nearest technological adopter (Llewellyn, 2007). Recent studies go beyond the factors that influence the use of information by farmers to identify opportunities for interventions that will help increase information percolation depending on the information search behaviour of farmers.

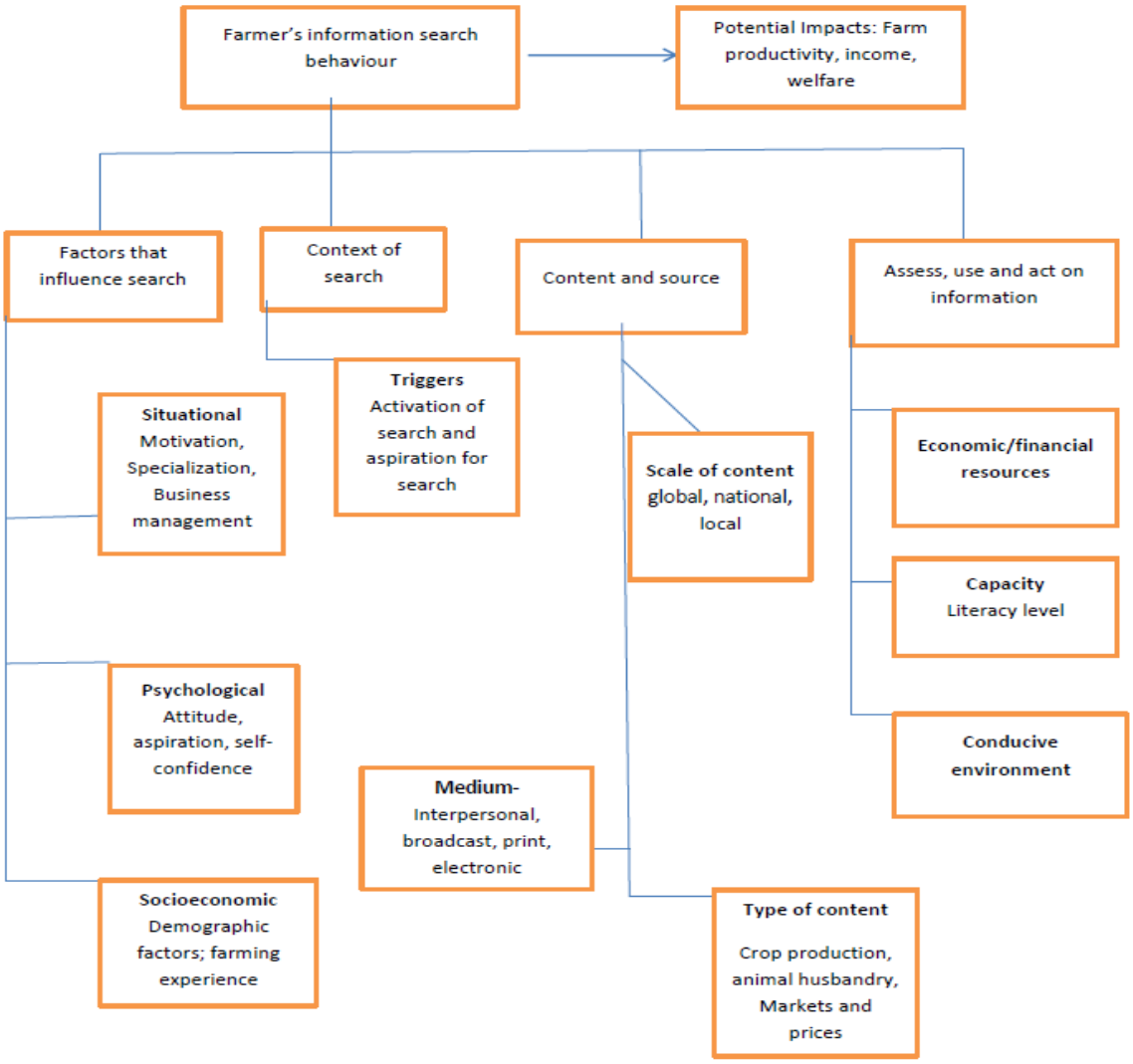
Bekele, (2006) used Ethiopian farmers' subjective ranking of agricultural problems and a stated preference model to determine their preferences for development intervention. Socio-economic circumstances and ranking of agricultural problems play a major role in the type of development intervention preferred.

The characteristics of information search depicted in Figure 1 relate to a set of observable factors that could be used to explain the information search behaviour of farmers.

These variables are grouped into situational, psychological and socio-economic factors (see Diekman*et al*., 2009). These characteristics, by themselves may not fully explain the information search behaviour of farmers. The context of information search also determines the search behaviour and the information needs of farmers (Wilson, 2006).

The information search behaviour of farmers is also conditioned by the aspiration for information search and the capacity of the farmer to accumulate social capital and social learning skills. In addition, the contents needed and the sources of information will further refine the search behaviour. The level of information search in terms of global, national and local information sources will depend on the triggers. However, these levels could be handled depending on the sources accessible to farmers. For example, local information needs could be met by a well-organised extension system that uses traditional and modern methods of communication such as television, radio and mobile phones. In addition, farmers who have access to information technology, are more likely to participate in agricultural and rural development programmes and other political, social and cultural practices (Anastasios*et al*., 2010). The role of NGOs and farmer-based organisations are increasingly recognised as key for information sharing on specific crops and cropping systems (Swanson and Rajalahti, 2010). Finally, the private sector that develops high-value agriculture chains through contract farming and input dealers who promote agrochemicals, play a critical role in filling the information gaps that may exist in rural areas (NSSO, 2005).

Figure 1: Farmers information seeking behaviour model



Source: Diekmann et al 2009 and Wilson 2006

2.3 Cattle marketing information systems in rural areasof South Africa

A Marketing Information System is defined as a system in which marketing information is formally collected, stored, analysed and distributed to managers in accordance with their informational needs on a regular and planned basis. The system focuses on understanding the information needs of marketing management, and supplies such information when, where and how the manager so desires.

Jobber (2004:89). As stated above, this is the type of information that smallholder livestock farmers in the North West lack.

According to Bekure and Tilahun, (1983), marketing provides the mechanism whereby producers exchange their livestock for cash. However, it is widely perceived that cattle markets in developing areas suffer significant inefficiencies due to high transaction costs, difficulties in contract enforcement, limited throughput capacity and selling animals that do not comply with market requirements. For example, in terms of the latter, a study conducted in the Eastern Cape by NERPO and IDT (2005) found that the general perception of cattle buyers was that farmers sell animals when they are too old and too lean but demand unreasonable prices for them, Jobber (2012).CTA 2014 reported that Market Information Systems (MIS), is a process which collect, disseminate information on agricultural markets and their dynamics. The benefits of MIS highlighted include MIS as a tool for public policies, and that MIS is credible and sustainable.

According to FAO 1997 defined Market Information Service, as a service usually operated by the public sector, which involves the collection on a regular basis of information on prices and, in some cases, quantities of widely traded agricultural products, from rural assembly markets, wholesale and retail markets, as appropriate, and dissemination of this information on a timely and regular basis through various media to farmers, traders, government officials, policymakers and others, including consumers

2.3.1 Internal continuous data

Businesses possess an enormous volume of marketing and financial data that may never be used for decision-making in marketing unless organised by means of an MIS. One advantage of setting up an MIS is the conversion of financial data into a form usable by marketing management.

For example, in the livestock industry, the Red Meat Abattoir Association (RMAA) compiles a price marketing information system. The RMAA was founded in February 1991 as an independent membership-based organisation. Prior to the deregulation process, the abattoir industry comprised mainly of larger high throughput abattoirs.

The deregulation process created an increase in the number of abattoirs to over 500. These events led to the need for current and up-to-date price information and market values from these abattoirs,

The RMAA initiated the development of the price information system with a database of historical and current prices, in order to create and maintain an information system with relevant and historical data essential for planning and development purposes. The primary objective is to timely release accurate and valid information at an acceptable cost. The price information report is released once a week. All participants are required to send their prices on a weekly basis to the RMAA every Monday before 12:00. All price information is handled in a confidential manner and may not be used for any purpose other than the development of the price information system. Prices are analysed and a report compiled and distributed to all participants through fax or electronic mail. This price information is just as relevant to the smallholder sector as it gives out information on the weekly prices of the various grades purchased by and sold to buyers. Smallholder farmers, just like other livestock farmers, need this information to make informed decisions on whether or not to sell their livestock and how much to expect for their livestock during a particular period.

2.3.2 Internal ad hoc data

Organisational data can also be used for specific (ad hoc) purposes. Capturing the data on MIS allows for specific analyses to be conducted when needed. Smallholder farmers can make informed decisions by having access to prices offered by abattoirs, depending on the various grades, and selling trends of certain grades of cattle in the market. This price information is, unfortunately, only available to subscribers, for example, the Internet–based SAMIC newsletter.

2.3.3 Environmental scanning

Although often amorphous in nature, environmental analysis, whereby economic, social, technological, legal and physical forces are monitored should be considered as part of the MIS. Smallholder farmers can make informed decisions by having access to prices offered by abattoirs, depending on the various grades and selling trends of certain grades of cattle in the market.

This price information is, unfortunately, only available to subscribers, for example, the Internet-based SAMIC newsletter.

2.3.4 Marketing research

Whereas environmental scanning focuses on the longer term, marketing research considers the more immediate situation. It is primarily concerned with the provision of information about markets and the reaction of these to thevarious products, price, distribution and promotion of decisions. As such, it is a key part of MIS because it makes a major contribution to marketing mix planning. Perrault and McCarthy, (2002: 218) maintain that successful marketing strategies require information on potential target markets and their likely responses to market mixes as well as about competition and other marketing environment variables. Managers also need information for implementation and control. Without good information, managers are left to guess, and in today's fast changing markets, this may lead to failure. Perrault and McCarthy (2002:218) define MIS as an organised way of continually collecting, accessing and analysing information that marketing managers need to make decisions. Successful marketing strategies require information on potential target markets and their likely responses to marketing mixes as well as on competition and other marketing environment variables. Access to good marketing information could be of great help to the smallholder farming community. Perrault and McCarthy (2002:218) explain MIS elements as follows:

2.3.5 Sources of information

These could either be market research studies, internal data sources and external data sources which could be of great help to the smallholder farming community.

Add a list of different sources

2.3.6 Marketing managers and the development of MIS

Information technology specialists must work in close collaboration with marketing managers to ensure that the right and useful information is stored in MIS. In the livestock industry, it is organisations such as the Red Meat Abattoir Association (RMAA), the then SAMIC and the Directorate-Statistics that, in partnership with Information and Communication Technology specialists, have the responsibilities of developing such marketing information systems.

The above-mentioned organisations are regarded as sources of cattle marketing information. Through their own established networks, commercial farmers have an advantage of accessing such information. The situation is different with farmers in the North West Province since networks are very poor. To date, the government has tried to facilitate the organisation of cooperatives among smallholder cattle farmers. Challenges confronted across this sector include lack of managerial capacity, especially financial management, inappropriate governance, petty politics and all other constraints. There is a dire need to capacitate these cooperatives for them to function properly

2.3.7 Decision support systems (DSS)

An MIS organises incoming information into a data warehouse, a place where databases of information are stored. To get better decisions, most marketing information systems are now provided with a decision support system (DSS). A DSS is a computer programme that puts managers online so they can study available data and make better marketing decisions faster.

This is the case in the livestock industry where organisations such as SAMIC and RMAA, collect, analyse and process raw data into information and make it available to users on a weekly or monthly basis.

2.3.8 Better decision-making through information

Once marketing managers or farmers see how a functioning MIS operates, or how a DSS can help in their decision-making, they become eager for more information. They realise that they can improve all aspects of planning, blending and combining the product, place, price and promotion elements into marketing mixes and developing and selecting plans. Furthermore, they can monitor the implementation of current plans, comparing results against plans and making necessary changes faster.

Fraser (1991) maintains that participation in the marketing system has relatively little to do with the provision of marketing facilities but rather with the role and number of cattle held by an individual.

On the other hand, Groenewald (1981) states that marketing should be recognised as a pre-requisite and not as a result of production, despite the quantity and quality of surplus available for sales. Although small-scale farmers have limited outlets, they still use channels of their own choice, and this is an indication that no one system fits every producer's needs. The choice of the marketing channel depends on a number of aspects. These include the availability of markets, prices offered in the market, distance to the market and the potential of the market to absorb the stock on sale. Paterson (1997) argues that, for farmers to be successful, the situation of a perfect market should prevail; implying that there have to be many buyers, many sellers, defined products, a marketplace and a market organisation. In many traditional settings, this is not the case as discussed in subsequent sections, but it is first necessary to look at different marketing channels.

According to Nkosi and Kirsten (1993), private sales are the most preferred channel in developing areas; this finding is also supported by a study conducted by NERPO (2005) for the Department of Agriculture. Speculators occupy a very important role in this regard. Often, they function in the remotest and least accessible areas where institutional services frequently do not reach them, thus providing a marketingchannel for rural surpluses, and often also fulfilling the consumption needs of rural communities by selling consumer goods. According to Bailey *et al*. (1999), a cohort of competitive arbitrageurs is essential to efficient marketing arrangements. Speculators are, however, often labelled by small-scale producers as exploitative. Where the context of institutions and infrastructure is not concrete, speculators may force emerging cattle farmers to confront a single, monopolistic buyer, consequently resulting in exploitation. Bellamy and Greenshields, (1979) argue that the anti-speculator attitude in sub-Saharan Africa has led to distrust, wide product output and price fluctuations, misallocation of farm resources as well as the deterioration of product quality.

Another marketing channel used by small-scale producers is auctioning, which plays a very important role in price setting (Nkosi and Kirsten, 1993). According to Nkosi and Kirsten (1993), auctioneers in developing areas experience a number of problems. One of such problems is lack of a reasonably saleable number of cattle. Generally, the majority of small-scale farmers in developing areas do not understand the modus operandi of auctions.

Nongoma District Municipality is a typical example where an auction system could not function, primarily because farmers wanted the auction to operate the opposite way (i.e. they could not agree on the price per kilogram and wanted to determine prices in a similar manner as what obtains during private sales).

Other areas where auctions are not functioning properly or are completely absent include Libode and Port St John's (Eastern Cape), Ganyesa (North West Province), and Sekhukhune and Bohlabela District Municipalities (Limpopo Province).

Armstrong and Kotler (2004:142) argue that increasingly, marketers view information not only as input for making better decisions but also as an important strategic asset and marketing tool. A company's information may prove to be its chief competitive advantage. Competitors can copy each other's equipment, products, procedures, but cannot duplicate the company's information and intellectual capital.

Armstrong and Kotler (2004: 142) also maintain that in today's more rapidly changing environments, managers need up-to-date information to make timely, high-quality decisions.

Armstrong and Kotler (2004:143) further argue that with the recent explosion of information technologies, companies now can generate information in greater quantities. Despite this data overload, marketing managers frequently complain that they lack information of the right kind. An effective MIS starts by determining the objective of the information and identifying decision needs that require certain information.

In the South African livestock industry, for example, SAMIC and RMAA, the latter being a representative forum for abattoir owners in South Africa, compiles a marketing information and a price information system respectively, on a continuous basis.

SAMIC, an umbrella association of livestock distribution chain industries was, among others, responsible for the provision of information on livestock classes, monitoring of livestock price trends and in the promotion of a positive image of South African red meat locally and internationally (Ntshephe, 2007.)

RMAA, on the other hand, collects weekly prices from member abattoirs to redistribute to subscribers and members. This information assists sellers to decide when and where to

sell livestock after price considerations have been made. According to Frick and Groenewald (1999), small-scale farmers will, undoubtedly, benefit from information about prevailing market conditions, type of product demanded, quality, quantity, and price and market opportunities.

Within a South African context, the lack of timely and reliable market information is particularly acute if one, for example, considers that information on the number of cattle slaughtered (supply) cannot be officially verified. This represents a major problem since demand and supply forces determine prices.

2.4 INFORMATION ON LIVESTOCK DISTRIBUTION CHANNELS

Information on livestock distribution channels forms an integral part of the livestock marketing information system. Farmers need to know which channels they should use to make livestock available at the right place, to the right target market at the right time.

The discussion that follows focuses on the detailed information on the various distribution channels in the livestock industry. Every farmer involved in the marketing of livestock, needs to have information on the characteristics of each distribution channel. The section below shows the major channels of distribution at the disposal of the livestock producers namely livestock marketing agents, private sales, feedlots, abattoirs and butchers. The characteristics of each distribution channel are discussed below NDA (2001).

Channel 1: Auctions

Livestock auctions are traditionally a collection point where large numbers of animals (cattle, sheep and horses) are bought and sold. Livestock marketing auctioneers render a service of bringing together a buyer and a seller, without owning the livestock, but assist in the transfer of ownership from producer to buyer. Their activities include arranging live auctions at regular times and at strategic points. Livestock producers bring livestock to auction at pens where transactions take place. Auctions are arranged by livestock auction agents on a commission basis.

Auctions play an important role in livestock marketing, and are the principal sales outlets for live animals. Auctions are quite popular in the smallholder sector. The sale of animals is done on the hoof (i.e. sold live) (Ntshephe, 2013).

Channel 2: Private sales

In developing areas, private sales are an important marketing channel. A private sale is a broad concept which in the case of livestock marketing, can comprehensively be viewed as a non-institutionalised activity involved in the buying and selling of various forms of livestock from local farmers. Private sales also include individuals buying livestock for different reasons. Informal buyers were interviewed for their impression on the quality of livestock and the price paid for livestock. Informal buyers were also requested to make suggestions on how smallholder livestock farmers can make more money from their livestock, or even improve the penetration of markets (Ntshephe, 2013).

It is difficult to quantify private sales as it takes several forms. Livestock is bought either for slaughtering or for investment. Livestock cattle, in particular,are bought for social functions, such as funerals, customary celebrations, weddings and religious celebrations. Private buying is important to farmers as they are able to determine the prices for their animals. Private sales are therefore the cheapest and probably the simplest form of marketing. However, demand is irregular with high demand during certain periods of the year, such as during festive seasons (Ntshephe, 2013).

Channel 3: Feedlots

A feedlot is a confined area with watering and feeding facilities where livestock is hand-fed or mechanically fed to consistently produce quality meat. Since animals are kept in pens, they are fed grain-based diets, hay or silage. This kind of livestock production is referred to as grain-fed beef production (Olivier, 2004). Feedlots normally buy weaned calves with a live mass of 230 kilogrammes at an age of 205 days and add about105 kilogrammes through intensive feeding for about 100 days. The ultimate dressed carcass weight will be about 215 kilogrammes. Classification of livestock handled by feedlots is 95% Grade *A* animals and approximately 5% AB grades. The benefit of grain-feeding in a feedlot with controlled quality and amounts of food is that cattle produce beef with uniform carcass fat content and colour (Olivier, 2004).

There are currently about 60 commercial cattle feedlots and ten 10 sheep/lamb feedlots registered under the South African Feedlot Association (SAFA).

These feedlots market their animals throughout the year, have a total standing capacity of about 420 000 animals with a throughput of 1 533 000 heads per annum (SAFA, 2014).

Channel 4: Abattoirs

The abattoir industry is responsible for the conversion of cattle and livestock in general, into meat. The process remains critical to ensure a safe and wholesome product to consumers.

The Meat Safety Act, 2000 (Act 40 of 2000) addresses measures to promote the safety of meat and animal products, and to establish and maintain essential national standards in respect of abattoirs. A significant number of abattoirs are operated as private ventures. These abattoirs differ in size and are located all over the country. Since the deregulation of the South African meat industry, a rapid growth in the number of registered abattoirs has been experienced, namely from 330 in 1993 to 560 in 1999. Total slaughter capacity at registered abattoirs currently is estimated at 16 500 units per day (one slaughter unit either equals one head of cattle or 15 herds of sheep or goats). Since deregulation, the abattoir sector fulfils an integrated wholesale function by buying animals on the hoof and directly selling carcasses and meat cuts to the retail sector (Ntshephe, 2013; Brouwer, 2004).

The role of the abattoir industry in the meat chain has changed dramatically over the last number of years due to the vertical integration and privatisation of the industry. Abattoirs are taking responsibility for the product once it is slaughtered with regard to quality and safety, and at the same time, have to incur losses attributed to the poor quality of purchased livestock. The development of the meat industry is also such that abattoir owners are often more involved in the processing side of the product and this has placed an even more direct burden on the abattoir owner (Ntshephe, 2013).

When livestock is ready for the market, the animals are transported from the producer (farmer) or feedlots to the abattoir. The animals must be transported in such a way that they are not injured since this could cause bruising. Animals are under stress when they are transported. Due to the stress, the animals are kept for some time to rest or calm

down before being slaughtered. During this period, the veterinarian examines the animals for any diseases. The transportation of live cattle is governed by the transportation welfare codes, coordinated by the Livestock Welfare Coordinating Committee (LWCC) (DAFF, 2011).

Meat goes through many operations before it hangs dressed in cold stores. The animals are stunned before they are slaughtered and dressed. After slaughtering, the carcass is suspended from an overhead rail for the dressing operation, and the hide and internal organs removed.

Various trimming procedures are performed on the carcass. By the time the carcass reaches the end of the chain, it is dressed and ready for inspection, chilling and classification. Once the slaughtering and dressing have been completed, carcasses are inspected by health inspectors in order to ensure that it is fit for human consumption (USDA, 2015).

Channel 5: Butchers

Another available option to farmers is to sell livestock directly to butchers. This option plays an important part in the marketing of cattle in developing regions. Though their market share and role cannot be quantified, they are a very important channel for smallholder livestock farmers. One butchery owner was interviewed during the study. Butchers enhance the marketability of livestock by acting as buyers in their own right and as buyers during auctions as well. Farmers with a strong bargaining power in determining the prices of their stock constitute the main reasons why some farmers are usually satisfied with sales to butchers (Musemwa, 2008).

2.5 MARKETING CHALLENGES FACED BY CATTLE FARMERS

The productivity of cattle in communal areas is affected by diseases and parasites, lack of feed resources and poor rangeland management (Chimonyo*et al*., 2000; Bester *et al*., 2003; Montshwe, 2006; Musemwa*et al*., 2007). However, for many cattle farmers, production-related problems are likely to be minimal. Therefore, cattle producers are likely

to encounter market-related constraints such as poor infrastructure, high transaction costs and lack of information.

2.5.1 Infrastructure

Lack of marketing facilities poses a serious constraint on the marketing of cattle (Mahabile*et al*., 2002). Most beneficiaries are located in remote areas that are far from major markets, where there is a serious lack of both physical and institutional infrastructure (NDA, 2005). This partly explains the poor cattle supplies to formal market outlets by small-scale farmers (USAID, 2003). In communities that have marketing facilities, they are either in a poor state or non-functional because farmers do not have funds to maintain them (Frisch, 1999).

The most important physical infrastructural weaknesses for the communal Nguni cattle producers are related to transport and holding facilities (Bailey *et al*., 1999). In South Africa, lack of marketing facilities such as sale pens and loading ramps are some of the numerous factors that pose a serious constraint on the ability of small-scale farmers to market their cattle (NERPO, 2004). On the contrary, Fidzani, (1993) reported that that poor infrastructure does not influence livestock marketing since in most cases, buyers provide their own loading and transport services. Comparatively, NERPO (2004) maintains that apart from the distance to formal markets, the poor state of road networks in communal areas of South Africa constitute a serious constraint. It affects the ability of farmers to attract many buyers in their areas since bad road network systems are associated with very high transport costs.

There is a need for the government, community members and stakeholders to collaborate in constructing and maintaining community infrastructure. The involvement of community members can instill some sense of ownership and responsibility and enable farmers to maintain infrastructure.

2.5.2 High transactional costs

Transactional costs are barriers to the efficient participation of farmers in different markets. Producers will not use a particular channel when the value of using such channel is outweighed by the cost of using it.

The remote location of most communal cattle producers, coupled with poor road networks, result in high transactional costs (especially transport costs) reducing the price that traders are prepared to pay for the cattle (Musemwa*et al*., 2007). Makhura (2001); Mahabileet *al*. (2002); and Nkhori (2004) maintain that even if farmers are in areas with good road linkages, the distance from the markets tends to influence transaction costs. The further away the farmers are from markets, the higher the transport costs they incur. In addition, farmers incur extra transport costs to obtain transporting and selling permits from police stations and veterinary offices respectively. It is a statutory requirement that when purchasing or selling cattle, stakeholders must have valid identification certificates and transporting permits (NDA, 2005). These restrict farmers' participation in distant markets.

2.5.3 Lack of information

None or poor provision of agricultural information is a key factor that has greatly limited agricultural development in developing countries (Bailey *et al*., 1999). Information needs of farmers are things that enable them to make rational, relevant decisions and strengthen their negotiating ability during transactions with buyers and consequently, prevent possible exploitation by better-informed buyers (Coetzee *et al*., 2004). Information needs of communal farmers range from information on prevailing production techniques and market conditions, type of products demanded, quality, quantity, price and market opportunities (Bailey *et al*., 1999).

According to Montshwe (2006), lack of time and reliable information is severe, particularly in communal areas. Although considerable progress has been made in the provision of communication systems such as telephone and cellular phone network facilities, communal farmers still remain uninformed in terms of new production techniques, market prices, trends and dates for auction sales. Radio and personal communication are still used as the main source of information. However, access by smallholder farmers to

radios, televisions and the internetare still limited. In most cases, information is broadcast or disseminated only in Afrikaans and English. This makes the information irrelevant to the majority of communal farmers who speak or understand only their local languages (isiXhosa, Sotho and isiZulu).

The poor transfer of knowledge, skills and information is further manifested by the limited interaction of farmers with extension officers due to poor road networks and resources (Coetzee *et al*., 2004). Training and education will further improve the capacity of farmers and allow them to make informed decisions.

2.5.4 Diseases

Diseases are a major constraint to the improvement of the livestock industry in the tropics (Devendra*et al*., 2000). Animal health issues are barriers to trade in livestock and its products, while specific diseases decrease production and increase morbidity and mortality (Düvel and Stephanus, 2000; Mwacharo and Drucker, 2005; Chawatama*et al*., 2005). These diseases include anthrax, foot and mouth disease, black-leg and contagious abortions. The Mail and Guardian (2007) reported that the South African government has confirmed that until further notice, no veterinary import permits will be issued for cloven-hoofed animals and products derived thereof, originating from the United Kingdom due to the current outbreak of diseases in the United Kingdom. The outbreak of such diseases in South Africa can be a threat to communal cattle producers who do not have medicine and proper disease control infrastructure. Furthermore, movement of cattle and by-products are difficult to monitor in communal areas. Development of effective and participatory ways and means of enforcing current rules and regulations that control animal movement is, therefore, important.

Communal cattle farmers fail to attract many buyers in their communities. This is due to a number of reasons, some of which include lack of marketable cattle numbers and poor health conditions of cattle. According to Stevens and Jabara, (1988), the number of livestock in communal areas is generally low per producer and the average weight of animals is generally low compared to those of the commercial farming sector. Lack of marketable livestock numbers and the poor condition of livestock, therefore, results in buyers not coming to purchase cattle since they will face very high transactional costs (Makhura, 2001).

Furthermore, the poor feeding of livestock often results in farmers getting low farm gate prices, especially during dry spells (Makhura, 2001).

More often, this leads to the refusal of farmers to sell cattle. Cattle auctioneers and speculators often raise concerns that they cannot pay competitive prices for animals that are in poor conditions or not ready for the market (Nkhori, 2004). In addition, Nkhori (2004) also maintains that the poor condition of livestock is important but the age of animals affects prices. The animals are often too old when sold by farmers and this equally contributes to poor prices.

2.6 COMMUNICATION CHANNELS USED BY FARMERS (MASS MEDIA)

Mass media could be used to expose a large number of people to the same information at the same time. Mass media could convey information through sound (radio, audio cassettes); moving pictures (television, films and videos); and print (posters, newspapers and leaflets). The attraction of mass media to extension services is the high speed and low cost with which information can be communicated to people over a wide area. Although the cost of producing and transmitting a radio programme may seem high, when that cost is divided between the millions of people who may listen to the programme, one realises thatin fact,it is a very cheap way of providing information to the public. The cost of an hour's radio broadcast per farmer, who listens, can be less than one-hundredth of the cost of an hour's contact with an extension agent (Oakley and Garforth, 1985).

However, mass media cannot perform all the services of an extension agent. It cannot offer personal advice and support, teach practical skills or provide answer questions immediately. The low cost suggests that mass media should be used for tasks that are properly suited to it. These tasks include the following:

- Creating awareness of new ideas and interests in farming innovations;
- Giving timely warnings about possible pest and disease outbreaks, and urgent advice on what actions to take;
- Multiplying the impact of extension activities. A demonstration will only be attended by a small number of farmers, but the results will reach many people if reported in newspapers and on the radio;

- Sharing experiences with other individuals and communities. The success of a village in establishing a local tree plantation campaign might stimulate other villages to do the same if broadcast over the radio. Farmers are also often interested in hearing about the problems of other farmers and how they have overcome them;
- Responding to questions and advising on problems common to a large number of farmers;
- Reinforcing or repeating information and advice. Information heard at a meeting or passed on by an extension agent could easily be forgotten. It will be remembered more easily if reinforced by mass media; and
- Using a variety of sources that are credible to farmers. Instead of listening to advice only from extension agents, through mass media, farmers can be brought into contact with successful farmers from other areas, respected political figures and agricultural specialists.

Communication through mass media requires specialist professional skills. Few extension agents will always be required to produce radio programmes or films. However, extension agents can contribute to the successful use of mass media by providing material to media producers, in the form of newspaper stories, photographs and recorded interviews with farmers, items of information about extension activities or ideas for new extension films.

This could be done through mass media in their extension work, for example, by distributing posters and leaflets or by encouraging farmers to listen to farm broadcasts.

The application of existing communication technologies and media to the problems of development has precisely delimited DSC (AID, 1984, p. 1). The systematic utilisation of appropriate communication channels and techniques is to Increase people's participation in development and to inform, motivate and train rural populations, mainly at grassroots level (Coldevin, 1987). DSC sections are currently found within most international development agencies (although they may be subsumed under different titles), with spheres of project support ranging across agriculture, forestry, fisheries, health, nutrition and population activities, to women in development and functional literacy.

2.7 Chapter summary

This chapter reviewed literature on the key areas of the study in terms of livestock in rural livelihoods, information needs of farmers, cattle marketing information systems in rural areas of South Africa, information on livestock distribution channels, marketing challenges faced by cattle farmers, communication channels used by farmers (mass media).

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Introduction

The chapter outlines how the study was conducted, describing specific research tools which include the surveys designs and the analytic framework. The discussion covers the choice of, sampling technique and sample size determination, research method, population under study, sampling procedure, and the method that was used to collect data.

3.2 Study area

NgakaModiri Molema District is one of the four district municipalities in the North West province. The other three are Bojanala Platinum, Dr Ruth SegomotsiMompati (Bophirima) and Dr Kenneth Kaunda districts. The district is home to Mahikeng (Mafikeng), the capital of the province. Aptly named, the capital is nicknamed "the City of Goodwill", which is also the city's slogan. It is a rapidly growing, modern, residential, administrative and commercial town that contrasts with its fascinating history. It is situated centrally within the North West province. It is made up of the five local municipalities of Mahikeng (Mafikeng) with 102 villages, Ratlou (Setla-Kgobi) (28 villages), Ramotshere-Moiloa (Zeerust) (40 villages), Ditsobotla (106 villages) and Tswaing (31 villages). It shares an international border with the Republic of Botswana.

NgakaModiri Molema District has a total population of 764,351, which is equivalent to 24% of the total population of the North-West, 34% of the total population reside in Mafikeng Local Municipality, thus giving it the largest population density in the district. A mere 14% of the total population is situated in Ratlou Local Municipality.

Ngaka Modiri Molema District is a predominantly rural region. Farming activities focus on cattle ranches, game farming around Zeerust and maize, wheat, fruit and vegetable cultivation. Several kinds of minerals, including gold, diamonds, lime and salt are also mined in the area. Agriculture and mining form the economic backbone of the district

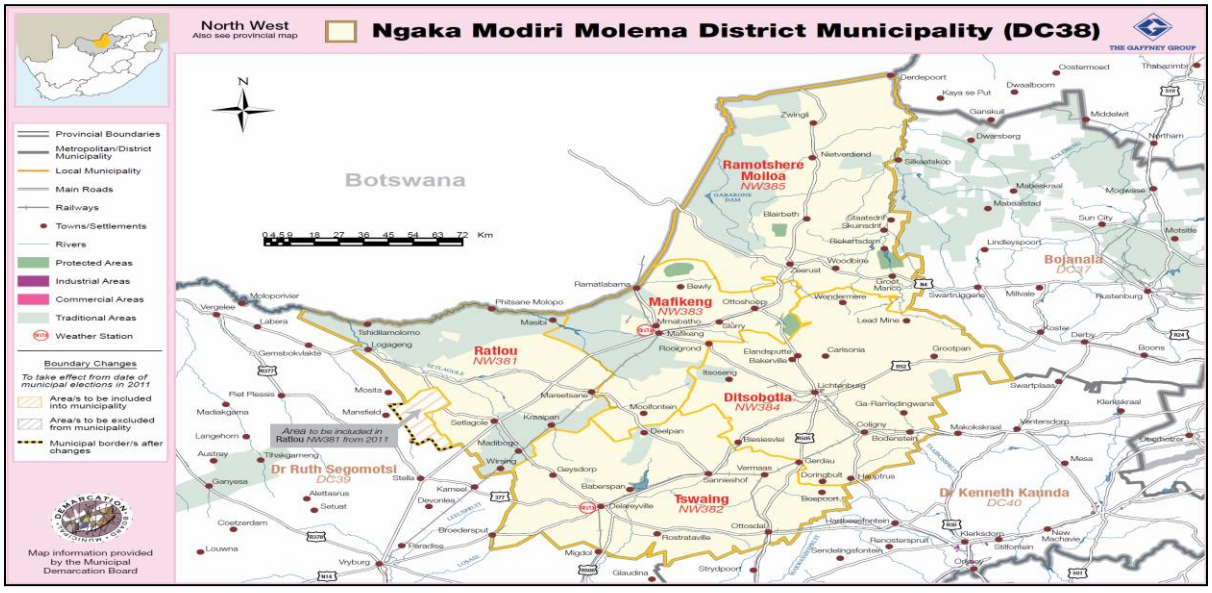


Figure 3.1: Map of Ngaka Modiri Molema District Municipality

Source: (Ngaka Modiri Molema District)

3.2.1 Study population

The population of the study consists of all cattle farmers in Ngaka Modiri Molema District of the North West Province, South Africa.

3.2.2 Sampling procedure and Sample size

A sample random sampling technique was used to select three local municipalities were selected from NgakaModiriMolema District (Mafikeng, Ratlou and Ramotshere-Moiloa Local Municipalities) However, three local municipalities were selected from NgakaModiriMolema District as follows: Mafikeng, Ratlou and Ramotshere-Moiloa Local Municipalities because of the cattle concentration in these municipalities. Two villages were selected from each municipality using simple random sampling techniques, namely; Mahikeng (Tlapeng) and (Makouspan), Ramotshere-Moiloa (Dinokana) and (Gopane), and Ratlou (Setlagole) and (Disaneng) villages.

Cattle farmers were randomly selected from each village of the three municipalities. Data for the study was collected through structured interview schedules.

After the random selection, sample sizes of 240 participants were selected from the total study area as indicated in Table 3.1.

Table3.1. Selection of sample size

Village	**Population of cattle farmers**	**Selected sample size**
Setlagole	420	44
Dinokana	800	85
Tlapeng	83	9
Makouspan	94	10
Gopane	600	63
Disaneng	273	29

	2, 270	**240**

3.3 Data collection

Data for the study was collected through structured interview schedules. A structured interview schedule was used in order to collect relevant data in accordance with the objectives and research questions raised in the study. The purpose of the study was to determine the importance of marketing information needs among cattle farmers. The questionnaire was into the following sections:

Section 1- Focused on the personal characteristics of farmers such as gender of respondents, age, highest level of education attained, farm size (in hectares), household size, household head, number of dependents, years of farming experience, income from farming, farming enterprise, other sources of income and sources of information.

Section 2– Focused on the sources of information on cattle marketing. Respondents were requested to choose from a list of information sources.

Section 3 – Requested participants to determine their preferred sources of information on marketing. Participants were requested to indicate their preferred sources of information from a list of information sources on cattle farming.

Section 4– Items in this section sought to determine marketing information needs of cattle farmers. Participants were requested to indicate areas of marketing information needs, based on a 3 point scale of moderate and low.

3.4 Data analysis

After the data collection, the data from completed questionnaire was coded and captured. Descriptive statistics such as standard deviation mean and frequency distribution were employed to summarise the socio-economic data. Graphs and tables were used where necessary.

The following regression model was used:

$Y= a+b_1x_1+b_2x_2+b_3x_3+b_4x_4+b_5x_5$……. +e

Where

Y: information needs (Index of composite score of marketing information needs)

A: the intercepts

b1: regression coefficients

X1=Age (years)

X2=Highest qualification (Educational level)

X3=Household head (Yes or No)

X4=Years of farming experience (years)

X5=Income from farming (Rand)

X6=Farming experience before joining scheme (ears)

X7=Knowledge about state vets (Yes or No)e= error

3.5 Ethical procedure of data collection

Standardisation and uniformity was adopted in the study for all participants. Permission to enter the farm was obtained from the farmers themselves.

They were informed about the objectives of the study. Participants were assured that the information obtained would be treated as confidentially as possible and that the results would be used solely for research purposes. The results may be used to develop policy guidelines on support services needs and constraints faced by farmers in the Department of Agricultural, Forestry and Fisheries. Participants were also treated with respect, dignity and the research objectives clearly explained to them. Participation in the study was voluntary for all participants and interviews focused solely on issues related to marketing information needs of farmers in the study area.

3.6 Chapter summary

In this chapter, the study area was described. The research design was followed addressing the population, sampling procedure, data collection instrument, data collection procedure and ethical concerns were attended to.

Analysis and discussion of the data was obtained from conducting 240 structured interviews with different farmers. The purpose of this survey was to identify issues related to marketing information needs among cattle farmers.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. INTRODUCTION

The discussion in this chapter is based on the results obtained. It is divided according to the tables given below and a detailed explanation of all issues regarding the different tables is given according to the views expressed by farmers. Issues regarding the personal characteristics of farmers, sources of information used by organisations, marketing information on cattle farming and determinants of attitudes towards information needs of farmers of cattle beef production are also discussed.

4.2. PERSONAL CHARACTERISTICS OF FARMERS

Table 4.1 presents the personal characteristics of cattle farmers in the study area. The majority of the respondent, (70%) were males, with 30% females. According to World Bank *et al*. (2009), women make essential contributions to the agricultural sector and rural economies in all developing countries. Their roles vary considerably between and within

regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Rural women often manage complex households and pursue multiple livelihood strategies. Their activities typically include producing agricultural crops, tending animals, processing and preparing food, working for wages in agricultural or other rural enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining homes. This explains why in most cases, the percentage of women who participate in agriculture is usually lower than that of males. From the findings, the majority (99.2%) of participants were Christians, 0.4%Hindus and 0.4% belonging to Islam and Bahai. Most of the participants (47.5%) were married while 38.3% were single with only 14.2% divorced. In terms of education, 40% of participants had completed primary school, 37.5% completed high school and 0.4% had tertiary qualifications (Table 4.1).

This is an indication majority of participants had competed primary and high school. In terms of farming and agricultural experiences, participants with more than 10 years of experience represented 26.8%, 14.6% for those with 21-30 yearsexperience and 47.6% for those with less than 10 years of farming experience (Table 4.1). It is believed that those who have fewer years on farming experience, lack the critical skills and experiences on agricultural production than those with many years of farming experience. Iversen*et al*. (1988) concurs with this position.

TABLE 4.1: PERSONAL CHARACTERISTICS OF FARMERS

Gender	**Frequency**	**Percentage**
Male	168	70
Female	72	30
Marital status		
Married	114	47.5
Single	92	38.3
Divorced	34	14.2
Race		
Black	240	100
Religion		
Christian	238	99.2
Hinduism	1	0.4
Islam Bahai	1	0.4
Highest educational level attained		
None	40	16.7
Primary	96	40

Completed primary	90	37.5
Highest school completed	13	5.4
Tertiary	1	0.4
Number of dependents		
1-4	139	57.9
5-8	93	38.8
Above 8	8	3.3
Size of herd (no of cattle)		
1-30	190	79.4
31-40	21	8.6
Above 40	29	12
Farm size (ha)		
1-5	127	55
6-10	58	24.2
Above 10	55	22.7
Years of farming experience		
Less than 10	114	47.6
10-20	64	26.8
21-30	35	14.6
Above 30	27	11.1
Number of workers		
1-4	238	99.2
Above 4	2	0.8
Contact with state vet extension agent		
No	10	4.2
Yes	230	95.8
Frequency of extension contact		
Occasionally	192	80.0
Regularly	48	20
Vaccination of animal		
No	5	2.1

Yes	235	97.9
Vaccination agency		
Workers	33	13.8
State vet	207	86.3

Source: Feed survey (2014)

4.3. SOURCES OF INFORMATION USED BY FARMERS

Table 4.2 shows the percentage ratings for each source of information used by farmers. Television (83.3%), Cell phone (85%), and Radio (93.3%) were the highest sources of information used by farmers. Participants indicated that they often or always provided useful information. The study concurs with Ozowa (2011) who reiterated that majority of farmers use radio as the most common information channel but agrees that the second most used channel is television. Ford and Babb (1989) and Schnitkey*et al*. (1992) found private firms, cooperative firms and salespeople to be important sources of information for production decisions. Ford and Babb (1989) observed that farm magazines are a widely used source of information. However, they maintain that large-scale farmers prefer personal, service-oriented information as opposed to written information. This is contrary to the findings of Schnitkey*et al*. (1992) who found that Ohio commercial producers displayed a preference for written information. The abattoir industry (7.9 %), auctioneer industry (8.8%) and the South African Meat industry Company (8.3%) are the lowest sources of information used by farmers (Table 4.2). Ortmann*et al*. (1993) argues that agricultural salespersons are considered relatively not as an important source of information for production decision-making.

TABLE 4.2: SOURCES OF INFORMATION USED BY FARMERS

Sources of information	**Yes**	**No**
Other cattle producers	113 (47.1)	127 (52.9)
Abattoir industry	19 (7.9)	221 (92.1)
Feedlot industry	36 (15)	204 (85)
Auctioneer industry	21(8.8)	219(91.3)
South African Meat industry Company	20(8.3)	220(91.7)
Internet	72(30)	168(70)
Newspapers	175(72.9)	65 (27.1)
Government officials	79(32.9)	161(67.1)
Extension officers	117 (48.8)	123(51.2)
Magazines	112(49.2)	118(50.8)
Radio	224(93.3)	16(6.7)
Private veterinarians	91(37.9)	149 (62.1)
Cell phone	204(85)	36(15)
Television	200(83.3)	40(16.7)
Posters	70(29.2)	170(70.8)
Private consultants	76 (32.1)	163(67.9)
Government state veterinarians	44(18.3)	196(81.7)
Handbills	44(18.3)	196(81.7)
Local farmers	214 (89.2)	26(10.8)
Library	44(18.3)	196 (81.7)

Source: Feed survey (2014)

4.4. SOURCES OF INFORMATION USED BY FARMERS IN MARKETING THEIR CATTLE

Table 4.3 presents the various sources of information in order of importance (as ranked by farmers) in marketing their cattle (ranked from a scale of 1-5). The Table also presents source of information needs used by cattle farmers for marketing their cattle. The ranking from high to low by respondents included the South African Meat Industry Company (79.6), Handbills (72.1), Local farmers (70.8) and the Auctioneer Industry (73.3) as their most critical sources of information. According to Montshwe (2006), lack of time and reliable information are challenging issues faced by farmers, particularly in communal areas. Although considerable progress has been made in the provision of communication systems (such as telephone and cellular phone network facilities), communal farmers still remain uninformed in terms of new production techniques, market prices, trends and dates for auction sales. Radio and personal communication are still used as the main source of information by farmers. Yoba (1997) maintains that farmers participating under poor marketing information circumstances cannot graduate to become fully fledged farmers without access to the necessary sources of information, which will empower them as independent decision-makers and adopters of appropriate technologies.

The poor transfer of knowledge, skills and information is further manifested by the limited interaction of farmers with extension officers. (Coetsee et al., 2014).Training and education will further improve the capacity of farmers and allow them to make informed decisions. These findings corroborate those of Yahaya (2002) and Tologbonse *et al*. (2006) who found that television and extension publications (bulletins, newsletters, posters and handbills) are not considered as important sources of agricultural information among farmers.

TABLE 4.3: SOURCES OF INFORMATION RANKED BY FARMERS IN MARKETING THEIR CATTLE

Sources of information	**1st**	**2nd**	**3rd**	**4th**	**5th**

Other cattle producers	111 (46.3)	13 (5.4)	24(10)	25(10.4)	67(27.9)
Abattoir industry	163(67.9)	51(21.3)	19(7.9)	5(2.1)	2(0.8)
Feedlot industry	154(64.2)	59(24.6)	21(8.8)	3(1.3)	3(1.3)
Auctioneer industry	176(73.3)	40(16.7)	17(7.1)	6(2.5)	1(0.4)
South African Meat Industry Company	191(79.6)	27(11.3)	16(6.7)	4(1.7)	2(0.8)
Internet	116(48.3)	57(23.8)	40(16.7)	9(3.8)	18(7.5)
Newspapers	28(11.7)	30(12.5)	87(36.3)	51(21.3)	44(18.3)
Government officials	80(33.3)	17(7.1)	21(8.8)	42(17.5)	80(33.3)
Extension officers	114(47.5)	19(7.9)	16(6.7)	24(10)	67(27.9)
Magazines	85(35.4)	41(17.7)	62(25.8)	31(12.9)	21(8.8)
Radio	10(4.2)	8(3.3)	43(17.9)	72(30)	107(44.6)
Private veterinarians	142(59.2)	9(3.8)	19(7.9)	26(10.8)	44(18.3)
Cell phone	27(11.3)	15(6.3)	62(25.8)	38(15.8)	98(40.8)
Television	20(8.3)	21(8.8)	49(20.4)	63(26.3)	87(36.3)
Posters	31(12.9)	29(12.1)	50(20.8)	40(16.7)	90(37.5)
Private consultants	147(61.3)	13(5.4)	25(10.4)	22(9.2)	33(13.8)
Government State Veterinarians	27(11.3)	17(7.1)	71(29.6)	27(11.3)	98(40.8)
Handbills	173(72.1)	35(14.6)	12(5)	8(3.3)	12(5)
Local farmers	9(3.8)	23(9.6)	73(30.4)	44(18.3)	91(37.9)
Library	170(70.8)	47(19.6)	11(4.6)	6(2.5)	6(2.5)

Source: Feed survey (2014)

4.5 MARKETING INFORMATION NEEDS AMONG CATTLE FARMERS

Table 4.4 presents the marketing information needs of cattle farmers. These needs were rated on 3 scale form (low, moderate and high) .22 market information needs were

identified. Four of these needs had higher rank scalesas follows: Procurement (supply) companies (83.3); Product Launch (85); Market Segments (90.4); and Market framework (88.3). As expected, access to market information, and the use thereof,increased the participation of cattle farmers in mainstream cattlemarkets. These results are consistent with the findings by Nkhori (2004). It should be noted that at this stage, the results do not indicate the impact of change when market information is supplied either to receivers or to non-receivers. Information needs of communal farmers range from information on prevailing production techniques and market conditions to types of products demanded, quality, quantity, price and market opportunities (Bailey *et al*., 1999).

Information considered to be of lower need are Cooperative management (10.8), Procedure for credit procurement (10.4), Transportation (20.8) and Entrepreneur ability (10) (Table 4.4). Bailey *et al*. (1999) reported that none or poor provision of agricultural information is a key factor that has greatly limited agricultural development in developing countries. Information needs of farmers enable them to make rational, relevant decisions and strengthen their negotiating ability during transactions with buyers and consequently, prevent possible exploitation by better-informed buyers(Coetzee *et al*., 2004).The shortest, simplest and the most popular option, especially among cattle owners, is private sales (directly to the ultimate consumer) (Nkosi and Kirsten, 1993).

TABLE 4.4: MARKETING INFORMATION NEEDS AMONG CATTLE FARMERS

Marketing information on cattle farming	**Low**	**Moderate**	**High**
Procedure for credit procurement	25(10.4)	62(25.8)	153(63.7)
Cooperative management	26(10.8)	123(51.2)	91(37.9)
Budgeting method	20(8.3)	105(43.8)	115(47.9)
Market prices	23(9.6)	112(46.7)	105(43.8)
Record keeping	20(8.3)	135(56.3)	85(35.4)
Investment	23(9.6)	120(50)	97(40.4)
Entrepreneur ability	24(10)	40(16.7)	176(73.3)
Available agric. Markets	19(7.9)	47(19.6)	174(72.5)

Procurement (supply) companies	10(4.2)	30(12.5)	200(83.3)
Demand for product	16(6.7)	35(14.6)	189(78.8)
Marketing means	16(6.7)	66(27.5)	158(65.8)
Market strategies	9(3.8)	65(27.1)	166(69.2)
Supply of products	9(3.8)	44(18.3)	187(77.9)
Supply of products	11(5)	58(24.2)	170(70.8)
Market behavior	6(2.5)	58(24.2)	176(73.3)
Sales forecast	16(6.9)	67(27.9)	157(65.4)
Market tactics	15(6.2)	68(28.3)	157(65.4)
Sale productivity	15(6.2)	41(17.1)	184(76.7)
Market intelligence	8(3.3)	64(26.7)	168(70)
Grading	9(3.7)	74(30.8)	157(65.4)
Product launch	6(2.5)	30(12.5)	204(85)
Market research	18(7.5)	53(22.1)	169(70.4)
Advertising	10(4.2)	110(45.8)	120(50)
Market structure	9(3.7)	81(33.8)	150(62.5)
Processing	14(5.8)	118(49.2)	108(45)
Transportation	50(20.8)	169(70.4)	21(8.8)
Storage method	7(2.9)	91(37.9)	142(59.2)
Market segments	2(0.8)	21(8.8)	217(90.4)
Market planning	10(4.2)	43(17.9)	187(77.9)
Market framework	10(4.2)	28(11.7)	202(84.2)
Value chain analysis	5(2.1)	23(9.6)	212(88.3)

Source: Feed survey (2014)

4.6 DETERMINANTS OF INFORMATION NEEDS OF CATTLE FARMERS

Determinants of information needs of cattle farmers are indicated in Table 4.5. The independent variables were significantly related to the information needs. The R value of 0.78 showed a strong correlation between the independent variables and marketing information needs (dependent variable). Twelve (12) out of the twenty-three (23) independent variables (Table 4.5) were significant. The significant independent variables were: gender (t= 2.622); religion (t= 2.868); highest level of education attained (t= 1.554);

number of dependents (t= -2.492); size of herd (t= 2.235); number of workers (t=-2.238); contact with state vet or extension officers (t=2.305); internet (t=1.624); and cell-phone (t=2.082) (Table 4.5).

Twelve of the independent variables are significant, seven are positively significant and five are negatively significant.

Three of the independent variables such as the number of dependents (t= -2.492) and the number of workers (t= -2.238), were negatively significant to the information needs of beef cattle owned by farmers (Table 4.5).

These findings suggest that the number of dependents used by respondents may impact negatively on the number of beef cattle. This issue to the high number of dependents on respondents. The negative effect on the number of workers employed (Table 4.5) by respondents could be because of new technologies and innovations introduced, and also due to the fact that literate farmers were likely going to adopt innovation than illiterate farmers.

Similarly, continued contact with state vet or extension agents, the internet, and availability of cell-phone to farmers would ensure that farmers have a positive attitude towards information needs in beef cattle production.

TABLE 4.5 DETERMINANTS OF INFORMATION NEED OF CATTLE FARMERS

Model	Unstandardised coefficients		Standardised coefficients	t	Sig.
	B	Std. Error	Beta		
Gender	3.572	1.362	0.128	2.622	0.009
Marital status	-0.180	0.857	-0.010	-0.210	0.834
Religion	18.007	6.278	0.319	2.868	0.005
Highest level of educational attained	1.231	0.792	0.078	1.554	0.122
Size of household	0.246	0.462	0.035	0.532	0.595

Number of dependents	-0.918	0.369	-0.300	-2.492	0.013
Size of herd	0.066	0.030	0.129	2.235	0.026
Farm size	0.044	0.097	0.025	0.450	0.653
Years of farming experience	-0.055	0.051	-0.057	-1.080	0.282
Number of workers	-0.458	0.205	-0.114	-2.238	0.26
Contact with state vet or extension agent	8.313	3.607	0.127	2.305	0.022
Frequency of consultation	0.824	1.542	-0.025	-0.535	0.594
Do you vaccinate your animals?	-7.403	5.156	-0.081	-1.436	0.153
Vaccination agency	-5.236	1.872	-0.136	-2.798	0.06
Internet	2.287	1.409	0.079	1.624	0.106
Extension officer	5.119	1.516	0.195	3.375	0.001
Radio	2.707	2.537	0.52	1.067	0.287
Private veterinarians	-7.751	1.661	-0.286	-4.667	0.000
Cell phone	-4.972	1.787	-0.134	-2.782	0.006
Private consultant	-0.447	1.761	-0.016	-0.254	0.800
Private veterinarians	-0.811	0.446	-0.101	-1.820	0.070
Cell phone	1.010	0.485	0.104	2.082	0.039
Posters	0.634	0.457	0.069	1.388	0.167
Procedure for credit procurement	11.183	0.960	0.571	11.650	0.000
F	14.007				
P.	0.00				
R. square	0.61				
R.	0.78				

4.7 CHAPTER SUMMARY

In this chapter, sources of information used by farmers and marketing information needs among cattle farmers were analysed. The analysis supports the hypothesis that will influence marketing information needs of cattle farmers.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. INTRODUCTION

This chapter provides an overview and summary of the entire study, a conclusion, and recommendations for further research by the Department of Agriculture and Rural Development. The summary of the study focuses on the objectives of the study, sampling techniques, sample size, method of data collection and the analysis.

5.2. SUMMARY

The objectives of this study were to: determine the socio-economic characteristics of cattle farmers; investigate the sources of information available to cattle farmers; determine the preferred sources of information used by cattle farmers; and determine the information needs of cattle farmers in the study area. It also reviewed extensive literature on information needs, sources and benefits to livestock farmers, information on the various channels of livestock distribution processes, decision-making through information and cattle marketing information systems in rural areas of South Africa.

The study was conducted in NgakaModiriMolema District of the North West Province, South Africa. 240 respondents were randomly selected from a total number of 2270 cattle farmers in the District. Data was largely quantitative in line with the specific objectives of the study. Data was collected through a survey questionnaire. Descriptive and inferential statistics such as frequencies, percentages, means and multiple regressions were used to interpret results.

5.3. CONCLUSION

From the study, it was revealed that 70% of the cattle farmers were males (70%) and 30% females. In terms of education, 40% of respondents had completed primary school, 37.5% had completed high school and 0.4% of participants had tertiary qualifications. In terms of farming and agricultural experience, 26.8% of participants had more than 10 years of farming experience, 14.6% had 21-30 years of farming experience while 47.6 of farmers had less than 10 years of farming experience.

In terms of sources of information used by farmers, television had the highest percentage (83.3%), Cell phone (85%), and Radio (93.3%).Critical marketing information needs to be identified in the study are: Procurement (supply) (83.3); Product Launch (85); Market Segments (90.4); and Market framework (88.3).

The indicator variables measured all revealed very high levels of significance to information needs with the test statistics (t-test) at $p<0.05$. The following variables were measured: gender (t= 2.622); religion (t= 2.868); highest level of education attained (t= 1.554); number of dependents (t= -2.492); size of herd (t= 2.235) number of workers (t=-2.238); contact with state vet or extension officer (t=2.305); internet (t=1.624); and cell-phone (t=2.082).

From the study, it could be concluded that marketing information needs are critical to the sustainable production of cattle in NgakaModiriMolema District of the North West Province. Television and radio are some of the most critical sources of market information for cattle farmers.

5.4. RECOMMENDATIONS

From the study, it is recommended that:

1. More sensitisation be done by the Department of Agriculture and the meat Company of South Africa on the needs and benefits of information in order to sustain cattle rearing.
2. There is a need for more educative programmes and adverts relating to cattle production and management. This constitutes the main source of information for farmers.
3. There is a need for cattle farmers to form groups or associations to ensure effective and faster dissemination of information by the Department of Agriculture through extension workers.

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APPENDIX i: INTERVIEW QUESTIONNAIRE

Questionnaire for: Marketing Information Need of Cattle Farmers in the North West Province, South Africa.

Dear Respondents,

This questionnaire is for data collection for marketing information need of cattle farmers in the North West Province, South Africa. The information provided will be treated as confidential, hence, no names are required and analysis will be group referenced.

Can you please spare some of your valuable time in responding to this questions. Thanking you in anticipation.

SECTION A:

Personal Characteristics

Gender	Male ☐
	Female ☐
Marital Status	Married ☐ Single ☐ Divorced ☐
Ethic Group	Black ☐ Indian ☐ Coloured ☐ Other (specify) _____
Religion	Christian ☐ Hinduism ☐ Islam Bahai Other(specify)_____
Highest Educational Level Attained	None ☐ Primar ☐ Incomple ☐ High School Complete ☐ Tertia ☐ Other (Specify) _____
House Held Size	Male ☐
	Female ☐

Number of dependents	
Herd Size	
Farm size	
Years of farming experience	
Number of workers	
Do you have contact with state vet or extension agent	Yes ☐ No ☐
If yes how often?	Regularly occasionally rarely
Do you vaccinate your animals?	Yes ☐ No ☐
Who vaccinate your animals?	Workers ☐ State vet ☐ Other (specify) _____

Please answer by Yes or NO across the relevant source of information used by your organisation (Mark with an X)

Source of information	**Yes**	**No**
Other cattle producers		
Abattoir industry		
Feedlot industry		
Auctioneer industry		
South African Meat Industry Company		
Internet		
Newspaper		
Government officials		
Extension officer		
Magazine		
Radio		
Private Veterinarians		
Cell phone		
Television		
Posters		

Private consultant		
Government State Veterinarians		
Handbills		
Local farmers		
Library		

Please indicate the preferred Sources of Information used by your organisations on a scale from 1 to 5 (Mark with an x)

Source of information	**1**	**2**	**3**	**4**	**5**
Other cattle producers					
Abattoir industry					
Feedlot industry					
Auctioneer industry					
South African Meat Industry company					
Internet					
Newspaper					
Government officials					
Extension officer					
Magazine					
Radio					
Private Veterinarians					
Cell phone					
Television					
Posters					
Private consultant					
Government State Veterinarians					
Handbills					
Local farmers					
Library					

Please indicate marketing information need for your cattle farming. (Mark with an x)

Marketing Information on cattle farmin	**High**	**Moderate**	**Low**
Procedure for credit Procurement			
Cooperative management			
Budgeting Method			
Market Prices			
Record Keeping			
Investment			
Entrepreneur ability			
Available agric markets			
Market prices			
Procurement (supply) companies			
Products' demand			
Marketing means			
Market strategies			
Products' supply			
Market behaviour			
Sales forecast			
Market tactics			
Sales productivity			
Market Intelligence			
Grading			
Market targets			
Product launch			
Market research			
Advertising			
Market structure			

Processing			
Transportation			
Storage methods			
Market segments			
Market planning			
Market frameworks			
Value chain analysis			
Storage cost			
Market report			
Market control			
Export procedures			
Marketing companies			

Thank you for your participation

APPENDIX ii: LETTER OF EDITING

APPENDIX iii: TURNITIN REPORT