

**An Investigation into The Information Needs and Seeking
Behaviour of Small-Scale Cattle Farmers in Katima Mulilo Rural
Constituency of Zambezi Region, Namibia**

By

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**A Dissertation Submitted to the University of Zambia in Partial
Fulfilment of the Requirements for the Award of the Degree of
Master of Library and Information Studies**

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Declaration

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Certificate of Approval

This dissertation of Melba Kabelele Mabuku has been approved as fulfilling the requirements for the award of the degree of Master of Library and Information Studies by the University of Zambia.

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Abstract

The need for information is felt at all levels of society regardless of an individual's location or intellectual achievement and it is believed that there is a lot of information around that people can use to make decisions, increase knowledge levels and reduce uncertainty. Yet, there are still categories of people in our societies that still face challenges in accessing it. One such group are the small-scale cattle farmers of Katima-Mulilo constituency of Namibia. The purpose of the study was to investigate into the information needs and seeking behaviours of small-scale cattle farmers of Katima-Mulilo rural constituency of Namibia.

A survey method was used in this study and both quantitative and qualitative methods were employed. Cluster sampling technique was used to sample the villages while the cattle farmers were randomly selected and Purposive sampling technique was used to sample the key informants (veterinary medical officers, extension officers and officials from the NGO's. The questionnaire and focus group discussion guide were used to collect data from the cattle farmers while the interview guide was used to collect data from the key informants. The critical incident technique was used to collect data from focus group discussions. Respondents were asked to recall some previous incidences that they had encountered which prompted them to seek information in order to make a decision or solve a problem. Quantitative data was analysed using the SPSS software while Qualitative data was analysed thematically using content analysis.

The study revealed the following information needs of cattle farmers: animal health information, market information, information on animal husbandry, information on new technologies, and information on agriculture policies. The major information sources used by cattle farmers were interpersonal sources for example friends, relatives and neighbours and information sources which were used to a lesser extent were extension officers, veterinary doctors, radio, newspapers and books. The satisfaction levels with various sources showed that farmers were satisfied with information obtained from veterinary doctors and extension officers but were least satisfied with information obtained from friends, relatives, neighbours, other cattle farmers and personal experience and were more dissatisfied with information obtained from radio, books and newspapers.

The study established that the preferred channel of communication was oral communication. The challenges faced by farmers when seeking information e.g. high illiteracy levels, language barrier, format in which information was packaged, inadequate numbers of

personnel's, inaccessible roads, distance to information centres and agriculture radio programs being aired at odd hours were also stated. Cross tabulations were performed to establish the influences that some demographic variables like age, gender and education levels attained had on the type of information required, information sources used and challenges faced and the study revealed positive significance levels on gender and education levels of the respondents. The study concluded that there is an increasing need to work in partnership and to share knowledge and skills in order to provide locally relevant services that meet the information needs of smallholder farmers in Namibia.

It was also noted that the information received by farmers indicated that it was not to the expected level therefore the study concluded that government and local authorities should develop the existing services, information and communication systems to facilitate the farmers to access relevant information on time in order to gain best agricultural productions. Based on the findings of the study, majority of the cattle farmers were illiterates. This study therefore recommended that there was need to educate farmers on various information sources which could enable them access and use information that could be useful to them.

The study results and conclusion made the following recommendations; there is need for the government and other relevant authorities in charge of disseminating information to do the following: extension should be designed with the farmer's information needs in mind, implement policies that would guide and support extension education, information to be presented in the local languages both during field days meetings with the farmers and in print form, government to employ more extension officers and veterinary doctors to enhance on information delivery, information on radio should be aired in the evening when farmers are back from the fields.

Dedication

I dedicate this work to my husband, Dr. Sitwala Paul Sitwala, my son Edmorh Wamuwi Sitwala, my parents Mr and Mrs Mabuku, my father in-law Mr Leonard W. Sitwala, my mother in-law Mrs. A. Sitwala, my brothers Nash and Samuel, My sister in-law Mwenya, My sisters Marvis, Everlyn and Precious.

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The development of this document saw the involvement of some veterinary doctors, animal health technicians, mentors and cattle farmers of Zambezi region of Namibia and all the cattle farmers who participated in this research. Without the involvement of these people in supplying data, the results would have been of lesser quality.

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List of Acronyms

AHK.....Animal health knowledge

CIT.....Critical incident technique

DESS.....Directorate of Extension and Engineering Services

DSV.....Directorate of Veterinary Services

FAO.....Food and Agriculture Organisation

FMD.....Foot and Mouth Disease

GDP.....Gross Domestic Product

ISSs.....Information seeking situations

MeatCo.....Meat Corporation Board of Namibia

MAWF.....Ministry of Agriculture, Water and Forestry

NGO.....Non-Governmental Organisation

WHO.....World Health Organisation

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter presents information on the background of the study, statement of the problem, objectives and the research questions to be answered in the study. Additionally, other areas covered in the chapter include the significance of the study, delimitation and limitations will be discussed. It also gives the operational definitions of key terms.

1.1 Background Information of the Study

The agriculture sector in developing countries is becoming increasingly knowledge intensive. Researchers at the global, regional, and national levels continue to generate new information. As agriculture systems become more complex, farmers' access to reliable, timely, and relevant information sources becomes more critical to their competitiveness. Information must be relevant and meaningful to farmers, in addition to being packaged and delivered in a way preferred by them (Diekmann et al, 2009).

Agriculture is a vital sector for the sustained growth not only for developed countries but more importantly for developing countries, especially agriculture-based countries such as those in Sub-Saharan Africa. It is for this reason that even some international organisations like the World Bank and Food Agriculture Organisation (2007) have pointed out that "agriculture can work in conjunction with other sectors to produce faster growth, reduce poverty and sustain the environment." Equally important, significant portions of the world's population, 86 percent of rural inhabitants still depend on agriculture for employment and sustenance (World Bank 2007).

Agriculture is considered a key ingredient to economic development the world over and therefore scientists have done a lot of research in the field. These researches have yielded tremendous innovations leading to improved food production (FAO, 2005:35). In most of the African countries, agriculture is the means of alleviating poverty whose incidence is debilitating with conditions that are too dehumanizing (World Bank, 2007). Strengthening agriculture is critical to addressing challenges of rural poverty, food insecurity, unemployment and sustainability of natural resources.

1.1.1 The Role of Information in Agriculture

The present human society is living in an information age and as a consequence, man has become more and more information conscious. More and more people deliberately and consciously seek information and it has become an integral part of human activity especially in the area of education, research and development, animal husbandry practices (e.g. castrations, dehorning, and marketing of animals, agriculture inclusive all of which have contributed to the improvement of the quality of life). The need for information is ubiquitous, meaning there is no sector that can effectively function without information. Yumba (1993:3) has stated that, “information plays a critical role in human life and society as a whole in the sense that it controls, instructs and thus tends to influence the action of the recipient.” Therefore, the field of agriculture is not an exception in the need for timely delivery of complete and relevant agriculture hence an investigation into the information seeking behaviours of cattle farmers.

Demiryurek et al, (2008) has confirmed that information is an important factor that interacts with other production factors such as land, labour, capital and managerial ability and can arguably be improved by relevant, reliable and useful information. He further states that information supplied by extension, research, education and agricultural organisations helps farmers make better decisions. It is important to acknowledge that Information plays an important role in the lives of the farmers as it helps them become more knowledgeable with best animal husbandry practices which help them in improving their production levels and prevents them from making wrong decision that may in turn affect the welfare of their animals. This contributes to the rise in the gross domestic product thereby contributing to economic development.

Information and knowledge are very vital in agricultural development of any community and where they are poorly disseminated as a result of certain constraints, the community’s agricultural development becomes highly impeded. Information is essential for facilitating agricultural and rural development and bringing about social and economic change. It is however sad to know that most African countries have not devoted adequate attention to providing their citizens with access to information especially in rural areas, where 70-80% of the African population residents (World Bank, 1997). Information is needed because it affects individuals’ living activities. When the rural farmers lack access to knowledge and information that would help them achieve maximum agricultural yield, they do not only

grope in the dark but are driven to the urban centres in search of formal employment, as the only option for survival (Munyua, 2000). According to Dervin (1995), information represents an ordered reality about the nature of the world people live in. Research on information seeking confirms that information is tailored to individuals' jobs and to their tasks within those jobs (Ingwerson et al, 1993).

Information as an enterprise is important for the production process especially for agricultural production and marketing of agricultural produce. Mudukuti and Miller (2002) argue that in the information age, dissemination of information and applying this information in the process of agricultural production will play a significant role in development of farm settlements. Animal health information is of potential importance not only to the farm business but potentially also to the animal welfare and public health.

A number of Scholars have written on the importance of information and have clearly stated the impacts of the lack of information. Alen et al (2007) have argued that appropriate use of information is a very important aspect in the information ages hence the need for proper dissemination of information to increasingly recognize the efforts of bringing about agricultural transformation in developing countries. Mchombu (2000) has noted that one cannot have knowledge unless one gets information. He argues that information equips a person with power, the power to choose and act in an informed manner. He further argues that information empowers people towards actions that can transform lives and allow for a great sense of independence.

Gudschinsky (1976) has also attested that lack of knowledge limits a person's ability to engage in activities that require either critical thinking or a solid base of skills, such activities may include understanding government policies, attendance of meetings, the use of new technologies as well as the use of certain information sources.

Cillie (1991) is of the opinion that information is the key to the development of a strong democracy and that Societies need information because it is the key to wealth, empowers people through knowledge, to create growth and jobs.

It is against this background that the field of agriculture is not an exception in the need for timely delivery of complete and relevant agriculture information. This is because cattle farmers have varying needs that range from information on the disease status of animals which is very crucial and can contribute to a large number of herd die offs when ignored or

pose as a threat to the wellbeing of humans. Cattle farmers also need information on good animal husbandry practices, new emerging technologies, market related information and information on agriculture policies. The assessment of the information needs and seeking behaviours of cattle farmers is essential for assisting them to access and use information resources required for high production levels and equally to assist the relevant authorities in charge of disseminating information to come up with better agricultural implementation strategies for the small scale cattle farmers.

Furthermore, understanding how farm and farmer demographic characteristics influence the search of information and use of various sources may provide insights into this study. Relevant information forms the basis for sound decisions of animal husbandry practices. Therefore, the field of agriculture is not an exception in the need for timely delivery of complete and relevant information. It is for this reason that knowledge dissemination has a pivotal role in addressing the poverty issues; it requires better understanding and application.

Lack of information on animal husbandry, health practices (ignorance, one of the prime constraints of development) ultimately results in production losses through morbidity and sometimes mortality - all resulting in economic losses to the cattle owners. This therefore entails that this particular group of farmers require information to be able to make sound decision if their production levels are to increase.

1.1.2 Background Information of the Zambezi-Region

The Zambezi region is one of the thirteen regions of Namibia, former Caprivi region. It is situated in the north eastern part of Namibia and is the furthest from the capital city, Windhoek. The region takes its name from the Zambezi River that runs along its border. It has an area of 14,538 square kilometers of land and a population of 79,826 people. The region has eight constituencies namely; Katima-urban, Katima-rural, Judea Lyaboloma, Kongola, Sibinda, Kabbe north, Kabbe south and Linyati (DEES, 2003). The region has six (6) ethnic tribes namely Subia, Yeyi, Mafwe, San, Tortela and Mbukushu and all these have adopted Lozi as a common medium of communication (RoN, 2006). Zambezi region supports what may be the most vibrant communal farming in Namibia. Indeed, it is the only region of Namibia that virtually feeds itself.

Mendelsohn (1998) has stated that besides fields of maize and millet, locally known as mahangu, each village has herds of cattle and goats. The National Planning Commission (2002) has stated that the average family is composed of 4-7 individuals and has 15.7 large stock units (combined measure of cattle and goats) counting five-stock units as one large-stock unit. This means that there are more cattle than people and the traditional African cattle culture is very much alive in the Zambezi region. Mendelsohn (1998) has described the Zambezi region as being the poorest region of Namibia, with its average household income levels being about half of those in the rest of the country.

The population in rural areas live in traditional villages without electricity, few jobs; it is difficult to buy other necessities of life. He also acknowledges that 70% of the population work outside the formal labour force, primarily on farms of few hectares. While there are large disparities in the distribution of wealth throughout Namibia, in the Zambezi region, though not everyone is poor, poverty is more widespread than it is in the rest of the country. Rural residents of Zambezi region have little access to jobs and cash, and depend mainly on cropping, livestock, piecework, wages, pensions and the use of a variety of natural resources. Furthermore, the vast swamps of Zambezi and neighbouring Zambia, Botswana and Angola hold some Africa's most untouchable wild animal habitats while this is good for tourism, especially when visually combined with traditional thatched-hut villages that appear every few kilometres, it poses hardship for communal farmers as herds of elephants regularly trample their millet fields and lions, hyenas, leopards and other animals carry off livestock. This is a clear problem with communal agriculture in Zambezi for example if a lion eats a cow, then the family that needed the cow for basic subsistence is further impoverished (Mendelsohn 1998).

It is however very important to state that Namibia is divided by the veterinary cordon fence. There is the infected and free Foot and mouth disease zone. The area under study happens to fall under the foot and mouth prone area due to free migration of wild animals particularly the water buffaloes and elephants.

Below is the map of the Zambezi region showing all the constituencies and the neighbouring countries.

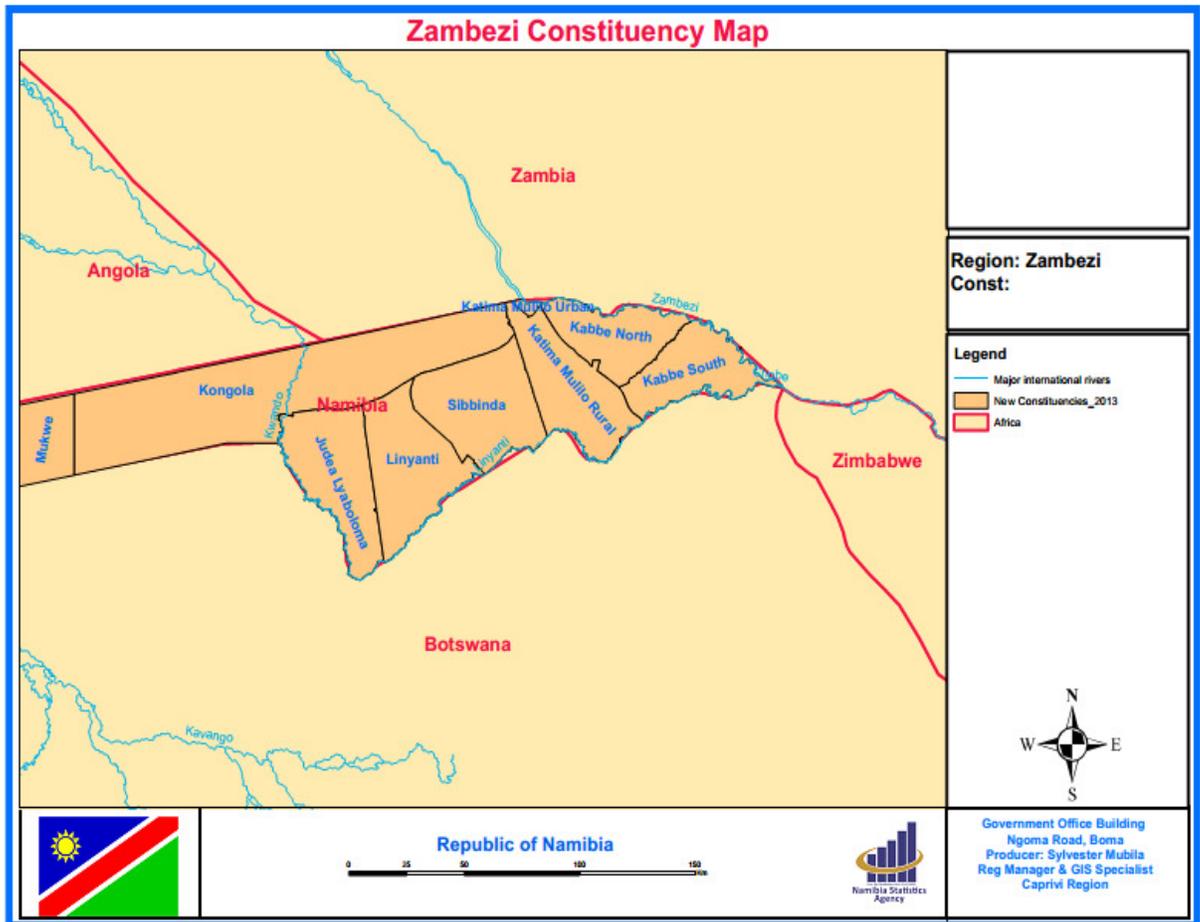


Figure 1. Map of the Zambezi region showing the constituencies.

Source: (Travel information guide, 2013)

1.1.3 Agriculture Sector of Namibia

Agriculture is one of the most important sectors in Namibia as it plays an enormous role in the development as well as the growth of the country’s economy. Despite, agriculture contributing only about 6% to the Gross Domestic Product (GDP), it is regarded as an important part of Namibia’s economy, as beef production is the main activity in Namibia’s agricultural sector, contributing approximately 85% of agricultural incomes and on average 10% of gross national product (Kruger and Lammerts-Imbuwa, 2008), and sustains 70% of

the Namibian population (Mushendami et al., 2008). Moreover, agriculture remains an important sector to Namibia because its national economy is widely dependent on agricultural production and has recorded the value of production of which is annually estimated at N \$ 900 million and approximately N \$ 400 million is contributed by cattle weaner exports.

Emongor (2007) has attested that the largest portion of Namibia is utilized by both commercial and subsistence farmers with cattle farming being the most predominant activity. The sector can be categorised into commercial and communal sectors. The commercial farming sector constitutes approximately 4,200 farmers and occupies 44% of the arable land, whereas, communal farmers account for 41% of the agricultural land and are estimated to make up 67% of the total population, 90% of whom are dependent on subsistence agriculture for their livelihood.

Ouseb (2006) confirms that the last annual census performed in Namibia at national level was in 2006 and the official population of cattle was estimated at 2.4 million. Cattle farming occur exclusively on natural grazing, supplemented with mineral licks to which a limited amount of grain is added. Feedlots are generally not viable in Namibia, due to the small scale and unreliability of grain production and high transportation costs associated with grain imports. As a semi-arid country well-endowed with natural pastures, Namibia is suited for extensive cattle farming.

Sweet and Burke (2006) have observed that cattle farming play an important role in the livelihoods of people living in Namibia and are referred to as “bank accounts”. Cattle are kept as a source of income, an investment, food production, and dowry payment. Other than serving as a source of cash income, cattle provide nourishment in the form of meat, milk, butter and butterfat.

1.1.4 The Ministry of Agriculture, Water and Forestry (MAWF)

The Ministry of Agriculture, Water and Forestry (MAWF) is tasked with the promotion, development, management and utilisation of agricultural, water and forestry resources. Logically, this Ministry is also responsible for formulating and implementing agricultural policy in Namibia. In 1995, the Ministry of Agriculture, Water and Rural Development (MAWRD) now the MAWF produced a “National Agriculture Policy White Paper”. This policy aims to provide an enabling environment for increased food production by smallholder producers, as a means to improve employment opportunities, incomes, household food

security and the nutritional status of all Namibians. The policy states that the northern communal areas offer the greatest potential for agricultural intensification and diversification. Two of the main objectives of this policy are to improve the profitability of agriculture and increase investment in agriculture. Castrol (2007) has affirmed that despite promises of increasing investment in the agricultural sector, there has been a long-term decline in such investment since the late 1990s. The budget share going to Agricultural Affairs and Services had halved since 1992/93.

In 1994, the commercial farming sub-sector contributed an estimated 7.8% to the Gross Domestic Product (GDP), and accounted for 72% of agriculture's total contribution to the economy. From 1987 to 1994, the communal farming sub-sector contributed an average of 2.6% to the GDP.¹²⁹ In 1994, the agricultural sector contributed a total of 10.4% to the GDP. By 2007, the total agricultural sector¹³⁰ accounted for 5.9% of the GDP.¹³¹ While the national economy as a whole grew by 4.1% between 1995 and 2007; the agricultural sector grew by less than 1.7%. Over the same period, subsistence agriculture grew by only 0.4%. It can be concluded that the economic performance of Namibia's national agricultural sector has been declining since Independence.

Nonetheless, despite its economic decline, the agricultural sector remains an important employment creator and safety net for many households in rural areas. According to Mendelsohn (2006), what has become increasingly clear over the years is that, despite having an Agriculture Policy, the Ministry of Agriculture, Water and Forestry (MAWF) lacks an agricultural implementation strategy for the communal areas.

The Ministry of Agriculture, Water and Forestry (MAWF) maintains 10 agricultural extension offices in the region. These are designed to work with small farmers to introduce new farming methods and to improve agricultural efficiency. Bearing in mind that the core economic activity in every conservancy is agriculture, a vital amount of small-scale agriculture is critical to conservancy members' wellbeing. The Ministry has not made a significant contribution to this effort, and agriculture languishes in the Caprivi conservancies. Indeed, with farming methods varying greatly from region to region in Namibia, the very purpose of having so many extension offices is to enable the MAWF to remain up to date on agriculture under local conditions however there is still a good number of cattle farmers who still lack information and access to the services offered by extension officers. The Ministry of

Agriculture, Water and Forestry (MAWF) has focused its efforts on large-scale commercial agriculture because of the domination of this form of agriculture in the Namibian economy, leaving subsistence farming behind.

1.1.5 The Directorate of Veterinary Services (DVS)

The Directorate of Veterinary Services falls under the department of Agriculture of the Ministry of Agriculture, Water and Forestry. In its functions, the (DVS) is concerned with surveillance, diagnosis and the control of animal disease. It is therefore involved with communicating regularly with the farmers in a bottom top approach to farming. The bottom top approach means the farmers' needs are put first. The directorate of Veterinary Services makes all the efforts to help the farmers improve on their methods of production to optimize the output. Farmers are given innovative skills and knowledge in line with what they farm with in order to maintain a healthy herd and hence increase calving's per year per farmer.

The animal health technician is directly involved with direct interactions with the farmers at village level. They identify farmer's problems and or may be approached by the farmers with problems. The technician's role comes in to assist the farmer where possible. The technician also links the farmer to the Directorate Veterinary Services by reporting disease outbreaks in the field. In terms of information flow, the technician therefore receives the information from the farmers, delivers to the Directorate of Veterinary Services and reports back to the farmers. Reporting to farmers is through notice boards at the office, radio, television, yearly report Community meetings with the farmers.

Despite all the efforts put in place to reach out to cattle farmers, there are still cattle farmers who lack information which will be highlighted in the study. It is with this background that the desire to investigate on the information needs and seeking behavior of cattle farmers was based in order to have a clear understanding of how farmers seek information, the sources used and bring out the problems they face when seeking information.

1.2 Statement of the Problem

Information plays a critical role in human life and society as a whole in the sense that it controls, instructs, and therefore tends to influence the actions of the recipient. The small-scale cattle farmers are not an exception in the need for timely delivery of complete and relevant information. Mchombu (2000) has noted that one cannot have knowledge unless one gets information. He argues that information equips a person with the power to choose and to act in an informed manner. Information is therefore needed by the small-scale farmers as it can empower them towards actions that can transform their lives. Over the years, rural farmers have dependent on local knowledge for improved farming animal husbandry and presently, most small-scale cattle farmers in Katima-mulilo constituency are faced with a number of challenges and all that is witnessed are low production levels, high poverty levels and low turn outs to farmers field days meetings.

The question is whether the information needed to mitigate these challenges is available, relevant and accessible by the affected farmers. It is not yet known how farmers seek information and the challenges they face therefore this study aimed at investigation into the information needs and seeking behaviors of small-scale cattle farmers of Katima-mulilo rural constituency of the Zambezi region, Namibia. An extensive review of literature has shown that, researchers have concentrated more on investigating the information needs and seeking behaviors of arable farmers neglecting the livestock farmers. There has not been any study conducted on the information needs and information seeking behavior of cattle farmers in Namibia hence the need for this study.

1.3 Objectives of the Study

The overall objective of this study was to investigate into the information needs and seeking behaviours of the small-scale cattle farmers of Katima Mulilo constituency of the Zambezi region, Namibia.

1.3.1 The Specific Objectives were as Follows:

1. To find out the incidences that trigger the information needs of farmers
2. To identify the information needs of cattle farmers.
3. To explore the information sources used by cattle farmers.

4. To identify the challenges faced by cattle farmers when seeking information

1.4. Research Questions

The study was guided by the following research questions:

1. What incidences trigger the information needs of cattle farmers?
2. What are the information needs of the cattle farmers?
3. What are the information sources used by cattle farmers?
4. What are the challenges faced by cattle farmers when seeking information?

1.5 Significance of the Study

Cattle farming is a major source of livelihood for over 70% of poor people in Africa. Therefore, access to timely and accurate information would enable sustainable cattle production and contribute to poverty reduction (Barret, 2005). It is hoped that the results of this study may help in increasing the level of awareness on the information needs and seeking behaviours of small-scale cattle farmers in various government ministries and departments in charge of disseminating information as well as enabling them to assess their effectiveness and efficiency in the way they provide information to the farmers hence may assist in the provision of information using more information accessible formats, channels and sources.

The findings of this study are important as they may help policy makers improve and formulate agriculture policies that will be tailored towards strengthening development in rural areas of Namibia and hopefully help in giving the policies a firm empirical verification. Furthermore, the study may enlighten farmers on other information sources that they may not be aware of and enable them to access information more conveniently. Lastly, the findings of this study will be a contribution to empirical research in the field of library and information science as well as the field of agriculture.

1.6 Limitations of the Study

Geographically, the study was confined only to only selected villages of Katima-mulilo rural constituency and this in itself posed a very big challenge in the generalisation of the research findings as the sample did not reflect the true representation of the entire population in the

region and that of other small-scale cattle farmers found in other parts of the country taking into consideration that cattle farming is practiced not only in the constituencies found in Zambezi region but in other parts of the country even at a commercial level. The use of the critical incident technique may have had a negative impact on the results of the findings as this method relies on events being remembered by respondents and requires truthful reporting which as a result may hinder the findings of the research if the truth is not told.

1.7 Operational Definitions

- **Information:** is any stimulus that we recognize in the environment (Case, 2006). In this study, information will be used to refer to any stimuli that cattle farmers recognize and use to make decisions.
- **Information need:** is an individual's desire to locate and obtain information to satisfy a conscious or unconscious need (Taylor, 1962).
- **Information seeking behaviour:** is the purposive seeking for information as a consequence of a need to satisfy a goal (Wilson, 2000).

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter looks at empirical studies on the concept of information needs and the processes of information seeking, sources of information used and challenges faced when seeking this information. The review looks at some of the various methodologies that have been employed in the past in an attempt to establish ways of identifying and studying information needs. The review will also highlight some of the general findings of previous studies from which an attempt to generalize and identify issues relevant to this study were made. However, there are no such studies that exist in Namibia yet. Davies et al (1986:6) defines literature review as “a review of existing literature that identifies what researchers have found to be important and provides a basis for the researchers to work from.”

2.1 Information Needs and Seeking Behavior

Just like any other sector, knowledge of the information needs and seeking behaviour of cattle farmers is critical to its effective utilization. It is important to begin with a definition of what is meant by a human “need,” because it is upon this hook that a person is driven into the process of information seeking. Grunig (1989:209) describes “Needs” as typically characterized as an “inner motivational state” that brings about thought and action. In addition, Liebnau & Backhouse (1990) and Searle (1983) have stated that “inner states” may include, for example, wanting, believing, doubting, fearing, or expecting. Therefore it can be said that information needs facilitate the information seeking behaviour of an individual.

Information seeking is a basic activity indulged in by all people and manifested through a particular way of behaviour. It is also an aspect of scholarly work most interesting to academic librarians who strive to develop collections, services, and organizational structures that facilitate seeking of information (Wiberley, 1989). There is a universal assumption that man was born innocent and should actively seek knowledge. Marchionini (1995) has added by stating that ‘Information seeking is thus a natural and necessary mechanism of human existence’. Information behaviour is broad term encompassing the ways individuals articulate their information needs, seek, evaluate, select and use information.

This is to say that information seeking behaviour is a concept that looks at activities a person may engage in when searching for information. It identifies the information needs of an individual and how they use information or transfer it. Wilson (2000:49) defines information seeking as “the totality of human behaviour in relation to sources and channels of information including both passive information seeking and use”. It can also be viewed as a process of finding information to fill a knowledge gap”.

Cattle farmers employ various information seeking strategies to acquire information from various sources in order to meet their needs. On this context, Case (2006:333) defines information seeking as “behaviour that occurs when an individual senses a problematic situation or information gap in which his or her internal knowledge, belief and model of the environment fail to suggest a path towards satisfaction of his or her goal”. This definition of information seeking brings out the aspect that an information seeker has a desired goal to attain. The information seeker may not stop looking for information until his or her need of attaining a specific goal is reached. This is true as can be applied the information seeking behaviour of cattle farmers who never give up in trying to fulfil a particular need they are faced with.

Wilson (2000:49) has further stated that Information seeking behaviour is the purposive seeking of information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual Information systems such as a newspaper or a library, or with computer-based systems such as the Web. Information seeking behaviour involves personal reasons for seeking information, the kinds of information which are being sought, and the ways and sources with which needed information is being sought. Information seeking behaviour is expressed in various forms, from reading printed material to research and experimentation.

2.2 Review of Empirical Literature

It has been observed that there is very little research done on the information seeking behaviours of cattle farmers and none of such a study has been undertaken in Namibia. However, this study has reviewed various literatures that have been thought to be of relevancy to this study. Bless, Higson-Smith, and Kagee (2006: 31) have defined literature review as a, “consideration of whatever has been published that appears relevant to the research topic. The literature review is categorized according to the information needs and

usage of information by cattle farmers, channels used to acquire the needed information and the challenges that farmers face when accessing this information”.

Information is defined in terms of tools, processes or knowledge (Bates, 2002) while Krikelas (1983: 39) defines an information need as, “the recognition of the existence of uncertainty in decision making”. According to Ehihkamenor (1990: 53), “an information need is also referred to the extent to which information is required to solve problems, as well as degree of expressed satisfaction and dissatisfaction with the information”.

Hayami and Petersen (1972) have noted that erroneous or missing information causes farmers to make production decisions that lead to lower profitability and a decrease in net social welfare. They found that much greater investment in collection and provision of data to primary farmers by the United States Department of Agriculture would deliver social returns far greater than the extra costs related to the data provision. Stiglitz (1985) has observed that economic decisions usually are made under conditions of uncertainty but the uncertainty could be reduced by provision of information. In many countries, governments have assumed a major role in providing necessary information to farmers. However, farmer associations, agricultural technologists, neighbours, and other private sources of information also have played major roles in information delivery.

2.2.1 Information Needs of Cattle Farmers

Rezvanfar et al (2000) investigated the information needs of farm women related to dairy farming and home management in Ilam State of Iran. A sample of 125 farm women was selected using cluster sampling technique. The survey research design was used and data was collected through interview schedule. Data was analysed using SPSS. The results show that farm women needed information on treatment of animals, controlling of external parasites and dairy technology. On the part of home management, farm women sought for information on family planning and home decisions. Most of the farm women depended on friends /husbands, neighbours, local leaders and educated people for their information needs. This study only used a questionnaire to collect data hence the farm women could not have had the chance to express themselves fully unlike if the focus group discussions were also used. Despite using SPSS, the researcher still does not show the frequencies or percentages of the farmers who needed what kind of information. It would have been best if the numbers of who sought for which kind of information in order to know the least needed information and find

out why it was not needed so that if farmers face challenges in accessing it hence make suggestions on how the dissemination of information can be improved.

Muhammad (1999) investigated on agricultural information needs of Pakistan farmers. The study used face to face interviews of men between the ages of 25-65 years actively participating in farming. Their information needs were centred on: soil preparation, seeds, taking care of crops, harvesting activities and animal husbandry. The study also revealed that the farmers depended on inter-personal relationships in meeting their information needs. The use of mass media and printed materials as sources of information was found to be very low. Lack of timely access, low level of education and language barrier were the main problems that these farmers faced while getting the required information. The researcher did not indicate which research design he used and it would have been better if he clearly specified the number of farmers and the age groups of those that needed information on animal husbandry out of the 125 farmers he sampled.

Kaniki (1989) investigated the information seeking situations and needs of agriculturalists and their use of and satisfaction with various information providers. The study investigated in more detail the use and non-use of agriculture-libraries. The findings were that some information seeking situations (ISSs) are limited to particular categories of agriculturalists and geographical locations and that the level of need differs among the different categories of agriculturalists. It was also found that in their attempt to resolve needs, agriculturalists use a variety of information providers and it was observed that the use of and satisfaction with Zambian agricultural libraries was very low. However, this study looked at both arable and livestock farmers in general hence there is still a gap as this study does not indicate which type of farmers seek what type of information and does not discuss in detail on other sources of information used but instead focuses more on the use and non-use of agriculture libraries as an information source. It is therefore difficult to know understand the specific farmers information seeking behaviours.

Zhao (2000) surveyed 285 farmers in rural areas of Zhejiang Province and found that they were most in need of information on agricultural policies and regulations, followed by information on agricultural science and technology, then on agricultural markets. In another study conducted in Hebei Province in 2004, the same author asserted that, the information needs of farmers depended on their educational level, income, level of economic development in their area, information service capacity, and cost of accessing the

information. Equally, he did not state how farmers accessed and used this information neither did the author show the level of satisfaction with the information acquired.

Jianget al. (2006) also conducted a survey of 310 farm households in fifteen counties in Hebei Province and found that many types of information were in demand, including information on agricultural technology, agricultural economics, cropping varieties, machines, production processes, product transportation, and rural policies. He further affirmed that many small scale farmers also wanted increased information on personal matters like education, health, culture, and social security. Based on both their surveys, it was noted that more than 80% of the farmers in their survey had nine or more years of formal education, leading to increased needs for information. However, these studies have not specified on which type of farmers sought what type of information neither has the author stated the satisfaction levels on the type of information sought hence making it difficult to gain more knowledge on what type of farming system is mostly practiced in these areas as to help understand categories of the particular type of farmers information seeking needs and behaviour.

Mmmoh (2002), studied on the information seeking behaviours of rural women in Borno state, Nigeria. It was observed that information needs of the women differed and their needs were that 52% of women sought information on animal husbandry, 20% sought information on health, and 3% sought information on politics and 1% sought information on education. The study concluded that the majority of rural women lack information on animal husbandry even though the study does not specify on the type of information on animal husbandry which was needed.

2.3 Sources of Information

Several studies have examined overall preferences for or use of information sources by farmers. Gloy, Akridge, and Whipker (2000) examined preferences for information sources used by cattle and crop farmers. The two most useful sources were crop/cattle-specific publications and general farm publications. They also found that cattle farmers were more likely to prefer specific publications on cattle farming over general farm publications compared with crop farmers. Vergot, Israel, and Mayo (2005) found that the most commonly used sources of information regarding beef cattle production used by farmers were other beef producers, county extension agents, and veterinarians.

On the other hand, in a survey conducted by Mmmoh (2002) in Borno state, Nigeria, affirmed that rural women used the following sources to satisfy their information needs; the government, Elite groups, relatives/ friends and non-governmental organisations (NGOs). It was further concluded that apart from government, the majority of the sources were informal hence an indication that either formal sources were lacking or that rural women preferred informal sources.

Naidoo & Rolls (2000) investigated agricultural information used by small-scale cattle farmers in Mauritius and found that the farmers managed information as a production resource. It was observed that personal characteristics and cattle husbandry practices of the farmers had major influences on their management of information. The practices were mainly learnt from family elders. Extension advice was only partly remembered, or rejected as the information from this source was sometimes not useful. It can be seen that lack of trust in Extension services may be the cause for not seeking information from them.

Jordan and Fourdraine (1993) studied information sources used by farmers operating the top milk producing herd in the United States as identified by the Dairy Herd Improvement Association. They found that veterinarians were the most highly rated and frequently used source of information, followed by farm magazines. In another related study, Lazarus and Smith (1988) surveyed a group of New York dairy farmers and found that education level and farm size, as measured by herd size, were positively related to use of veterinarian services. From the above two studies, it can be seen that the level of education was the driving force on the source of information of the farmers hence observing that the most used source of information was the veterinarians.

In a survey of information needs and sources of 1,042 households in ten villages of Linfen County in Shanxi province, Zhao (1998) found that television and radio were the main channels of information which farmers used to obtain necessary information to run their farming businesses and that information obtained through talking with friends and relatives tended to be mostly experience or hearsay information. He reported that the most educated farmers read newspapers to get information on agricultural technologies and they tended to discuss agricultural policies in meetings with village leaders. The above study simply entails that the infrastructures and network connections are good such that people are able to rely on information from television and radios which is not the case for most of the farmers.

Barret (2005) stated that most of the small-scale farmers operated their business with limited information hence recognized the need for improved availability of accurate information. He further suggested that, there was need for government and private organizations to work together in order to develop advanced information dissemination systems for farmers.

Geng (2001) also studied information channels for supplying information needs of farmers. In addition to television, radios and newspapers, he found that farmers obtained information through computer networks, country market price notices, agricultural service stations, village departments that promoted agricultural technology, and agricultural technicians' reports. However, Xu (2001) found large differences in information awareness of farmers, depending on personal characteristics, local information, infrastructure conditions, market environment, and information services situation.

Tan and Feng (2006) studied the role of television broadcasting as the main channel for farmers to receive information. They surveyed farmers in twenty-seven Chinese provinces and found that the key to enhancing information services in rural areas was to make available different types of informational programs that would be more suitable for different types of farmers even though they don't give examples of information programs that should be put in place.

He and Zou (2006) surveyed 638 farmers about information sources they found useful in rural areas of Jiangsu, Jiangxi, Inner Mongolia and Yunnan provinces. They found that the main information channels for farmers in these provinces were television, radio and other traditional approaches such as talking with neighbors. They found that the government was the most important organization for providing information in rural areas but many government officials lacked essential understanding of farmers' information needs. It can be concluded that farmers seem to lack information in various areas due to the government not knowing and understanding the farmer's information needs.

Gloy, Akridge, and Whipker (2000) found that the significant farm and farm characteristics that explained preferences for sources depended upon the type of information source. They did find that farmers producing a larger number of commodities were more likely to have positive attitudes toward a variety of information sources than those producing few commodities.

Kursat (2006) analysed the agricultural information systems and communication network used by members and non-members of the Dairy Cattle Breeders' Association which provided a framework for identifying the strength and weaknesses of the current systems. Structured interviews were used to collect data from randomly selected forty-three members and sixty-five non-members of the Association. The results showed that the main function of the information systems was the dissemination of dairy-farming-related information. Association membership functions as a means to keep more European pure-bred cows and provide financial incentives, rather than developing a modern dairy sector. The non-members of the Association mainly used their current knowledge and traditional practices. It was concluded that lack of information support from the institutional sources resulted in the development of personal information sources to exchange information and diffuse technology among the farmers themselves. They recommended that more functional cooperation between public and private information sources in the system was needed to motivate conventional dairy farmers to convert into modern dairy farming system.

Agricultural studies examine how farmers source general information (Vergot et al. 2005, Villamil et al. 2008), the role of interpersonal information (Ford and Babb 1989; Solano et al. 2003), and the use of specific sources of information such as the world-wide web (Spink and Hicks 1996), written information (Sutherland et al. 1996) and communication networks (Demiryurek et al. 2008). Yet these studies do not tell us what content the farmers were seeking from the information, nor do they consider where the farmer was in the adoption decision making process. If there is a pattern to the farmers' information seeking behaviour, extension activities could be designed to enable farmers to obtain the required information from fewer sources. Farmers would be able to obtain reliable information more quickly and easily, saving time and frustration, and hastening the adoption process (Solano et al. 2003). Furthermore it may reduce the chance of a decision made on incomplete or erroneous information.

Riesenbeg (1999) conducted a study to determine the information literacy level of paddy farmers of Ampara district in Sri Lanka in accessing agricultural information and explored how much this support the enhanced agricultural productivity. Stratified random sampling technique was used to select sample paddy farmers of Ampara district. 57 farmers were selected as the sample from all nineteen D.S. divisions of Ampara as three from each division. Survey method was used to collect data for this study. Questionnaire and Interview were used as research instruments. District Officer of Agriculture was interviewed and

farmers were administered with questionnaires. Results were analysed mainly quantitatively by using SPSS and Mini Tab. The study reviewed that majority of the respondents' preferred verbal communication, print sources and the use of computer and internet was reported poor. He concluded that Communication gap, poor communication services, lack of libraries, lack of information literacy skills, poor infrastructure and inadequate extension services might have caused poor access to information.

In addition, the 2003 NSSO survey showed that 7 percent of farmers accessed information on modern technologies from newspapers. Considering the increasing emphasis on mobiles and tele-centers, this comparatively "old" approach is still a relevant source of information for farmers—greater than that of the extension worker or KVK. Nevertheless, within the central schemes and programs in extension, and the current ICT initiatives, newspapers are rarely considered. The "mass media to support agricultural extension" scheme focuses on TV and radio only.

Furthermore, Gandhi et al. (2009: 86) also reported that, "mobile phone penetration in rural India are expanding rapidly (from 1.4 units per 100 people in 1995 to 51 units, or one phone per two persons, currently). There are a number of initiatives using mobiles to communicate information directly to farmers; these include IKSL (IFFCO Kisan Sanchar Ltd. in collaboration with Airtel), Mandi on Mobile (BSNL and Uttar Pradesh Marketing Board), Reuters Market Light, and Nokia Life Tools. Most of these approaches provide market information through SMS or voice messages, or question-and-answer capabilities. To date there has been little evaluation of the impact of these services on farm production. Other projects, such as e-Sagu and Lifelines, also use mobile phones in combination with computing technology to provide expert advice based on farmer queries. While these approaches are ICT-driven, an approach by Digital Green uses ICTs to support existing extension services provided by NGOs. Digital Green partners with NGOs to promote a video-based process for disseminating technology and agricultural practices. The videos are made with local resource people from the community and are shown to farmer groups established by the partner NGOs. Assessment of adoption practices in the pilot of Digital Green shows a higher adoption rate through this video-based process than through T&V-style extension approaches".

2.4 Challenges Faced by Farmers when Seeking Information

Hu et al. (2006) studied the needs for agricultural information of farmers in Jiangxi province and found the main problems the farmers faced were the lack of awareness of available agricultural information networks. They also determined that not many qualified persons were available to provide reliable and scientifically based information on markets and technologies. The authors recommended that Jiangxi agricultural officials expand dissemination of information on macroeconomic policies, agriculture technologies, input and output markets, and employment opportunities.

Hangara (2011) examined the factors that influence the supply of cattle to the market in Namibia, with a specific focus on four communal areas of the Omaheke Region. A total of 100 cattle farmers were selected using purposive sampling and data was collected using questionnaires and interviews. The study found that the number of cattle owned, cost of production inputs, accessibility to market information, accessibility to local markets and rainfall have a strong influence on the sales volume. The study strongly recommended that there was need for formation of cattle marketing groups that could be employed to lower transaction cost, increase bargaining power, access to information and participation in formal markets. There was also need to improve access to institutions and to remove existing distortions in the livestock marketing in Namibia. The study showed that there was an inverse relationship between source and information and volume of sales.

Other studies have examined the effects of farm or farmer demographic characteristics on use of information for farming. Jones, Batte, and Schnitkey (1989) concluded that farm size, off-farm employment, and farm enterprise type affected the demand for information by farmers. Mishra and Williams (2006) suggested that adoption of computers with Internet access is positively influenced by age of farmer, educational level, off-farm business income, and regional location of the farm. They also found that larger farms were more likely to adopt computers with Internet access.

Various studies conducted in Pondicherry (Ramkumar and Rao 2001; Butchaiah et al 2001) revealed the importance of cattle rearing and the significance of cattle in the livelihoods of the people who rear them. It was also highlighted that, “the productivity of livestock owned by poor farmers needs to be improved to enable them to move out of poverty. One important way of doing this was by addressing the information needs of the cattle owners.

Dissemination of knowledge through appropriate delivery methods played an important part in addressing these needs.”

Nnenna (2011) studied on the rural farmer’s problems on accessing agricultural information in Enugu state, Nigeria. Questionnaires and interviews were used to collect data in this study. The findings were that the majority of the Nsukka rural farmers encountered a number of constraints; lack of access roads in their communities, poor public relations of extension workers and agricultural information not being broadcasted on radio and television.

Pingali et al (2005) stated that small-scale farmers had difficulties hindering them from commercialisation; these hindrances were seen to arise from lack of public goods that hamper market exchange as well as from a new set of transaction costs that emerged from dealing with the food system. Matungul et al, (2001) and Alene et al (2007) explained that smallholders in Africa often face high transaction costs in production and marketing of agricultural outputs owing to the nature of their products and the institutional environment in which they have to operate. In the African context, transportation infrastructures are a common bottleneck to increase intra-regional trade. Furthermore, it was observed that inadequate market information flows and high illiteracy among market operators were hampering cattle marketing (Iimi, 2007).

Doss et al, (2005) affirmed that Transaction costs had different meanings to different groups of people thus all risks had to be understood within the larger social, cultural and economic context. Musemwa et al, (2008) explains that transaction costs are considered as barriers to the efficient participation of producers in different markets. Thus, producers would not use a particular channel when value of using that channel is outweighed by the costs of using it. Households living in places where roads are impassable may not have easy access to up-to-date information about the markets and market prices (Nkhori, 2004).

In addition, illiteracy was cited as a major barrier by (Carter, 1999; Mbozi, 2002), when it comes to using printed information materials. Furthermore, Aina (2006: 43) also pointed out that, “farmers in Africa are largely illiterate, so they cannot use the printed materials as a vehicle for disseminating agricultural information”. Information access can also be hindered by a lack of resources and excessive costs. For example, internet access and online use of information systems are costly, as noted by (Nicholas, 1996). Aina (2007: 76) associated the following problems or constraints with dissemination of agricultural

information in Africa; inadequate financial power of farmers in Africa, African farmers are illiterate. Majority of them cannot read or write in any language, farmers in Africa live in areas, where there is lack of basic infrastructure, such as telephone, electricity, good road network, pipe borne water, few number of extension workers (the ratio of agricultural extension workers to farmers is low) and poor radio and television reception signals in most village communities in Africa.

Nnenna (2011) investigated the rural farmers' problems accessing agricultural information in five towns of Nsukka local government area of Enugu state. The towns were randomly selected and twenty farmers were sampled from each town and that made a total of 100 respondents. The questionnaire and scheduled interview were used to collect data. SPSS software was used to calculate the means of each item. The study revealed the following constraints which farmers encountered in their quest to access agricultural information from their community with poor public relations of extension officers being rated first, then inability to read and write (illiteracy), poor radio and television signals, agriculture information on radio aired at odd hours, lack of electrification, lack of access roads for easy community visits of extension workers and lack of money to purchase newsletters, leaflets of agricultural information.

2.4.1. Conclusion

The first part of literature looked at empirical studies done by various authors in the field of agriculture. It is still not understood in the literature why marginal and smallholder farmers do not access information more frequently. Whether it is because the information is not available or not relevant or there are no incentives to access information is still unknown. Another possibility is that these farmers do not have the means to use the information. If this is the case, information that is supported by services and inputs could be highly relevant. The literature shows quite a number of sources used by farmers yet it does not show the satisfaction levels of these sources by the farmers. It was also observed that there are few studies on the information needs of farmers, so research into this area could help analysts understand the information-seeking behaviours of different of the small-scale cattle farmers in other parts of Namibia. Majority of the studies presented in this chapter have focussed more on the information sources used by farmers in general without having to specify the categories of farmers as it was observed by the researcher that some studies combined both crop and livestock. Exposure to and use of appropriate information by the small-scale cattle

farmers can help them to improve their cattle farming business, thus helping them to move out of poverty. Therefore, there is an urgent need to understand the dynamics of information“ as an important resource for the cattle dependent livelihoods. Available information on Animal Health Knowledge (AHK) need to be efficiently disseminated and delivered to the end users for better production from livestock.

2.5 CONCEPTUAL FRAMEWORK

2.5.0 Overview

The study was anchored on the conceptual framework presented below based on a combination of the literature on information needs; the behaviour models developed by Wilson (2006); and Diekmann, Loibl, and Batte's (2009) framework for the economics of agricultural information. Bringing these approaches together helped in showing how characteristics of information search from an individual perspective translate into final welfare outcomes such as farm productivity and income through the various contexts of information search, information content and sources, and how information is converted into specific action through its adoption by the farmers.

2.5.1 A Conceptual Framework of Farmers' Information Needs and Search Behaviour

The Characteristics of information search depicted in figure 3.1 relate to a set of observable factors that could be used to explain the information search behaviour of cattle farmers. These variables are grouped into situational factors, psychological and socio-economic factors (Diekmann, Loibl and Batte 2009). These characteristics by themselves may not fully explain the information needs and information search behaviour of the farmers (Wilson 2006). The information search behaviour is conditioned by a farmer's aspiration for information search and the capacity of the farmer to accumulate social capital and social learning skills. The content 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 aspiration of the searcher. Further, farmer's ability to search for information depends on the sources that are accessible to farmers e.g. local information needs could be met by a well organised extension system that uses traditional and modern methods of communication such as radio, mobile phones and television while the need for global information has to be met through internet connections or through contact with private firms like NGOs. These farmer-based organisations (NGOs) are increasingly being recognised as key for information sharing and tend to play a critical role in filling the information gaps that may exist in rural areas (NSSO 2005).

To access, assess and apply the content, farmers must have economic resources e.g. money, skills, technology and social resources such as motivation, trust, confidence and knowledge (Heeks 2005). Therefore, farmers must not only be able to access the content but assess its relevance and apply it to a specific decision but ultimately they must be able to act upon the information. This requires further resources at the user level including action resources and capacity for example, the content maybe available to a community but it may not be accessed because of low levels of literacy or it may be accessed but not acted upon because of poor financial capacity to buy the necessary inputs. Coudel and Tonneau (2010: 63) have also noted that ‘information may seem appropriate, usable, and relevant but it can only be useful if its actors have capacity to use it and their environment offers them the opportunity to use it’.

The nature and extension of the benefits farmers gain by using information in specific operations will determine not only productivity and welfare outcomes but also how information is sought. It is therefore important to understand the information needs and farmers information seeking behaviour in order to for extension workers to be able to provide specific, relevant information to the farmers.

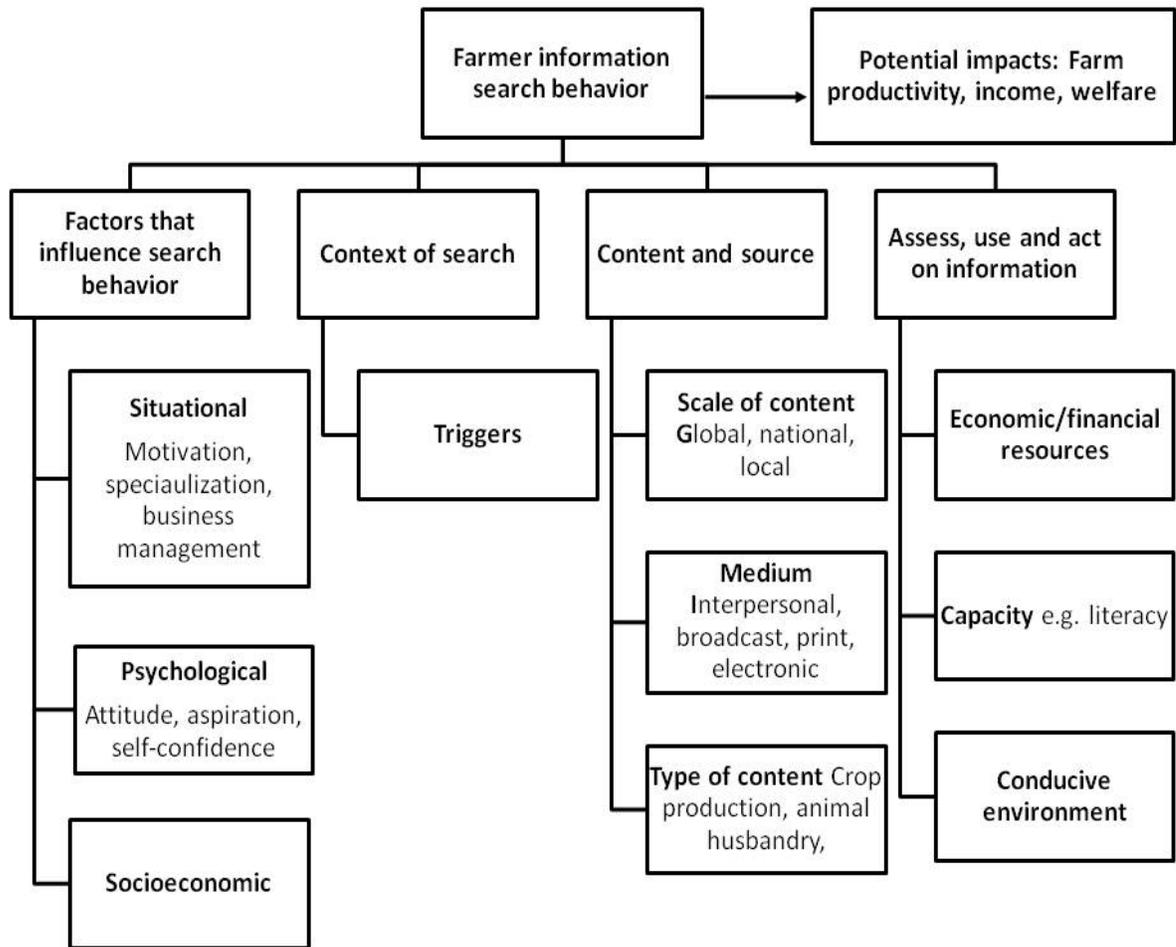


Figure 1: A conceptual framework of farmers' information needs and search behaviour

Source: Diekmann et al (2006).

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter explains the general plan of how the research questions are going to be answered. It describes the methods used in collecting data, how the data will be analysed. It also outlines the research design employed, the target population, sample size and sampling method. Data collection procedure and analysis as well as the instruments used are outlined.

3.1 Research Design

In this study, the researcher used a survey method. This method was chosen because it allows collection of large amount of data in a highly economical way. Surveys are used to answer the questions who, what, where, and how much, (Saunders, Lewis and Thornhill, 2007). The researcher was able to identify who provided information to the cattle farmers, what information was sought, where information was sourced, and why the information was sought. The researcher was also able to identify the challenges which were faced by the cattle farmers during the process of information seeking.

Both quantitative and qualitative methods were employed. This is based on the recognition of the fact that when either of the approaches is used in exclusion of the other, it would have grave limitations and biasness. Quantitative research involves measurement in terms of quantities or numbers (Cooper and Schindler, 2001). This approach was necessary in this study and questionnaires were used to solicit quantitative data. This method enabled the researcher to have the statics of how many people from various age group sought for what type of information source hence help in knowing the mostly used sources of information.

Qualitative methods on the other hand aim at answering questions about the `what` how or why of a phenomenon. This method will help give details on what kind of information is sought by the farmers, how it is sought and why it is sought. Qualitative research is concerned with studies pertaining to people's perceptions or feelings towards certain policies, actions or other occurrences that cannot be measured numerically (Bless, Higson-Smith and Kagee, 2006).

3.2 Target Population

The target population for this study comprised of veterinary doctors, Animal health technicians, officers from the private sector in the field of agriculture and small-scale cattle farmers from 10 selected villages of Katima-mulilo rural constituency namely Bukalo, Ngoma, Liselo, Ibbu, Nfoma, Kalimbezi, Miyako, Ngala, Zilitene and Musanga.

Table 1: Population of Katima Mulilo Rural Constituency

Area	Total	Female	Percent	Male	Percent
Katima Mulilo Rural Constituency	6,399	8, 242	50.3%	8,157	49.7%

3.3 Research Sample and Sampling Procedure

The participants of this study comprised of one hundred and forty (140) respondents and were divided as follows: 125 cattle farmers were sampled out of a population of 16,399 people who live in Katima Mulilo rural constituency. This figure (125) was broken down as follows; 100 answered questionnaires while the other 25 cattle farmers participated in the focus group discussion. All the 10 Extension officers, 3 Veterinary officers and 2 personnel's from the private sector (MeatCorporation Board) also participated in the study. Cluster Sampling was used to sample the villages and out of 27 villages found in Katima Mulilo rural constituency, 10 were sampled for inclusion in this study. The researcher selected groups or clusters which in this case were villages from Katima Mulilo rural constituency, and then from each selected cluster (village), the researcher selected the individual subjects who in this case were cattle farmers through random sampling.

In random sampling, individuals are selected from the population in such a way as to accord every individual of the population the chance of being selected, Gnosh (2003). Therefore, this method was relevant for this study as this sampling technique gave all the cattle farmers who participated in this study an equal chance of being selected. In each of the 10 villages, out of the 27 villages, 10 respondents were randomly selected to take part in this study.

Furthermore, purposive sampling method was used to sample the key informants who included Veterinary doctors, Animal health technicians and officials from non-governmental

organizations. This method enabled the researcher to purposively target a group of people believed to be reliable for the study. According to Donald (2006), the power of purposive sampling lies in selecting information rich cases for in-depth analysis related to the central issues being studied.

3.4 Research Instruments

3.4.1 Ethical Permission

Permission was sought from the office of the ministry of agriculture, water and forestry as well as from the chief through the village headmen of Katima Mulilo rural constituency to collect data from the cattle farmers. In addition the researcher obtained an official letter of introduction from the School of Education at the University of Zambia.

3.4.2 Validity of the Instruments

The questionnaire, the structured interview schedule and the focus group discussion guide were validated by the researcher, the supervisor and other experts in Educational Research Methods at the Directorate of Research and Graduate Studies (DRGS), who critically examined the face and content values of the instruments. Necessary corrections were made in order to improve the instruments. Equally, pre-testing of instruments to test the relevancy and validity of the questions was done on 20 cattle farmers in Mwandu District and 2 veterinary officers and 3 extension officers. The respondents were requested to comment on the following:

- The clarity of the questions contained in the instruments.
- To state according to their opinion whether or not the instruments have been organized in a logical order.
- To state the relevance of questions in the instruments, to the research topic.
- Also to comment on the length of the questions

The following are the types of instruments which were used in this study.

3.4.3 Questionnaire Data

Data for this study was collected by the researcher with the help of the assistant researchers over a period of two months from November to December 2013. The questions comprised of both open ended and closed questions. A total of 100 questionnaires which were translated into Silozi were distributed in person to 100 small-scale cattle farmers and all the 100 questionnaires were returned. The response rate of the questionnaires returned was 100%. The 100 small-scale cattle farmers who answered the questionnaire were excluded from the focus group discussion. The researcher with the help of assistant researchers gave the self-administered questionnaires with a cover letter to the farmers, and would wait for it to be completed by those respondents who were able to complete immediately. At the end, each assistant researcher, together with the researcher counted the number of questionnaires returned against the number that was given to them to check if they were any missing questionnaires.

3.4.4 Interviews Data

Appointments were made with veterinary doctors, animal health technicians and non-governmental officials to accord the researcher a chance to interview them at their own convenient time. Interview schedules were used to collect information from the key informants. Interviews with these key informants took place in their offices and the researcher recorded the responses of each of them in a note book. Fifteen (15) key informants were interviewed which included all the three veterinary doctors and all the 10 animal health technicians in Zambezi region.

3.4.5 Focus Group Discussions

Focus group discussion guide were used to collect data from the 25 cattle farmers as this helped in clarifying some issues that may have been left out or not clear in the questionnaire. The researcher was able to probe deeper understanding on the topic and gave the respondents the chance to freely express themselves. The 25 small-scale cattle farmers did not take part in answering the questionnaire as the researcher wanted to see if there was going to be new information that was going to be obtained. These discussants were randomly selected. The material which was used to collect data was a tape recorder. Refreshments such as drinks and

snacks / sandwiches were provided to the discussants to avoid them leaving the meeting and as a way of appreciation for their time.

In collecting qualitative data from focus group discussions with the cattle farmers, the Critical Incident Technique will be used. When describing the critical incident, Fisher and Oulton (1999) consider that it is a technique used to describe a flexible set of principles for qualitative research, which was developed as a tool for the systematic study of human behaviour. Similarly, Ngimwa, Ocholla and Ojiambo (1996), describe the critical incident method as a specialized form of survey technique which involves studying the performance of a group or individuals.

They further explain that it is based on the theory that people have less difficulty in remembering or recalling accurately the latest events taking place in their lives. As the rural population of Katima-Mulilo rural are mostly illiterate, it will be easy for them to recall without contacting any recorded sources. Critical incidence help the researcher to ask more, probing deeper questions to the respondents so that the information being sought may not be shallow. This will be applied through the use of focus group discussions with the cattle farmers.

3.5 Data Collection Procedure

Primary data were collected through face to face interviews with the key informants who in this case were veterinary doctors, Animal health technicians and non-governmental officials. During the interviews, the researcher took notes based on the conversation between the researcher and the respondents. The interviews were used to get opinions from the stated respondents on the type of information which they provided to the cattle farmers, how it was provided. The questionnaire was also administered to get data from the small-scale cattle farmers on the incidences that triggered their information search, the sources used when searching for information and the challenges faced while seeking information. The researcher also conducted five (5) focus group discussions with 25 cattle farmers and each group comprised of 5 respondents. The discussion was recorded on the tape recorder.

3.6 Data Analysis

Cooper and Schindler (2001) refer to data analysis as the reduction and accumulation of data to manageable size, developing summaries, looking for patterns and applying statistical techniques. Bless, Higson-Smith, and Kagee (2006) further state that analysis of data is

necessary because the researcher is able to detect consistent patterns within the data such as the co-variance of two or more variables. Quantitative data is usually analysed using a range of descriptive and inferential statistical procedures. In this study, the Statistical Package for Social Sciences (SPSS) version twenty (20) was used to analyse the quantitative data to create tables, graphs and charts and to perform various statistics. Qualitative data which were collected from open-ended items in the questionnaire, the focus group discussions and interviews were analysed thematically using content analysis, as themes and sub themes emerged from the data. The responses from subjects were put into categories according to the emerging themes. This allowed objective and critical interpretation, so as to make decisions that were valid for proper conclusion and recommendations of the study.

3.7 Ethical Issues

The researcher ensured that consent was sought from everyone who had participated in the research and this was without being coerced or unfairly pressurised. This means that they were well-informed about what participation entails, and were reassured that in case declined from the research, it would not affect any services they had received. The researcher ensured that verbal consent was done so as not to frighten the participants. Issues of confidentiality were taken into consideration as the identity of the participants was protected at all times and not be left lying around in notebooks or un-protected computer files.

3.8 Conclusion

The research design of this study was a survey and used both quantitative and qualitative approaches. The study instruments used were questionnaires, interview guides and focus discussion guides. The researcher faced challenges in holding interviews with some of the key informants as most of them were out in the fields when the researcher was collecting data and this was due to the fact that there said period was the time the region was affected with foot and mouth disease outbreak.

CHAPTER FOUR PRESENTATION OF FINDINGS

4.0 Overview

This chapter presents the findings of the study which investigated the information needs and seeking behaviours of cattle farmers in Katima-Mulilo rural of Namibia. The chapter is divided into the following sub-headings: Findings from the questionnaire survey, findings from the focus group discussions which were held with the farmers and findings from the interviews held with the key informants. The responses were based on the research questions which were related to the study in question.

The research questions that were investigated by this study were:

1. What are the incidences that trigger the information needs of cattle farmers?
2. What are the information needs of cattle farmers?
3. What are the information sources used by cattle farmers?
4. What are the challenges faced by cattle farmers when seeking information?

4.1 Findings from the Questionnaire Survey

This section presents the findings from the questionnaire survey. It is divided into four sections namely: demographic characteristics of respondents, information needs of cattle farmers, information sources, information seeking behaviours of cattle farmers, challenges encountered by cattle farmers when seeking information and suggestions to overcome the problems.

4.1.1 Demographic Characteristics of Respondents

A total number of 100 (N= 100) cattle farmers were sampled from 10 selected villages of Katima-Mulilo rural. One hundred questionnaires were distributed to them and all of them were returned making the response rate to be 100%.Ninety-five percent of the respondents were male while five percent were female. Sixty-one were aged above 50years, 19 were aged 41-51, twelve were aged 31-40years and eight were aged 20-30years. Table one summarises the characteristics of the respondents. Seventy percent of the respondents were married, eighteen percent were single, seven percent were divorced and five percent of the respondents

were widowed. Information on the education levels showed that forty-four percent of the respondents had never been to school or received any formal education, twenty-five percent had only gone up to primary level, nineteen percent had reached tertiary level while twelve percent had attained secondary education. In terms of farm ownership, eighty-nine percent of the respondents were owners, seven percent were supervisors and four percent were senior employees.

Table 2: Characteristics of the Respondents

Variable	Value	Frequency n=(100)	Percentage
Gender	Male	95	95%
	Female	5	5%
Age	Above 50 years	61	61%
	Below 40 years	20	20%
	40-50	19	19%
Marital status	Married	70	70%
	Single	18	18%
	Divorced	7	7%
	Widowed	5	5%
Educational level	No formal education	44	44%
	Primary	25	25%
	Tertiary	19	19%
	Secondary	12	12%
Ownership of farm	Owner	89	89%
	Employee	11	11%

4.1.2 Information Needs of Cattle Farmers

The respondents were asked if they had ever felt the need for information. All the one hundred cattle farmers reported that, they had felt the need for information at one point or another. Table 3 shows the most common information needed by the farmers. The study revealed that fifty-five percent said they needed information on animal health, twenty percent needed market information, thirteen felt the need for animal husbandry, nine percent required information on new technologies while three percent needed information on agriculture policies.

Table 3: Information Needs of Cattle Farmers

Rank	Type of information required	Frequency	Percentage
1	Information on animal health	55	55%
2	Market information	20	20%
3	Information on animal husbandry	13	13%
4	Information on new technologies	9	9%
5	Information on agriculture policies	3	3%
Total		100	100%

The researcher further did a cross tabulation on the type of information needed with the position that a farmer held. The study revealed that all the 89 owners needed information on animal health , they also needed market information (76), 68 mentioned information on agriculture policies, 42 also needed information on animal husbandry, while 39 sought for information on new technologies and 21 needed information on agriculture policies. It was also established that the employees information were as follows; 11 had a higher need for animal health information, 9 sought for market information, 7 needed information on animal husbandry, 3 on information on new technologies and 2 sought for information on agriculture policies. Table 4 shows the responses of a cross tabulation performed between the type of information needed and the position held by the respondents.

Table 4: Type of Information Versus Position Held on the Farm

Type of information Needed	Response of respondents	Position of respondents	
		Owner	Employee
Animal health information	yes	89	11
	no	0	0
Information on new technologies	yes	39	3
	no	50	8
Market information	yes	76	9
	no	13	2
Agriculture policies	yes	21	2
	no	68	9
Information on animal husbandry	yes	42	7
	no	47	4

In order to establish whether there was an association between education level and kind of information required by the small-scale cattle farmers, the researcher conducted a Fishers

Exact test at significance level of 0.05. The results were significant ($\chi^2 = 49.608$; $df=15$; $p=0.001$). The results revealed that small-scale cattle farmers with no formal education 12 sought for information on animal health information, nine 9sought information on marketing and to a very lesser extent two 2 sought for information on animal husbandry and only 1 sought for information on new technologies while none of them sought for information on agriculture policies.

The study also revealed that the small-scale cattle farmers who attained primary education, 33 sought for information on animal health, 19 sought for marketing information, 8 were in need of information on animal husbandry while 3 sought for information on new technologies and only 1 sought for agriculture policies. In secondary level, 30 sought for animal health information, 17 sought for market information while 12 had a need for information on new technologies, 7needed information on animal husbandry and only 1 sought for information on agriculture policies.

In addition, those who had acquired tertiary education, 23 sought for information on animal health, 19needed information on new technologies, 16 sought for market information while 10 needed information on agriculture policies and 13 were in need of information on animal husbandry.

Table 5: Education Level Attained Versus Type of Information Required

Highest educational level attained	Kind of information required by farmers				
	Animal health	New technologies	Marketing	Agriculture policies	Animal husbandry
no formal education	12	1	9	0	2
Primary	33	3	19	1	8
Secondary	30	12	17	1	7
Tertiary	23	19	16	10	13

A Chi square test was further conducted to establish whether there was an association between age and kinds of information required by the small-scale cattle farmers at significance level of 0.05. The results were not significant ($\chi^2 = 8.292$; $df=10$; $p=0.600$). The study revealed that respondents below the age 40 years, 18 sought for animal health

information, 12 had a need for market information, 4 sought for information on new technologies, another 4 sought for information on animal husbandry but none in this age group sought for information on agriculture policies.

It was further established that those between 41 and 50 years, 30 had a need for animal health information, 19 on market information, 11 needed information on new technologies, 11 more respondents needed information on animal husbandry while 4 sought for information on agriculture policies.

Those above 50 years, 50 had a much higher need for animal health information, 30 on market information, 20 needed information on new technologies and 15 wanted information on animal husbandry while 8 sought for information on agriculture policies. The table below illustrates results from a cross tabulation between type of information required and age.

Table 6: Type of Information Required Versus Age

Type of information required by farmers	Age		
	<40 years	41-50 years	>50 years
Animal health	18	30	50
New technologies	4	11	20
Market information	12	19	30
Agriculture policies	0	4	8
Animal husbandry	4	11	15

4.1.3 Information Sources Used by Cattle Farmers

The researcher wanted to establish the respondents' information seeking behaviour. The cattle farmers were asked to state the sources used when seeking information. Table 3 below shows the sources of information used by cattle farmers. The study revealed that forty-nine percent of the respondents accessed information from other cattle farmers (friends, relatives and neighbours), twenty-one percent accessed information from extension officers, and twelve percent obtained information from veterinary doctors while eight percent used personal experience. The study further revealed that six percent of the respondents accessed

information from the radio, two percent used books and another two percent accessed information from newspapers.

Table7: Sources of Information

Rank	Name of information source	Frequency	Percentage
1	Friends, relatives	49	49%
2	Personal experience	21	21%
3	Extension officers	12	12%
4	Veterinary doctors	8	8%
5	Radio	6	6%
6	Newspapers	2	2%
7	Books	2	2%
Total		100	100%

The researcher further conducted a Chi square test was conducted to establish whether there was an association between age and information sources used by cattle farmers at significance level of 0.05. The results were not significant ($\chi^2 = 16.829$; $df=14$; $p=0.265$). The results revealed that those below 40 years, 14 sought for information from friends and relatives, 13 consulted veterinary officers, 12 used personal experience, 11 also consulted extension officers and only 4 used the radio. From this age group (<40yrs), none of them used newspapers or books. While those between 40-50 years of age, 22 consulted veterinary officers, 20 used personal experience, 17 consulted friends and relatives while 16 consulted extension officers, 13 used the radio, 4 used newspapers and 3 also consulted books. The study further established that those above 50 years, 37 used personal experience, 33 consulted friends, another 33 sought information from veterinary officers, 23 also consulted extension officers while 16 used the radio, 7 also used books and 6 sought for information from newspapers.

Table 8: Information Source versus Age

Information sources	Age		
	below 40 years	40-50 years	above 50 years
Personal experience	12	20	37
Newspapers	0	4	6
Friends/relatives	14	17	33
Books	0	3	7
Extension officers	11	16	23
Veterinarians	13	22	33
Radio	4	13	16

A Chi square test was conducted to establish whether there was an association between gender and information sources cattle farmers used at significance level of 0.05. The results were significant ($\chi^2 = 18.703$; $df = 7$; $p = 0.009$). The results revealed that male cattle farmers relied heavily on personal experience (45), veterinary medical officers (6), friends/relatives, (20), extension officers (11), radio (5). To a lesser extent, the male respondents also sought information from books (5) and 3 also used newspapers.

In addition, all the female respondents (5) relied heavily on friends and relatives.

Table9: Information Source versus Gender

Information sources	Sex of respondents	
	Male	Female
Personal experience	45	0
Newspapers	3	0
Friends/relatives	20	5
Books	5	0
Extension officers	11	0
Veterinarians	6	0
Radio	5	0
Total	95	5

A Fishers Exact test was conducted to establish whether there was an association between education level and information sources cattle farmers used at significance level of 0.05. The results were significant ($\chi^2 = 58.324$; $df = 21$; $p = 0.001$). These results revealed that the respondents with no formal education 10 relied on friends and relatives, another 10 on personal experience, 8 on extension officers, 7 on veterinary medical officers and another 7 used the radio while only 1 used newspaper and none of them used books. While those in primary level, 23 used personal experience and another 23 consulted friends and relatives, 21 also consulted veterinary medical officers, 15 consulted extension officers, 11 used the radio while none of them used newspapers or books.

Those in secondary level; 24 used personal experiences, 17 sought for information from friends and relatives, 15 consulted veterinary officers, 13 consulted extension officers, 16 used the radio while 3 read newspapers and only 1 used books. Lastly, those in tertiary level, 20 used veterinary medical officers, 16 consulted friends and relatives, 15 used personal experiences, 14 consulted extension officers, 9 obtained information from the radio and another 9 also used books while 6 used newspapers.

Table 10: Information Source versus Education Level

Source of information	Highest educational level attained			
	no formal education	primary	secondary	tertiary
Personal experience	10	23	24	15
Newspapers	1	0	3	6
Friends/relatives	10	23	17	16
Books	0	0	1	9
Extension officers	8	15	13	14
Veterinarians	7	21	15	20
Radio	7	11	6	9
Total	12	33	27	23

4.1.4 Channel of Communication

In order to understand the preference channel of communication used by the small- scale cattle farmers, the level of education was used to understand which channel was the most preferred by which category of farmers. The results showed that those who had no formal education, respondents who had primary education and secondary used oral communication as a channel of communication and to a lesser extent only 2 among those who had attained secondary education used mobile phones while the respondents who had acquired tertiary education, 6 preferred oral communication, 10 read books and 3 used mobile phones. Below is a table showing the results of a cross tabulation between channel of communication and education level of the respondents.

Table 11: Channel of Communication versus Education Level

Channel of communication	Level of o education			
	No formal education	Primary	Secondary	Tertiary
Oral communication	44	25	10	6
Reading	0	0	0	10
Use of mobile Phone	0	0	2	3

4.1.5 Satisfaction Level with Information Source

The respondents were asked to state their satisfaction levels on the sources they used when accessing information. This was to understand the respondent's satisfaction levels towards the sources. Table 4 shows the satisfaction levels with information sources. The study revealed that twelve percent of the respondents who obtained information from veterinary doctors were very satisfied; eight percent of those who used extension officers were very satisfied while thirteen said they were satisfied. The study further revealed that all the respondents who accessed information from other cattle farmers (friends, relatives, and neighbours), personal experience, radio, books and newspapers were not satisfied with the information they obtained.

Table 12: Respondents Satisfaction Level with Information Source

Source	Frequency	Very satisfied	Satisfied	Not satisfied
Veterinary doctors	8	8	0	0
Extension officers	12	12	0	0
Friends/ Relatives	49	0	0	49
Personal Experience	21	0	0	8
Radio	6	0	0	6
Books	2	0	0	2
News papers	2	0	0	2

4.1.6 Information Challenges Faced When Seeking Information

Cattle farmers experience various challenges when seeking information in order to solve their problems. In order to identify the problems that the respondents faced, they were asked to tick the challenges they encountered when seeking information. This made it possible to rank the problems. Table 5 summarises the challenges faced by farmers. Fifty-nine percent of the respondents said that the language used to disseminate information was a barrier to them as most of the information was presented in English which they could not understand. Twenty percent indicated distance to information centres while ten percent said format in which information was presented was a challenge that hindered them from accessing information. Furthermore six percent mentioned the unavailability of skilled personnel to consult from whenever the need for information arose, three percent (3%) indicated poor public relations of extension worker and two percent stated the lack of financial resources. Table 5 below shows the challenges faced by cattle farmers when seeking information.

Table 13: Challenges faced by cattle farmers when seeking information

Type of challenge	Frequency	Percentage
High illiteracy levels	59	59%
Language barrier	20	20%
Long distance to information centres	10	10%
Inadequate numbers of personnel to consult	6	6%
Poor public relations of extension workers	3	3%
Agriculture information on radio aired at odd hours	2	2%
Total	100	100%

A Fishers Exact test was conducted to establish whether there was an association between age of farmers and challenges they face when seeking information. The test was conducted at a significance level of 0.05. The results were not significant ($\chi^2 = 11.504$; $df=8$; $p=0.175$). Respondents below the age of 40, six pointed out high illiteracy levels, three mentioned language barrier, three also highlighted distances to information centers, five said the inadequate numbers on personnel to consult and three said poor public relations of extension workers while six said agriculture information on radio was aired at odd hours.

The study further established that in the age group between 40 and 50, six pointed out high illiteracy levels, four mentioned language barrier, two also highlighted distances to information centers, five said the inadequate numbers on personnel to consult and none mentioned poor public relations of extension workers while nine said agriculture information on radio was aired at odd hours.

In addition, those above 50 years expressed the following challenges; ten pointed out high illiteracy levels, four mentioned language barrier, ten again also highlighted distances to information centers, four said the inadequate numbers on personnel to consult and none mentioned poor public relations of extension workers while fifteen said agriculture information on radio was aired at odd hours. Table 14 below shows the cross tabulation of the challenges faced by small-scale farmers with age.

Table 14: Challenges versus Age

Challenges faced when seeking information	Age		
	Below 40 years	40-50	Above 50 years
High illiteracy levels	6	6	10
Language barrier	3	4	4
Long distance to information centres	3	2	10
Inadequate numbers of personnel to consult	5	5	4
Poor public relation of extension workers	3	0	0

Agriculture information on radio aired at odd hours	6	9	15
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A Fishers Exact test was conducted to establish whether there was an association between education level of farmers and challenges they face when seeking information. The test was conducted at a significance level of 0.05. The results were significant ($\chi^2 = 21.218$; $df = 12$; $p = 0.047$). The study revealed that those who had no formal education, 8 pointed out high illiteracy levels, seven mentioned language barrier, 3 highlighted distance to information centers, one said the inadequate numbers on personnel to consult and two said agriculture information on radio was aired at odd hours. None in this category mentioned poor public relation of extension officers as being a challenge to them. Those that had attained primary level, eighteen mentioned high illiteracy levels, six said language in which information was presented, four said long distance to information centers, four again mentioned the inadequate numbers of personnel while three said poor public relations of extension officers and 1 said agriculture information was on radio was aired at odd hours.

The study further established that the respondents who had attained secondary education, fourteen said high illiteracy levels, eighty said language in which information was presented, three said long distances to information centers while two mentioned the inadequate numbers of personnel's to consult from and none in this category mentioned poor public relation of extension officers and agriculture information being aired at odd hours.

In addition, those who had gone up to tertiary level none mentioned high illiteracy levels and language barrier as being challenges they were facing but eighty complained of the long distances to information centers while eighty again mentioned inadequate numbers of personnel's to consult and three said agriculture information on radio was aired at odd hours and none of them mentioned poor public relations of extension officers. The table below shows the cross tabulation results of challenges faced by cattle farmers and educational level.

Table 15: Challenges versus Education Level

Challenges faced when seeking information	Educational level Attained			
	No formal education	Primary	Secondary	Tertiary
High illiteracy levels	8	18	14	0
Language barrier	7	6	8	0
Long distance to information centres	3	4	3	8
Inadequate numbers of personnel to consult	1	4	2	8
Poor public relation of extension workers	0	3	0	0
Agriculture information on radio aired at odd hours	2	1	0	3

A Fishers Exact test was conducted to establish whether there was an association between gender of farmers and challenges they face when seeking information. The test was conducted at a significance level of 0.05. The results were significant ($\chi^2 = 6.368$; $df=6$; $p=0.173$). The results revealed that from the male category, 37 highlighted high illiteracy levels, 23 said language used when presenting information was a barrier to them, 13 complained of long distances to information centers, 9 said inadequate numbers of personnel to consult while 3 complained of the poor public relations of extension officers and 10 said agriculture information on the radio was aired at odd hours. It was further noted that all the 5 females pointed out high illiteracy levels as being the biggest challenge to them.

Table 16: Challenges versus Gender

Challenges faced when seeking information	Gender		
	Response of respondents	Male	Female
High illiteracy levels	Yes	37	5
	No	0	0
Language barrier	Yes	23	0
	No	0	0
Long distance to information centres	Yes	13	0
	No	0	0
Inadequate numbers of personnel to consult	Yes	9	0
	No	0	0
Poor public relation of extension workers	Yes	3	0
	No	0	0
Agriculture information on radio aired at odd hours	Yes	10	0
	No	0	0

4.1.7 Suggestions to Overcome the Challenges

The cattle farmers were asked to state what they thought should be done to overcome the problems that they encountered when seeking information. The results are summarised in table 6 below. Thirty-eight percent of the respondents suggested that government should provide information in local languages, twenty-five percent suggested that government should build information centres or kiosks in the villages, seventeen percent said that government should employ more veterinary doctors and animal health technicians (extension workers); and twelve percent said that government should train more information providers for example extension workers on the skills of disseminating information; and two percent

suggested that there was need for agriculture information to be aired on radio when farmers had returned from the fields.

Table 17: Suggestions to Overcome the Challenges

Suggestions to overcome problems	Frequency	Percentage
Government to provide information in local languages	38	38%
Government should build information centers in the villages	25	25%
Government should employ more extension workers	17	17%
Government should provide more trainings to the information providers	12	12%
More awareness programs to given to the farmers	8	8%
Total	100	100%

A cross tabulation was further performed to establish the views of the respondents with suggestions. The study revealed that those with no formal education, 30 said that there was need for the government to provide more information in local languages, only 1 said that government should build more centers in the villages, 7 said more extension workers needed to be employed, one said that more training needed to be given to information providers and 5 said there was need for more awareness programs to be given to farmers. In primary level, 10 said that there was need for the government to provide more information in local languages, none of them said that government should build more centers in the villages, 8 said more extension workers needed to be employed, 2 said that more training needed to be given to information providers and 5 said there was need for more awareness programs to be given to farmers.

The study further revealed that the suggestions of those in secondary level were as follows; 5 said that there was need for the government to provide more information in local languages, none of them said that government should build more centers in the villages, 5 said more extension workers needed to be employed, none of them said that more training needed to be given to information providers and 2 said there was need for more awareness programs to be given to farmers.

In tertiary, none of them said that there was need for the government to provide more information in local languages or that government should build more centers in the villages, 12 said more extension workers needed to be employed, 2 of them said that more training needed to be given to information providers and 5 said there was need for more awareness

programs to be given to farmers. Below is a cross tabulation of suggestions with educational level of respondents.

Table 18: Cross Tabulation between Suggestions with Educational Level

Suggestions	No formal education	Primary	Secondary	Tertiary
Government to provide information in local languages	30	10	5	0
Government should build more centers in the villages	1	0	0	0
More extension workers to be employed	7	8	5	12
More training to be provided to information providers	1	2	0	2
More awareness programs to be given to farmers	5	5	2	5
Total	44	25	12	19

4.1.8 Summary of the Findings from the Questionnaire Survey

The above section presented the findings from the questionnaire survey. The study revealed that majority of the cattle farmers considered information on animal health as the most important followed by information on animal husbandry, information on new technologies was ranked third while market information was ranked fourth the last was information on agriculture policies. The information sources mainly used by the respondents were ranked as follows starting with the frequently used source: cattle farmers (friends/relatives), extension officers, veterinary doctors, personal experience, radio, books and newspapers. The study also found that all the respondents who obtained information from veterinary doctors and extension workers were either very satisfied or satisfied while those that used other cattle farmers, personal experience, radio, books and newspapers were dissatisfied. The challenges that farmers faced when accessing information were summarised as follows: language barrier, distance to information centres, format in which information was presented, lack of personnel to consult, lack of financial resources.

4.2 Findings from the Focus Group Discussions

4.2.1 Background Information of Participants (Discussants)

Five focus group discussions were held with 25 cattle farmers. Each group consisted of five (5) participants making a total number of 25 discussants who participated in the focus group discussions. The respondents were randomly selected. The critical incident technique was used in collecting data. This helped the cattle farmers in recalling some of the past incidences that they had encountered that prompted them to seek information.

4.2.2 Information Needs of Cattle Farmers

In order to provide relevant information to people, their information needs and seeking patterns have to be known. The participants were asked if they had ever felt a need for any kind of information under any circumstance. This was asked in order to find out if these cattle farmers have experienced the need for information. In trying to understand the information needs of the cattle farmers, they were asked to recall some previous incidences they had encountered that prompted them to seek information. Below are quotes of reported incidences in Lozi from the focus group discussions: Farmers said that;

“kanako yemwi, nenikile nayokupa kezezo likomu anelikenezwi kikutuku bonenisazibi”

Translation: at one time, I had sought for information when my cows got sick and I did not know the type of sickness they were suffering from.

“nenikile nayokupa kezezo yamifuta yeminde yalikomu zakuuta nimwaku libabalela kulikana nilicho zeziswanela kuchanga”

Translation: I sought for information on the best type of breed to keep and how to take care of them in terms of feeding them (information on animal husbandry in general).

“anetikile naleka likomu mwabuse, nenikile nayokupa kezezo mwakuli noliseza”

Translation: I sought for information on the procedure to register the animals which I had bought from a neighbouring country.

“anenibata kulifela banake kwalikolo, nenikile nakupa kezezo kwa musika omunde kwakulekiseza likomu”

Translation: I sought for information on the available best markets when I wanted to sell my cows in order to pay my children's school fees.

'nenikile nakupa kelezo kwama vet, kubusa mifuta yemincha yakulimisa'

Translation: I sought for information from the veterinary doctors on new technologies to use in cattle farming.

The incidences that triggered farmer's information need for information were summarised as follows: Outbreak of diseases made them to seek for information on animal health in order to protect their animals, the desire to sell animals in order to raise funds to pay for their children's and to sustain themselves also made them to seek for market information, the need to improve a particular practice forced them to seek for information on new technologies and the desire to understand the registration process facilitated for the need to seek information on agriculture policies. These incidences facilitated the information seeking process of farmers. The study further established the following as information needs which were felt by the cattle farmers: the farmers had a higher need for information on animal health, market information, information on animal husbandry, new technologies, and information on agriculture policies.

4.2.3 Sources of Information

To understand the information seeking behaviour of farmers, respondents were asked to mention sources they used when seeking information and to state their reasons for preferring these sources. The study revealed that the small-scale cattle farmers relied heavily on friends and relatives and to a lesser extent also consulted veterinary medical officers, extension officers, Meat Corporation of Namibia, traditional leaders, Likwama Farmers Union and the radio. The study further revealed that the use of books and newspapers was very low. The respondents who preferred to obtain information from other cattle farmers gave the following reasons; information was readily available and easily accessible as it was presented in the local language and no costs were involved.

The study also established that the use of various information sources was influenced by the level of education as during the discussions, the discussants themselves mentioned that they relied heavily on obtaining information from friends and relatives due to their low levels of education. This was also because they spoke a language they all understood. The respondents also said that because they could understand English, they were forced not to show up to the mentorship meetings because of the language which was used when presenting information.

4.2.4 Information Seeking Behaviour

Having had identified the sources which the small-scale cattle farmers used, the researcher saw the need to try and understand their information seeking behaviour. The farmers were then asked to describe their information seeking processes. The respondents said that whenever a need for information rose, they first used personal experience to try and solve the problem, when they failed, they consulted other cattle farmers (friends, relatives) and if this failed then they sought information from experts. However, there were some discussants who pointed out that, they immediately consulted experts (veterinary medical officers and extension officers) whenever they felt the need for information.

4.2.5 Satisfaction Levels

The respondents were asked to state whether they got the particular information they needed. This was asked in order to find out whether it sometimes happened that they did not get the information needed. Farmers were more satisfied with information obtained from veterinary doctors and extension workers but were least satisfied with information obtained from the Likwama Farmers Union, friends and personal experience. Furthermore, they were also dissatisfied with information obtained from the radio, books and newspapers.

The respondents were further asked to give reasons for their dissatisfaction. The reasons were that: information obtained from the Likwama Farmers Union and information from books was presented in English and was too technical. Information obtained from other cattle farmers (friends/relatives) was insufficient while the topics covered in the newspapers and radio tended to be shallow. Information on radio was often broadcast when farmers were out in the field.

4.2.6 Problems Faced When Accessing Information

In order to identify the problems that farmers faced when seeking information, the respondents were asked to state the problems they encountered while seeking information and the problems were stated as follows: inadequate personnel, language barrier, poor radio signals, agriculture information on radio aired at odd hours when farmers were out in the fields, inaccessible roads which made it difficult for extension workers to conduct community visits, very little agriculture information which was broadcast on radio and in newspapers, long distance to information centres and format in which information was presented.

4.2.7 Suggestions to Overcome Problems

The farmers were asked to give suggestions that could be put in place in order to improve the information delivery. The suggestions were that the government should do the following:

- Employ more veterinary doctors and extension workers
- Information should be presented in local languages
- Install radio antennas at strategic places to improve the signal
- The radio agriculture programmes should be broad cast in the evening when farmers are at home
- Build good roads to enable extension workers have more frequent visits
- Information on radio should be broadcast in the evening when farmers are back from the farms
- Build information centres/kiosks in the villages
- Provide interpreters during agricultural farmers meetings, agriculture field days and exhibits

4.2.8 Summary of Findings From Focus Group

The findings from the focus group discussions revealed some incidences which helped in understanding the cattle farmer's information needs. The incidences were grouped into the following: Outbreak of diseases, the desire to sell animals which was influenced by the need to sustain themselves and to raise funds for their children's school fees, the need to improve on a particular practice in order to increase production levels also prompted them to seek for information new technologies and the desire to understand the registration process and other policies which were in place, the farmers saw the need to seek for information on agriculture policies. The study further revealed the following information sought by the cattle farmers animal health information, market information, information on animal husbandry, information on nutrition, information on agriculture policies and new technologies. The farmers used the following sources to obtain information: friends and relatives, veterinary doctors, extension officers, Meat Corporation board of Namibia, traditional leaders, Likwama farmers union, radio, television and newspapers. It was observed that farmers were satisfied with information obtained from veterinary doctors, extension officers and were least satisfied

with information obtained from Likwama farmers union, friends/ relatives, personal experience. Furthermore, farmers were dissatisfied with information obtained from the radio, books and newspapers. In addition, it was revealed that the need to seek information was mainly influenced by the number of animals a farmer had and also the education level influenced the type of source where information was sought.

The results from the focus group discussions also established the following challenges: illiteracy level, language barrier, inadequate personnel, format in which information was packaged, inaccessible roads and distances to information centres. The following suggestions to overcome the challenges were highlighted: there was need for government to increase awareness programs, more information to be presented in local languages, employ more extension workers, build proper roads, and build information centres in the villages.

4.3 Findings from the Interviews Held with the Key Informants

4.3.1 Background Information of Interviews

This section presents the findings from the interviews which were held with three veterinary doctors, ten animal health technicians (extension officers) and two key informants from the private sector (Meat Corporation Board of Namibia and Likwama Farmers Union). The key informants were selected using purposive sampling. This method was used to enable the researcher to sample only the people who were relevant in providing information for this study. The findings from the interviews were guided by the four objectives namely: (a) to find out the information needs of cattle farmers, (b) to investigate the information sources they were using, (c) to explore how cattle farmers sought information and (d) to find out the challenges cattle farmers were facing when seeking information.

4.3.2 Information Provided to Cattle Farmers

The key informants were asked to state the information that they provided to the cattle farmers. This was to help in confirming if farmer's information needs matched with the information which was provided to the farmers. The study established that the following information was provided by the veterinary doctors and extension workers: animal health (information on disease status in the region), vaccination days, information on animal husbandry, information on new technologies, information on nutrition, information on animal care handling to avoid diseases like rabbits and tuberculosis which can easily be transmitted to human beings. The Meat Corporation Board provided market information to the farmers while the Likwama Farmers Union provided the farmers with information on animal husbandry.

4.3.3 Number of Contacts with the Farmers

The key informants were also asked to state the number of times they met with the farmers to provide information. This was to have an insight of the number of times cattle farmers accessed information from formal institutions. Three (3) vet doctors who were interviewed said that they provided information to the farmers on a daily basis for those that could manage to visit their offices and once a month to those that could not visit their offices. From the nine (9) extension officers who were interviewed all stated that they met the farmers

only once a month and when attending to emergencies. The Meat Corporation Board of Namibia provided market information whenever farmers were faced with need to sell their animals and the Likwama Farmers Union only met the farmers once in a while during field days and agriculture exhibitions.

4.3.4 Channels and Formats of Information Transfer

In trying to understand the information sources used by the farmers, the key informants were asked to state the methods they used when providing information to the cattle farmers and they indicated that, information was given to the farmers through verbal conversations with them. Information was also written in books, brochures, notice boards, newspapers and the radio. The key informants acknowledged that the usage levels of print materials were very low as farmers were more comfortable with receiving information through verbal communication and in their local languages. They further stated that sources of information helped in revealing how the cattle farmers sought information as most of the information sources used were not formal as indicated in the findings that majority of the cattle farmers sought information from friends, relatives, neighbours and through their personal experiences. Therefore, their information seeking process could be described as personal experience, then friends/ relatives and finally experts but other would always consult experts whenever the need for information rose.

4.3.5 Problems Facing Cattle Farmers

The key informants were further asked to state the problems which they felt farmers faced when seeking information. The key informants highlighted the following problems: illiteracy, language barrier, inadequate personnel (vet-doctors and extension officers), long distance to information centres, inaccessible roads and agriculture information on radio aired at odd hours when farmers are in the field.

4.3.6 Suggestions to Overcome the Problems

The key informants stated that there was need for the government to do the following:

- Increase more awareness programs
- More information to be presented in the local languages
- Employ more extension officers and veterinary doctors
- Build information centres/ kiosks in villages

- Build good roads
- Information on radio to be aired in the evening when farmers are back from the fields

4.4 Summary of Findings from Interviews

Based on the findings from the interviews with the key informants, the following was the information which was provided to the farmers: animal health e.g. information on disease status in the region, vaccination days, information on animal husbandry, information on new technologies, information on nutrition, information on animal care handling to avoid the transmitted diseases like rabbis and tuberculosis which can easily transmit to human beings. Information on animal husbandry and market information. They also stated that information was given to the farmers through oral communication, information was also written in books, brochures, notice boards, newspapers, television and the radio. The following problems were highlighted by the key informants: illiteracy, language barrier, format in which information was packaged, inadequate personnel (vet-doctors and extension officers), distance to information centres and inaccessible roads and the suggestions were that government should do the following: Increase on awareness programs, more information to be presented in the local languages, information to be presented in friendly formats, employ more extension officers and veterinary doctors, build information centres/ kiosks in villages, build good roads.

4.5 Conclusion

Chapter four presented the findings from the questionnaire survey, focus group discussions and interviews. The study revealed the most needed information needs of the farmers were: animal health information e.g. information on the disease status in the region, measures to take, information on animal husbandry, information on new technologies, market information, information on agriculture policies and the least needed information was on animal nutrition, information on credit/loan facilities, information on transport, information on the procedure to bring in cattle bought from neighbouring countries.

The study also revealed that farmers used the following sources when seeking information: friends/relatives, personal experience, veterinary doctors, extension officers, likwama farmers union, traditional leaders, books, newspapers and the radio. It was revealed that farmers were more satisfied with information obtained from veterinary doctors and extension officers and were least satisfied with information obtained from friends/relatives, personal experience, likwama farmers union, and tradition leader. Furthermore, the farmers were dissatisfied with information obtained from books, newspapers and the radio. The findings also revealed the following challenges: illiteracy, language barrier, inadequate personnel, inaccessible roads and distance to information centres. Therefore it can be concluded that the cattle farmers in Katima-mulilo rural have access to information and that some of their information needs are met but what they lack is adequate to wide range of current information sources. The study observed that there was need to address the above mentioned problems to the relevant authorities.

CHAPTER FIVE

INTERPRETATION AND DISCUSSION

5.0 Overview

The purpose of this chapter is to interpret and discuss the findings in relation to the research question which are:

1. What incidences trigger the information needs of farmers?
2. What are the information needs of cattle farmers?
3. What are the information sources used by cattle farmers?
4. What are the challenges faced by cattle farmers when seeking information?

Based on these research questions, the chapter has been divided into four sub-sections: (1) incidences that trigger information needs, (2) information needs, (3) information sources and information seeking behaviour, (4) challenges to information seeking. In discussing the findings, the chapter draws upon other studies and their conclusions to inform the discourse.

5.1 Incidences that Trigger Information Needs

The first research question was to find out the incidences that triggered the farmers need for information. According to sub-section 4.2.2 of chapter four, the study revealed the following incidences as being the ones that trigger the farmers need for information: Outbreak of diseases, the desire to sell animals which was influenced by the need to sustain themselves and to raise funds for their children's school fees, the need to improve on a particular practice in order to increase production levels also prompted them to seek for information new technologies and the desire to understand the registration process and other policies which were in place, the farmers saw the need to seek for information on agriculture policies.

However, after an extensive review of literature, it was observed that there was no study that had been studied on information needs and seeking behaviours of cattle farmers not to mention any information on incidences that trigger the information needs of the farmers hence making this study being the first of its kind and enabled the researcher to find out the above incidences that act as driving forces towards the farmers information needs which later

leads to the search for information. This, therefore, made it very impossible for the researcher to compare or contradict the findings of this study with other studies as all studies in the literature review did not bring out this aspect. The researcher therefore saw the need to have a deeper understanding on the incidences that triggered the information search of the small scale cattle farmers of the Zambezi region of Namibia.

5.2 Information Needs of the Farmers

The second research question : what are the information needs of small-scale cattle farmers was answered using the critical incident technique developed by Belkin (1984) amongst other researchers and has been used successfully in assessing user information needs ever since. The rationale behind the use of the critical incident technique was that since the subject of information needs maybe abstract to some people, one may not get useful responses by directly asking respondents what their information needs are.

The critical incident technique therefore requires respondents to think about a problem or any difficult situation they were confronted with in the past which required them to acquire information and consequently, knowledge to enable them make a decision or solve a problem. This is in contrast with the direct questioning method which may not be understood by the respondents if they were asked to identify their information needs in a vacuum. Most of the respondents may not be able to comprehend the concept of information need because it is abstract and complex in nature. The researcher therefore saw the need to use this technique as no study of information needs and seeking behaviours of farmers have ever used this technique.

In table three of sub-section 4.1.2 of chapter four, the study revealed that fifty-five percent of the cattle farmers had felt the need for information on animal health, twenty percent needed information on animal husbandry, thirteen percent sought for information on new technologies, nine percent felt the need for market information and three percent sought for information on agriculture policies. The findings of the study with regard to information needs are similar to the results of the research conducted by Hu et al (2006) who investigated into the information needs of livestock farmers in China. The results showed that livestock farmers had a higher need for market information, information on nutrition and market. In another related study, Muhammad (1999) investigated on the agricultural information needs of Pakistan farmers. The study revealed that farmers had a higher need for information on

feeding, followed by animal health information e.g. vaccination against viral and bacterial diseases and their time intervals. The need for market information was rated third.

5.2.1 Cross Tabulation between Positions on the Farm with Type of Information Sought

A cross tabulation was done to find as illustrated in table four to establish whether the position one held on the farm had an influence on the type of information sought. The results showed that the owners of the animals had a need for a wide range of information compared to the employee's. However, it was also noted that the employees who had animals also felt the need for various types of information even despite them being few. This is to simply say that the need for information is felt by anyone regardless of the position they hold on the farm. However, after an extensive review of literature, it was discovered that no study took interest in establishing whether employees also felt the need for information hence the need for more studies of this nature to try and take interest in establishing the information needs of employees. This is important as the researcher discovered that some workers had worked for a long time and have also acquired some animals hence the need to consider them.

5.2.2 Cross Tabulation between Education Levels with Type of Information Required

The researcher further did a fishers exact test at significance level 0.05 to find out whether the education level of respondents had an influence on the type of information sought. The results were significant. The research revealed that the respondents who had acquired tertiary education felt the need for a wide range of information unlike those with no formal education, primary and secondary. A chi square test at significance level 0.05 was also conducted to determine whether age had an influence on the type of information sought by the farmers. The results were not significant which meant that one's age did not determine the type of information they needed.

The researcher concluded that the higher education a respondent attained, the higher the need for a variety of information as it was noted in the study that the respondents who had not attained tertiary education did not show interest in the need for information on new technologies and agriculture policies. Instead, they showed more interest only in animal health information as various outbreaks types of diseases still remain a major concern in this region. In agreeing with the findings of this study, Zhao (2000) also noted that information needs of farmers depended on their education level as the highest, income level, the level of economic development in a particular area, information service capacity and cost of

accessing the information. In addition, contrary to the findings of this study, his results showed that farmers had a higher need for information on agriculture policies, regulations, agriculture science and technology. It can then be obvious to conclude that the level of education has an influence on the type of information one would need.

Based on the results above, it is clear that the highest felt need for a particular country may not be the most needed information need in another country due to various factors like age, education level of respondents in a particular area hence the difference in the ranking of the needs. Equally, it is worth stating that there farming systems differ from one country to another hence the difference also in the types of information needed. Mostly, in developed countries like China, the farming system practiced there is on a commercial scale while in most developing countries like Namibia; there is a mixture of commercial and communal type of farming being the most practiced by many farmers who only farm at subsistence level. Therefore, it is obvious that there information needs are likely to differ.

This statement is supported by the findings of Jiang et al. (2006) who conducted a survey on 310 farm households in fifteen counties in Hebie province and the results of his study revealed that agricultural technology was among the most needed information by the farmers and this was because, unlike the study which focussed on small-scale cattle farmers, in India, majority of the farmers operate on a commercial level hence the difference in the need for particular type of information

5.2.3 Animal health information

The study revealed that the respondents in this survey had a higher need for information on animal health and the reason for this higher need on this type of information was that the study area happens to fall under the foot and mouth prone area due to migrating elephants and buffaloes from neighbouring countries namely Zambia, Angola and Botswana. The other reason was that, it is believed that treatment of animals on various livestock diseases may not be very pronounced in other neighbouring countries as it is in Namibia hence any animal that enters Namibia poses danger to their animals.

The finding of the study were similar to what Rezvanfar et al (2000) reported in his study when he investigated the information needs of farm women related to dairy farming and home management Iran. The results of his study also revealed that farm women had a higher need for information on the treatment of animals and information on how to control external

parasites. Equally, it can be said that naturally, farmers are more concerned with the health of their livestock as this has a negative impact on the production level. When animals get sick, some farmers may fail to afford to buy medicines hence they end up risking their animals to dying. Therefore, it is every cattle farmers wish to ensure that his/her animals are free from diseases.

Another reason for the higher need for information on animal health was because the cattle farmers understand that diseases like anthrax, foot and mouth may not only affect their animals but pose danger to the livelihoods when animal products are eaten hence the need for farmers to want to ensure that their livestock are healthy all the time. The fact that information on animal health was ranked highest does not mean that the farmers have less need for other information like animal husbandry, market information, agriculture technologies and agriculture policies. This is because animal health information happens to be their concern due to the high prevalence levels of animal diseases in this study area.

5.2.4 Market Information

The study further revealed that market information was rated second and the reasons for this were associated to various reasons for keeping cattle. According to Musemwa et al. (2010), smallholder farmers in developing countries have multiple goals for their livestock enterprise. Apart from cash benefits, livestock are closely linked to the social and cultural lives of smallholder farmers for whom animal ownership ensures varying degrees of household economic stability. For instance, cattle are kept for different purposes such as meat, milk, manure, draught power, and ceremonies apart from being a source of cash. Cattle are also considered a common means of demonstrating wealth, cementing relationships through bride price payment, and a social link (Ouma, Obare, and Staal 2004). Therefore, farmers who attach more value to non-cash benefits, tend not to commercialize their livestock production.

However, the case for Katima-mulilo rural small-scale cattle framers is different as cattle is a means to sustaining their livelihoods e.g. paying for their children's school fees hence considered as bank accounts as the more animals one has, the more money they expect when they sale. Therefore, to them, this is viewed as a very big investment hence the need for information on marketing being ranked second.

5.2.5 Information on Animal Husbandry

Information on animal husbandry was rated third in this study. The reason was that majority of the farmers have been in this farming system for a long time so they have gained some experience in taking care of their cattle. Much as this information was ranked third, it didn't not mean that they were not in need of this information. Farmers are always eager to know more new trends in this type of farming system despite their information needs varying.

Mmmoh (2002) on the other hand found information on animal husbandry as being the most felt need for most of the women farmers in his study. It would have been better if the author also highlighted the most felt need by specifying as information on animal husbandry is broad.

5.2.6 Information on Technology And Agricultural Policies

The study also indicated that very few farmers had a need for information on new technologies. The reason behind this was because of the type of farming industry that was under investigation. It is believed that this type of farming industry (livestock) has less technological options compared to its counter parts in other agriculture farming systems e.g. arable farmers. Information on new technologies is needed for the farmers to help them improve with their farming practices however the study revealed that there were few farmers who sought for this type of information.

The study also revealed that the need for agriculture policies was very low with only three respondents who had attained tertiary education felt the need for this kind of information. The reason for having low level need for this type of information was attributed to low levels of education and lack of information on agriculture policies which was not availed to the farmers as Gudschinsky (1976) has attested that lack of knowledge limits a person's ability to engage in activities that require either critical thinking or solid base of skills. Such activities may include: understanding government policies, governance issues, and attendance of meetings, use of certain information media as well as the use of new technologies.

The results of this study revealed that education had an influence on the type of information which was sought by the respondents after a chi square test was done as indicated in table. This was the reason the respondents who had no formal education never sought for information on agriculture policies as they had no understanding on this type of information.

The researcher however suggested that there was need for extension officers and other people in charge of disseminating agriculture information to effectively avail this information to the farmers. This is because information can only be appreciated by the users when people are well informed and that relevant, accurate and timely information is availed to them.

Judging from the findings of this study and related studies from other countries which have already being alluded to, the researcher can safely conclude that the type of information needed, source used and challenges faced while seeking information are determined by variables such as ones education level, Gender and Age. In addition, access to proper facilities such as roads, electricity, availability of information centres in villages and the number of qualified staff available for farmers to consult from can help small-scale cattle farmers become more knowledgeable, improve on their farming systems and help in increase in production levels. The absence of such facilities which are important in the lives of farmers and communities as a whole therefore triggers a variety of information needs.

5.3 Information Sources Used by Farmers

Small-scale cattle farmers just like any other farmer be it those practicing arable farming rely on various sources of information to solve problems that they encounter in their farming business or to make a decision on a particular issue they are faced with. Most of these farmers decide to use certain sources because of the kind of information they expect to find there. The different needs that farmers have and the various problems they experience may require them to use certain sources of information.

According to table 7 of chapter 4 under sub-section 4.1.2, the study revealed that forty- nine percent of the respondents obtained information from other cattle farmers, friends, relatives and neighbours, twenty-one percent used personal experience, twelve percent obtained information from extension officers, eighty percent used veterinary doctors, six percent used the radio while two percent obtained information from newspapers and another two percent obtained information from books.

5.3.1 Cross Tabulation between Information Sources Used With Age

The researcher also conducted two chi square tests to establish whether there was an association on the source of information used by small-scale cattle farmers with age and gender. The results showed that there was no significance between the information sources used with the age of respondents as illustrated in table 8 under sub-section 4.1.3. However, the results revealed that there was a significance between the information sources used by small-scale cattle farmers with gender as the results in table 9 under sub-section 4.1.3 showed that majority of the male relied heavily on personal experience and veterinary officers while female cattle farmers relied heavily on friends and relatives.

Women's access to agricultural information is based mainly on their everyday interactions with the communities of which they are a part and the groups of individuals with whom they regularly come into contact (Achia, (2002). Durutan (1999) noted that, although there is a growing awareness of the need to reach women farmers, agricultural extension services are generally geared to male farmers. Aina (2006) adds that, even when extension agents visit farmers, they usually focus their activities on the male farmers, hardly reaching out to the women, who constitute a substantial proportion of farmers in Africa.

5.3.2 Cross Tabulation between Information Sources Used with Educational Level

A fisher's exact test was further done to establish whether there was a relation between the type of information source used by small-scale cattle farmers and their education level at significance level of 0.05. The results showed that there was significance between the two as the results revealed that those who had tertiary education had a used a wide range of information sources compared to those with no formal or low education. The results of this fishers test are illustrated in table 10 of sub-section 4.1.3. It can then be said that some demographic variables like gender and education level of respondents can have an influence on the type of information sought. This was in confirmation with what Lazarus and smith (1998) stated in their survey of dairy farmers that education level was among the variables that had an influence on the use of veterinary services. Equally, Zhao (1998) also reported that most educated farmers read newspapers to get information on agricultural technologies.

Xu (2001) on the other hand, found large differences in information awareness of farmers which were dependant on personal characteristics which unfortunately did not disclose in his study. From information which was obtained from the focus group discussions, it was noted that farmers who had a large herd size resorted to seeking for information from a wide range of sources and these results were in confirmation with what Gloy, Akridge and Whipker

(2000) reported that farmers producing a larger number of commodities were more likely to have positive attitudes towards a variety of information sources than those producing few commodities.

All in all, it was observed that the results of the study showed that majority of the small-scale cattle farmers relied heavily on informal sources. Similar, Muhammad (1999) investigated the information needs of Pakistan farmers, the results showed that 94% sought information on animal husbandry from friends, neighbours and other cattle farmers, 46.5% used personal experience, 34.2% obtained information from livestock health workers while 21% obtained information from veterinary doctors and 5.4% used television and radio.

Chomba et al (2002) earlier conducted a user needs assessment on improving the transfer and use of agricultural market information in Zambia among traders and farmers. Their study like this one revealed that information was obtained from fellow farmers, relatives and friends, usually through informal conversations.

5.3.3 Veterinary Doctors and Extension Officers as Information Sources

It is evident that the low ratios of extension officers and veterinary doctors as indicated in this study in chapter four under sub-section 4.3 from the interviews held with the key informants hinder farmers from accessing information from these sources which could be of great help to the farmers. This in itself has negative consequence on the farmers' part in that, the farmers tend to miss out on valuable and professional information from experts. Despite majority of the farmers having to rely on interpersonal sources, knowledge gotten from these sources may be inadequate as there may be no new knowledge gained from these sources. This is because these farmers live in the same area hence tending to know almost the same things. Therefore, there is a need for capacity building of these sources to make them better able to respond to the users' information needs which require knowledge of different subject fields.

5.3.4 Friends, Relatives and Personal Experience as Information Sources

It is evident from the above findings that most farmers rely a lot on informal sources of information by seeking information from friends, relatives and the use of personal experience. This is because they live near to these people thus easy to access. The over dependence on inter-personal sources as indicated in the above findings can be attributed to the absence of formal sources in these villages. It can also be said that people opt to use an

information source that they can easily access and the ones that they know personally regardless of the quality of information they contain.

Moore (2002) also argued that information users will always consult the sources of information that they value. He believes that personal discussion and conversations with friends and relatives are considered a reliable source because of the ability to verify facts there and then. The results were in confirmation with what Ford and Babb (1989) reported in their study that farmers preferred to obtain information from family and friends.

5.3.5 Radio as Information Source

The radio can be a very important source of information for farmers. This is because it is a cheap and direct means of information transfer and communication for most rural villagers in Katima-mulilo rural constituency. However, the results in this study showed low usage levels of this media as an information source. Most of the respondents complained that information presented on radio was too basic, narrow and lacked wider coverage of many subject areas. Farmers in rural areas also depend on batteries to power their radio sets and according to the views of the small-scale cattle farmers, batteries were not readily available for sale in these places, in areas where they were found, farmers could not manage to buy due to the lack of money as they were too expensive. Another factor that contributed to low usage of the radio as a source of information was the poor reception experienced in most rural areas as the area under study does not have electricity. Some farmers also complained that information on agriculture was aired at odd hours when most farmers were out in the fields. Most farmers also insisted that information presented on this media was brief and not detailed.

Contrary to the findings of the study which showed the low usage of radio as an information source, several authors like Zhao (1998), Geng (2001), He and Zou (2006) reported that the main sources of information which farmers in their studies used were television. The use of television and the radio were ranked first in their studies and this was because unlike the situation prevailing in Katima Mulilo rural constituency, the areas where their studies were undertaken do not lack electricity hence the wide usage of television and radio.

In addition, (Kalusopa, 2005; Dutta, 2009), are of the view that television and radio are good sources of information. However they are expensive, rural areas lack of electrification,

batteries are expensive, the timing of the programmes is sometimes not helpful, the messages are of poor quality, and use the wrong language.

5.3.6 Newspapers and Books as Information Sources

Another factor worth noting was that information sources like newspapers and books were ranked last in the results of the study and the reason was the low levels of education of the small-scale cattle farmers as indicated in the study were majority of the respondents had no formal education. The reason for the low usage levels of these sources; the newspapers and books was because most of the information in these medias was presented in English a language which most of farmers were unable to read later on understand hence the farmers had difficulties in accessing information from such sources. Therefore as indicated in the study, only farmers who had attained secondary and tertiary education were able to use these medium as sources of information. It is also believed that naturally, illiterate people will shy away from information sources which will require a certain level of literacy for them to use.

Contrary to the findings of this study, Gloy, Akridge and Whipker (2000) examined preferences of information sources used by cattle and crop farmers. Their study revealed that the two most useful sources were crop/cattle specific publications and general farm publications. In addition, Zhao (1998) reported that most of the educated farmer's ready newspapers to get information on agriculture technologies and they also tended to discuss agriculture policies in meetings with village leaders.

Their findings are in confirmation with what the results of this study reported after a chi square test which aimed at establishing whether education level of the respondents had an influence on the information source farmers used and the results showed a high level of significance as majority of farmers who had attained tertiary education were reported to have also consulted newspapers and books while it was the opposite on the respondents who had no formal education, those in primary level and in secondary level. The researcher then concluded that some demographic variables like age, gender and education level of respondents had an influence on the type of source used by the small-scale cattle farmers.

Information sources like newspapers may not be used often in rural areas because very few newspapers are distributed in such areas because there is no market there. Progressing educated farmers have realised that most of the information in books and newspapers can always be referred to any time they wanted. This is because information presented in this type

of medium is recorded and can stay for a long time which is not the case for information on the radio. In addition, the use of print media, that is leaflets and newsletters, as message carriers are of limited use for reaching illiterate farmers. Relevant agricultural information publications in Africa are scarce due to inadequate financial resources. The quantity and quality of publications still pose a problem as relevant information cannot be accessed in a timely manner by users (Ozawa, 1995).

In addition, The 2003 NSSO survey showed that 7 percent of farmers accessed information on modern technologies from newspapers. Considering the increasing emphasis on mobiles and tele-centers, this comparatively “old” approach is still a relevant source of information for farmers-greater than that of the extension worker. Nevertheless, within the central schemes and programs in extension, and the current ICT initiatives, newspapers are rarely considered. The “mass media to support agricultural extension” scheme focuses on TV and radio only.

5.3.7 Internet as Information Sources

While other authors like Geng (2001) reported that farmers obtained information through computer networks, the usage of information sources such as internet was not even mentioned in this study. Much as internet maybe a new technology on the market and facilitates a wide coverage and simultaneous use of information, people in rural areas are not yet familiar with this type of medium and it also requires an individual to have knowledge and skills of using it. This type of medium also requires an individual to have some money to pay for its services which most people in rural areas cannot afford.

The above state of affairs shown in this study has far-reaching implications for information provision in rural areas. It is therefore important for information providers to understand the nature of information sources farmers turn to in search for information so that they can pro-actively accommodate their ways of seeking information and review the way in which they present their information to rural small-scale cattle farmers and also ensure that these sources are readily available to the farmers. Understanding the sources these farmers use can help the information providers to train more farmers to be mentors since this study has shown that majority of the farmers rely on interpersonal sources of information.

5.4 Channels of Communication

5.4.1 Oral (Verbal) Communication

There are a lot of channels used in transferring information. According to this study in chapter four under section 4.1.4, a cross tabulation n was performed to establish whether the education level of farmers had an influence on the preferred channel of communication. The study revealed that oral communication was the most preferred channel of communication and to a lesser extent the farmers also said they obtained information through reading and the use of mobile phones being the last to be ranked. It was observed that indeed there education had an influence on the channel of communication as farmers with no formal education, those in primary and secondary levels relied heavily on oral (Verbal) communication while those in tertiary level also obtained information through reading and the use of mobile phones.

In confirmation with the results of this study, Riesenbeg (1999) conducted a study to determine the information literacy level of paddy farmers of Ampara district in Sri Lanka in accessing agricultural information and explored how much this support the enhanced agricultural productivity. The study reviewed that majority of the respondents' preferred verbal communication, print sources and the use of computer and internet is reported poor.

In addition, Rao (1981:63), Alemna (1990:22), Odi (1996:194) and Uhegbu (1997:87) had similar findings as regard to the channel of communication. They contend that rural villagers prefer non-print materials because they are more accustomed to acquiring information through listening rather than reading. They further go on to state that this channel of communication is deeply rooted in orality.

Furthermore, oral information transfer as observed by Leach (1999:165) is an old as humankind. He further describes it as an immediate and requires no technology. He however, laments that it lacks permanence therefore; he is of the view that it is a basic medium of information transfer which does not require the acquisition of new skills such as reading. Oral information provision is a suitable means of communication especially for a group of people who are not educated like the cattle farmers.

It is naturally that rural people prefer getting information through oral communication for instance, if there is a new technology being introduced, unless they see these extension officers demonstrate how a particular technology works, they will never use it with just hear say information. They are more comfortable with using communication channels were they

can be able to clarify issues that they do not understand just there and then. As the saying goes that seeing is believing.

5.4.2 Reading as a Communication Channel

The report revealed that reading as a communication channel was only used by farmers who had attained tertiary education and this was due to the high illiteracy levels as earlier reported in the study. Equally, due to the type of farming system under investigation as a lot of jargon words are used in this type of farming system which farmers were unable to understand. The technical language used in this type of medium made it even more impossible for the farmers to take interest in reading.

In another related study by Spur et al (2013) in the final report on the assessment of Kenyan farmers on the use of agriculture innovations stated that farmers have strong preferences regarding the way they want to receive information. The results showed that 80% prefer personal information by visits or by field days, then comes radio with 52%, but also written material is favoured by almost a quarter of participants. This was similar to what the study revealed that some farmers preferred reading when accessing information. One farmer was quoted saying *“I like to carry something home after a field day, because you can’t memorize everything.”*(Farmer in Kongola village).

This is to say that after information has been delivered to them, he preferred taking even a brochure or a copy of the presentation of what they had learned in order for him to be going through to refresh him of the discussion they had in order to recall what they had learnt. This is a common practice to most of the farmers in rural areas.

5.4.3 Mobile Phones as a Communication Channel

The use of mobile phones was rated last in this study. Much as this channel of information may be the most effective and fastest way of communicating, the case was not the same for this study as very few were reported to have ever used mobile phones as a channel of communication. This is not to say that farmers of Katima Mulilo constituency do not use mobile phones to talk with friends or neighbours. According to the views that were expressed during discussions with them, they expressed the concern of the people in charge of disseminating information having an attitude of not picking up phones hence they would

rather just consult friends or relatives whenever they felt a need for information or personally go to their offices. Talk time was another reason for not using this channel as it scarce in these areas and farmers were expected to walk long distances to just go and purchase talk time.

The mobile phone is much less used for receiving agricultural information although it is regarded by Western donors and modern NGOs as being the new media channel for farmers. On the contrary, any communication to farmers that wants to reach a large audience needs to be built around the radio and an appropriate media mix (newspapers, brochures, mobile services) can then complement the information supply by radio.

Gandhi et al. (2009) also reported that mobile phone penetration in rural India is expanding rapidly (from 1.4 units per 100 people in 1995 to 51 units, or one phone per two persons, currently). There are a number of initiatives using mobiles to communicate information directly to farmers; these include IKSL (IFFCO Kisan Sanchar Ltd. in collaboration with Airtel), Mandi on Mobile (BSNL and Uttar Pradesh Marketing Board), Reuters Market Light, and Nokia Life Tools. Most of these approaches provide market information through SMS or voice messages, or question-and-answer capabilities.

To date there has been little evaluation of the impact of these services on farm production. Other projects, such as e-Sagu and Lifelines, also use mobile phones in combination with computing technology to provide expert advice based on farmer queries. While these approaches are ICT-driven, an approach by Digital Green uses ICTs to support existing extension services provided by NGOs. Digital Green partners with NGOs to promote a video-based process for disseminating technology and agricultural practices. The videos are made with local resource people from the community and are shown to farmer groups established by the partner NGOs. Assessment of adoption practices in the pilot of Digital Green shows a higher adoption rate through this video-based process than through T&V-style extension approaches. It is not the same for farmers in Katima Mulilo rural and it should be a move which all the stake holders in charge of disseminating agricultural information should put into consideration.

5.5 Information seeking of the farmers

Information seeking is a process in which information needs are pursued, in which problem-solving takes place in a particular context (Foster, 2004). The information seeking process is initiated by a recognised need for information and a decision to act on it (Bystrom and Hansen, 2005) in which the information seeking reflects the experiences of the information seeker. Farmers behave in different ways when seeking information. This is to say that they contact different people in the quest to obtain the kind of information that they need. In this study, the information seeking behaviour of farmers was depicted from the sources they use when seeking information. It is also important to state that the farmers' information seeking process was triggered by the following incidences e.g. Out breaks of diseases, the desire to sell animals in order for the farmers to sustain themselves and to raise funds for their children's school fees, the need to improve on a particular practice and the desire to understand the registration processes.

According to this study, there are incidences that trigger the farmers information seeking behaviour, followed by the information needs then the sources of information consulted whenever a need arises. The study revealed that the small-scale cattle farmers information seeking behaviour was influenced by some demographic variable as earlier discussed in this chapter therefore it can be said that they do not have a uniform pattern for seeking information but varies based on education level and gender of the farmer. The study revealed that their information seeking behaviour was more aligned to informal sources (information gotten from friends, relatives and personal experiences) than formal. This according to Mmmoh (2002) was because these sources to them are more accessible, reliable and authentic'.

The findings of this study also revealed that interpersonal sources were mostly used by small-scale cattle because they were more convenient to them as friends and neighbours were easily accessed since they were found in the same area where they lived. Another reason was that people tend to seek information which is most accessible to them. This is to say that the search for information is undertaken with the principle 'of least effort' and that people tend to follow habitual patterns when seeking information which is very normal especially for people living in rural areas. This could have been the situation for the cattle farmers of Katima-Mulilo rural.

The results on information seeking behaviour of small-scale cattle farmers were in confirmation with Zipf's (1949) 'principle of least effort in human behaviour'. This is to say that, as human beings seek information, they will always consult sources that are near to them than those that are far away or will give problems for them to access information. Equally the issue of trust also comes in, mostly rural people would want to use sources they are familiar with it's when they tend to feel more comfortable and convinced.

Cattle farmers in this study as indicated in their information seeking behaviour obtained information from both formal and informal sources. Kaye (1995) observes that both formal and informal sources of information help in the provision of information to individual farmers. Kaye (1995) further argues that formal sources maybe regarded as those that are constituted in some regularized or legal manner in relation to the user. For the cattle farming business to be successful, both types of sources of information are cardinal (Riaga, 1994). It is therefore very important to understand where this information comes from so that these farmers can be assisted in ensuring that these sources are readily available and in a format they can easily understand.

5.6 Challenges Faced when Seeking Information and Suggestion

Small-scale cattle farmers in Katima Mulilo constituency face various challenges when seeking information. The study revealed some the major challenges which they faced.

5.6.1 High Illiteracy Level of the Small-Scale Cattle Farmers

High illiteracy levels of cattle a farmer was ranked first as being the biggest challenge to small-scale cattle farmers. This differs from one country to the other. In developed countries, you will find that even villages are well developed and farmers are well educated hence have can use sources like internet, television, newspapers and books to obtain information which is not the case in the villages of this study. It being a developing country even makes it worse to have good facilities in villages. This in itself poses a negative impact on the development of the cattle industry in Namibia despite cattle farming having to play a big role in economic and social development of the country. When people are not educated, they will not make efforts to exploit other information sources that require them to have a certain level of education hence will continue to only rely on interpersonal sources.

The findings of the study were similar though not ranked the same with what Aina (2007) found in his study. He associated the following problems or constraints with dissemination of

agricultural information in Africa : inadequate financial power of farmers in Africa, high illiteracy levels, farmers living in areas where there is lack of basic infrastructure such as telephones, good roads and electricity. Also few numbers of extension workers and agriculture information aired at odd hours.

Citing the example of fisher folk in Nigeria, Dutta (2009) pointed out that because most farmers in rural areas are illiterate they often get information that is out dated, unreliable and inaccurate through informal networks, and this puts them at a disadvantage professionally as well as financially. Small-Scale farmers are likely to be affected in the same way.

5.6.2 Language Barrier

Language barrier was ranked the second biggest challenge that farmers faced when seeking information. This is because most of the agricultural information is written or presented in English which cannot be understood by small-scale farmers in Africa who have not gone far with their education. As pointed out by (Ozawa, 1995; Momodu, 2002; Aina, 2007), a large number of African farmers are illiterate and so they cannot read or write in any language. Information which is written in English is not useful to small-scale farmers. In supporting the same idea, Omekwu (1998) points out that small-scale farmers in developing countries are unable to acquire up to-date information due to language barriers. The information provided needs to be simple, and in a language which can be understood by many farmers, noted (Rwazo, 2007). Therefore people use what is easiest to get and what is close to hand and not what actually the best is or most appropriate (Nicholas, 1996).

The Namibian government through the help of some donors have recruited a few people as mentors to help in disseminating information to the farmers and it was observed that information is presented in English via power point or just by mere presentation. This makes a lot of farmers to abscond from such meetings as they felt that it was a sheer waste of time. It is therefore important for information providers to ensure that interpreters are provided during such meeting to enable farmers start attending these meetings. This is because meetings like such are very important as a lot of information is shared when various experts, farmers come together to discuss various issues affecting their business and issues that could help them increase their production levels.

5.6.3 Long Distance to Information Centres

The results of the study rated long distance to information centers as being the third constraint which was hindering the small-scale cattle farmers of Katima Mulilo rural constituency from accessing agricultural information. Farmers complained that they could not afford to find money for transport to reach to these centers and due to the shortage numbers of extension officers, the centers in the villages were a good as being considered as white elephants as no officials were found there. Contrary to studies in the literature, this was not the challenge to the farmers as they were able to access information from the center's hence making long distance to information centers not to be a constraint on their part.

5.6.4 The Inadequate Number of Agricultural Extension Officers

This was another barrier to information access as indicated under sub-section 4.3 of chapter 4 that the ratio of extension officers and veterinary doctors is very low as compared to the number of cattle farmers. This makes it impossible for these officers to reach out to all the farmers as the total number of these officers is 13 of which they have to cater for all the farmers in the entire Zambezi region which has about 8 constituencies where the area of my study happen to be one of them. It therefore make some of the cattle farmers who fail to come in contact with the experts to continue relying on the old methods of farming as well as continue to use interpersonal sources of information which are near to them. This mostly leads to their information needs not being met and their production levels continue to reduce instead of increasing.

The findings of the study were similar with what Ozawa (1995), Isinika and Mdoe (2001) and Aina (2006) noted that because of the low numbers of Agricultural Extension Workers, farmers hardly obtain new information. This is because the ratio of Agricultural Extension Workers to farmers is low. Bilonkwamanagara (2008) points out that Agricultural Extension Workers do not reach every farmer and few farmers receive agricultural extension services. Hence there is limited flow of information about the latest agricultural technologies and both men and women are equally denied access to extension services in villages where there are no extension agents (Mntambo, 2007).

5.6.5 Inaccessible Roads

This challenge made extension officers, veterinary doctors and other people from the private sector in charge of disseminating information fail to conduct community visits in these areas as they feared to have their vehicles damaged in some cases these vehicles could not even pass through these roads. This hindered farmers' from accessing valuable information from experts and also had a negative effect when it came to market their animals. The only trucks that could transport their animals to abattoirs when they wanted to sell were hired at a very high cost hence by the time they sale their animals, losses were encountered. The farmers also reported that they lost their animals through high recorded numbers of disease outbreaks because of the distance to information centres as it was impossible for them to be aware of any out breaks that may have occurred.

5.6.6 Poor Public Relations of Extension Officers

The provision of information and farmers' use of it are influenced by human capacity: The capacity of extension personnel to engage and obtain feedback from farmers, and also seek global and local information for sharing with farmers, influences how farmers use the information provided. Human capacity can also refer to both the quality and quantity of extension personnel. Their ability to acquire and develop new information and knowledge and to contextualize it for farmers in the operational area affects the use and impact of this knowledge on farmer productivity and income. Additionally, supporting farmers to process and integrate information from many different sources is important.

The study revealed poor public relation of extension workers as being a challenge to them hence they are made to rely on information sources like friends and relatives as they feared to be treated harshly. This therefore compromised the quality of the content of the information received from friends and relatives as the reliability, relevance, usability, and timeliness of the information is critical. Processes: The process through which the information is shared can determine the effectiveness of the information and its use. Setting priorities for information needs in consultation with users, adding value to the information collected, learning from how information is used by farmers, and changing the dissemination strategy by stratifying and targeting users will influence the success of the extension approach.

The results of the study showed that only three respondents highlighted poor public relations as a challenge. This is to say that this was not a big challenge for small-scale cattle farmers of Katima Mulilo while contrary to these findings, Nnenna (2011) investigated the rural farmers problems accessing agricultural information of Nsukka local government area of Enugu state and reported poor public relations of extension officers as having being the highest concern among others which hindered farmers from accessing agriculture information.

5.6.7 Agriculture Information on Radio Aired at Odd Hours.

It was reported that agriculture information was aired at odd hours when farmers were out in the fields hence in the case any outbreak, the farmers missed out on the information such as vaccination days hence this could not only affect the health of animals but more of human beings who slaughtered animals for sale as this endangered the lives of humans through food borne disease. Despite these sentiments, this challenge was not strongly felt by most of the cattle farmers as they were comfortable with receiving agriculture information from other sources. Similarly, literature reviewed that this challenge was not among the strongest felt challenge by most of the farmers in studies like this one. Much as the radio is a good information source as it covers wide range of areas and reaches out even to people in the remotest areas, information which is broad cast on such a medium is not detailed and the time given to it is not enough.

5.6.8 Suggestions

The cattle farmers were asked to give suggestions that could be put in place in order to improve the information delivery. According to the findings of this study, it was suggested that there was need for the government to build more information centre/kiosks in the villages, employ more extension officers and veterinary doctors who would be available always for consultation. They also suggested that government should build more good roads to enable extension officers' conduct their community visits more effectively to all the farmers regardless of a farmers' location and that there was need for agricultural information on radio to be aired in the evenings when farmers are back from the fields as this would help in transforming the agriculture sector of Namibia and more importantly boost the small-scale cattle farmers' potential in this type of farming system.

5.7 Conclusion

This chapter discussed the findings of the study that were presented in chapter five. The findings were discussed in relation to other studies that were reviewed. Access to reliable information on animal husbandry is vital for the increased production levels. The study revealed that outbreak of diseases, the desire to sell animals in order to sustain their lives and to raise funds for their children's school fees, the need to improve on a particular practice and the desire to understand the registration process were some of the incidences that triggered the farmers' information needs. Information on animal health, market information, animal husbandry, new technologies, and information on agriculture policies were the mostly felt and needed information needs by the cattle farmers of Katima–mulilo rural constituency. However, after cross tabulations which were conducted through chi square tests and the fisher's exact tests, the needs were seen to be influenced by some demographic variables like age and educational level of respondents as the study found that age had no influence on the type of information that the farmers sought.

This is to say that, the results were correct because the need for information is felt at all levels of society despite the age of an individual. Farmers need information to increase their knowledge level which in turn would contribute in having high production levels. However, the tests also revealed that there was a high significance between education level of farmers and the type of information sought as those with no formal education and primary had only interest in animal health information and market information while those who had attained secondary and tertiary education felt the need for all the information. This is to say that, the farmers in this category wanted an understanding on a lot in this type of farming business.

The study also revealed that the most used sources of information were interpersonal sources while experts were not frequently consulted due to various factors that have been discussed in the study such inadequate numbers of personnel's, long distances to information centres, language barrier and inaccessible roads. After the cross tabulations which were done through the chi square tests and the fishers exact test, it was noted that demographic variables like gender and education level had an influence on the type of information sources used by the farmers. The study revealed that women relied heavily on information which was obtained from friends and relatives while men relied heavily on personal experience though they also consulted other sources like the veterinary medical doctors, extension officers, friends and relatives.

However, the respondents with no formal education and those in primary were seen to rely mostly of friends and relatives while those in secondary and tertiary had a consulted a wide range of information sources. The respondents who had no formal education and the ones who had only gone up to primary level had problems with the language hence could not resort to consulting experts on any agricultural information they needed thereby making them to depend on friends and relatives as they spoke a language they were all familiar with.

Furthermore, Farmers were presented with the following challenges when seeking information: high illiteracy levels, inaccessible roads, low numbers of personnel's, long distances to information centres, language barrier and agriculture information on radio being aired at odd hours. It was also reported that the challenges were influenced by some demographic variables like education level. It was observed that the respondents with no formal education and those in primary rated high illiteracy level and language barrier as being the most faced challenges that hindered them from accessing agricultural information while it was the opposite for the respondents in secondary and tertiary level as they highlighted long distance to information centres, inadequate numbers of personnel to consult from and agriculture information on radio aired at odd hours.

It is hoped that suggestions presented in this chapter should be able to help the Ministry on Agriculture, Water and Forestry to address them and ensure that policies are tailored at helping meet the needs of small-scale cattle farmers and the information needs should help the information providers to design information services which will be tailored to delivering accurate, timely information to the farmers.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Overview

The general purpose of this study was to investigate into the information needs and seeking behaviours of small-scale cattle farmers. The study therefore aimed at filling in the gap by finding out the information needs of cattle farmers; establish information sources farmers' use as they seek information, explore their information seeking behaviour and identify the challenges they face when seeking information. It is from this background that this chapter intends to make the conclusion and recommendations of the said study.

The conclusion and recommendations are based on the research findings from the respondents. The sample target of the respondents was 140 and was divided as follows: 125 cattle farmers, 15 key informants' namely veterinary doctors, extension officers and officers from NGO's. Out of the 125 cattle farmers, 100 responded to a questionnaire and while 25 took part in the focus group discussions while the 15 key informants responded to interviews. The analysis and presentation of results were organised around the research objectives and the research questions that were formulated. Therefore, the conclusions and recommendations are based on the findings that are anchored on the research objectives.

6.1 Summary of the Findings

The study used the questionnaire, focus group discussions and interviews as tools to collect data. The study findings established that majority of the farmers were above the age of 50 years, followed by those below 40 years and last the respondents who were between 40 and 50. In as far as education level is concerned, the study revealed that most of the farmers had no formal education and others had only attained primary level while it was noted that those in secondary and tertiary level were few. This means that majority of the small-scale cattle farmers were illiterate.

The study revealed that the respondents had felt the need for information on the following starting with the highest felt information need: animal health, market information, animal husbandry, new technologies, and agriculture policies. These information needs were catered for but not to the satisfaction of the farmers due to factors like educational level which

hindered the access and use of certain information needs like information on new technologies and information on agricultural policies. This in itself possess a very big negative impact on the increase of production levels as it meant that farmers had to stick to their old methods of farming without having to utilize the new emerging technologies like dehorning of animals.

It was also revealed from this study that the most commonly used information sources were interpersonal sources e.g. friends, relatives and personal experience. It is therefore assumed that they either got wrong, distorted information, out dated or irrelevant information from these sources. Also it can be said that information gotten from friends and relatives possesses approximately the same information as they do. They therefore do not always get information they need as many are the times they were not satisfied with this information thus their information needs are not met.

The use of veterinary doctors and extension officers was wide spread but not higher than the use of friends and relatives and this was due to the low numbers of staff. The use of modern print media such as the radio, books and newspapers to seek information was seen not to be effective enough since sometimes there were no means to facilitate easy access to such medias like finance to purchase them or time to listen to them or literacy to read them especially when presented in another language other than lozi or subiya. It is therefore true that unavailability of relevant information in appropriate format hinder them to exploit information.

It was further observed from the information sources used by the small-scale cattle farmers that their information seeking behaviour was more from interpersonal sources than formal sources. The study also established the following as being challenges which hindered farmers from accessing and using information; high illiteracy levels, Language barrier, long distance to information centres, inadequate numbers of personnel,, Inaccessible roads, agricultural information broadcast at odd hours.

6.2 Conclusion

Despite all the efforts made by the ministry of Agriculture, water and forestry through the extension workers in providing information and services to the cattle farmers, there are still some farmers that lack access to information and services. This does not mean that their

information needs are not met. Some information needs are met but what farmers still lack is adequate to a wider range of current information sources. Farmers are embedded with a lot of challenges ranging from conventional literacy, inadequate personnel, distance to information centres, lack of resources, inaccessible roads, agriculture information broad cast at odd hours on radio and lack of rural electrification are some of the challenges that need to be addressed if Namibian's dream to have an agricultural transformation is to be met.

In view of the findings and conclusions of this study. The recommendations emanated from the results and conclusion of the study hence they should be adopted in an effort to improve the way small-scale cattle farmers access and utilize information. Therefore, the government of Namibia should do the following: Enhance the oral transfer of information by training a lot of mentors who in this case happen to be progressing farmers. This move would enable farmers have faster access to accurate and reliable information since these mentors (fellow cattle farmers) will be easily reached.

There is need for more information to be presented in local languages especially during field day meetings with the farmers, create more awareness agricultural programs to the farmers, and employ more veterinary doctors and extension workers to reduce on the inequality in the way information is disseminated. Some farmers have access to information while others don't have, build more information centres/kiosks in the villages to enable farmers have access to information near, build more proper roads, agriculture information on radio should to be broad cast in the evening when farmers are back from their fields and also there is need for the government to consider having these areas electrified to enable them have access to new emerging technologies which could be used to access information.

6.3 Recommendations

The study results and conclusion made the following recommendations:

1. There is need for the government and other relevant authorities in charge of disseminating information to do the following: understand that demographic variables like gender and education levels of farmers which may have a negative impact in accessing and usage of agriculture information and extension should be designed with the farmer's information needs in mind.

2. Government should implement policies that would guide and support the building of adult education centres and facilitate extension education hence the need for adult educational centres to be built. There is need to incorporate the women in any agricultural activities and encourage them to use other various information sources which could be of help to them.
3. There is need for information to be presented in the local languages both during field days meetings with the farmers and in print form because technical language used in communicating information is incomprehensible to the farmers.
4. There is need to employ more extension officers and veterinary doctors to enhance on information delivery.
5. Information on radio should be aired in the evening when farmers are back from the fields and there is also need for more sensitization to be given to farmers on other information sources.
6. There is need to provide information services using more accessible information formats, channels and sources as access to reliable agricultural information is significant to the growth and development of the region and the country at large.
7. Extension and other agricultural educators must consider the capability of the information source for delivering the information, and their target clientele's preferences for receiving information from various sources.

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Appendix I: Questionnaire for Farmers

The University of Zambia

Directorate of Research and Graduate Studies

Dear Respondent,

I am a post-graduate student at the University of Zambia. I am conducting a research to investigate into the information needs and seeking behaviours of Small-scale cattle farmers of Katima-Mulilo rural constituency in the Zambezi region of Namibia. You have been randomly selected to participate in this study by way of this questionnaire. The questionnaire has a number of questions to which you are requested to supply a wide range of responses.

You may only supply a foster name. You reserve the right to refuse or accept to participate in the study. You may terminate your participation in the study at any time and without prior notice. The responses that you will supply in this questionnaire will be used for entirely academic purposes and your anonymity is hereby fully guaranteed.

I thank you very much for taking time off your busy schedules.

Yours sincerely

Mabuku Melba Kabele

Characteristics of respondent's

Q1. Sex.....

- a) Male []
- b) Female []

Q2. How old are you.....?

Q3. What is your marital status?

- a) Married []
- b) Divorced []
- c) Widowed []
- d) Any other, specify.....

Q4. What is the level of education you have attained?

- a) Primary []
- b) Junior secondary []
- c) Senior secondary []
- d) College certificate []
- e) College diploma []
- f) University []
- g) Never been to school []

Q5. What position do you hold on this farm?

- a) Owner []
- b) Supervisor []
- c) Senior employee []
- d) Other, specify.....

Q6. What types of breeds do you keep and give reasons if any.

.....
.....

Q7. What are your information needs? You can tick as many as applicable.

- a) Animal health information []
- b) Information on new technologies []
- c) Market information []
- d) Agriculture policies []

- e) Information on animal husbandly []
- f) Others, specify.....

.....

.....

Q8. Among the information needs that you have listed, would you kindly state the most important ones?

.....

Q9. Where do you seek information when faced with a need to resolve situations that you encounter? YES NO

- a) Personal experience [] []
- b) Newspapers [] []
- c) Friends/relatives [] []
- d) Books [] []
- e) Extension officers [] []
- f) Veterinarians [] []
- g) Radio [][]
- h) Any other, specify.....

Q10. How often do you visit the above named sources?

Very often Often Not often Rare

- a) Personal experience [] [][] []
- b) Newspapers [] [][] []
- c) Friends/relatives [][] [] []
- d) Books [][] [] []
- e) Extension officers [] [] [] []
- f) Veterinarians [][] [] []
- g) Radio [][] [] []

Q11. How satisfied are you with the sources you use?

Very satisfied Satisfied Not satisfied

- a) Personal experience [] [] []
- b) Friends/relatives [][] []
- c) Books [][] []
- d) Extension officers [] [] []
- e) Veterinarians [][] []

f) Radio [] [] []

Q12. What communication channels are you more comfortable with when acquiring information?

- a) Use of mobile phones
- b) Reading
- c) Oral communication

Q13. Would you state the reasons for using the named information sources?

- a) Distance is not long []
- b) Good services []
- c) Friendly []
- d) Others, please specify.....
.....
.....

Q14. What are some of the challenges you face when seeking information?

- a) Format in which information is packaged []
- b) Distance to information centres []
- c) Language in which information is presented []
- d) Cost of information []
- e) Others, specify.....
.....
.....

Thank you

Appendix IA: Lozi Questionnaire for Farmers

The University of Zambia

Directorate of Research and Graduate Studies

Mualabi ,

Kina mwana asikolo fa University of Zambia. Nibata kubatisisa li'gusa z aba lili balikomu ape nibata kuziba linzila mobanatelanga lin'gusa zeyama miutelo walikomu ni kobayanga. Musebezi o uyezezwa mwa sibaka sa Katima-Mulilo rural constituency ya Zambezi region mwa Namibia. Muketilwe kuli mutuse kwakualaba lipuzo zezinzi mwa pepa ye. Mwapepa ye kunani lipuzo zemuswanela kualaba kamomu bonela lika moziyezezwa. Musike mwa n'gola libizo lamina. Munani nimata yakuhana kuzwela pili kualaba lipuzo ze ape mwakona kutuhela nebile fahali amulata. Lin'gusa ze mu fa mwa paper mo, ziitusisiwa fela kwa sikolokipeto. Musike mwa saba kualaba kuli mwendi ziya kusili batili, kizakwa sikolofela. Nitumezi kwa kufumana nako kualaba lipuzo zee.

Mabuku Melba Kabele

Characteristics of respondent's

Q1. Muuna/Musali

- c) Muna
- d) Musali

Q2. Munani nililimo zekai.....?

Q3. Zamanyalo?

- a) Anisikanyala kappa kunyaliwa
- b) Ninyezi/Ninyezwi
- c) Lukauhani
- d) Ni mbelwa

Q4. Mukeni kuisa mwa sitopa sifi?

- a) Anisikakena sikolo
- b) kuisa grade 7
- c) nikeni kuzwa grade eiti kufita grade 12
- d) nikeni kufita kwa ma college

Q5. Usweli situlo mani fa simu fa?

- a) Mun'ga simu
- b) Mubelekifela

Q7. Kana lin'gusa zemutokwa kizifi? Mulaitele zabutokwa kaufela .

- (a) lin'gusa za buiketo za likomu
- b) Lipangaliko zenca
- c) likelezo zeama milekisezoMarket information d)
- d) Likelezo zamo libulukelwa
- e) Milao ya zanjimo

Q8. Falika zemubonise kuli mutokwa kelezo ku zona, hamubonise zabutokwa hahulu kuzona?

.....

Q9. Komubatanga lin'gusa amunani nto yemubata kikakayi?

YES NO

- a) Mapampili [] []
- b) Balikani/ mizwale [] []
- c) Libuka [] []
- d) Babelekinyan [] []
- e) Balimunanu [] []
- f) Wayalesi [] []

Q10. Mukolwanga cwani batu ni lika ze mukupanga tuso kuzona?

- | Ahulu | isike ahulu | | |
|---------------------|-------------|-----|-----|
| a) Mapampili | | [] | [] |
| b) Balikani/mizwale | | [] | [] |
| c) Libuka | | [] | [] |
| d) Babelekinyana | | [] | [] |
| e) Balimunanu | | [] | [] |
| f) wayalesi | | [] | [] |

Q11. Kinzila mani yemungelenga mwateni lin'gusa?

- a) Ma phoni
- b) Kubala
- c) Kubulelelwa fa pili ahao

Q12. Kana wakona kufa mabaka akukupisanga lin'gusa kwa batu ni lika zeubulezi?

- a) Kifakaufi
- b) Lubulela mushobo ulimumwi nibeni kupanga kwa teni
- c) Akuna mashelen'gi yatokwahalanga
- d) Bafumanaha nako kaufela

Q13. kibutata man'gi bo mufumananga anze mubata tuso?

.....

Thank you

Appendix II: Focus Group Discussion Guide

The University of Zambia

School of Education

Department of Library and information Studies

Dear Respondent,

I am a post-graduate student at the University of Zambia. I am conducting a research to investigate into the information needs and seeking behaviours of Small-scale cattle farmers of Katima-Mulilo rural constituency in the Zambezi region of Namibia. You have been randomly selected to participate in this study by way of this questionnaire. The questionnaire has a number of questions to which you are requested to supply a wide range of responses.

You may only supply a foster name. You reserve the right to refuse or accept to participate in the study. You may terminate your participation in the study at any time and without prior notice. The responses that you will supply in this questionnaire will be used for entirely academic purposes and your anonymity is hereby fully guaranteed.

I thank you very much for taking time off your busy schedules.

Yours sincerely

Mabuku Melba Kabele

Q1. Can you remember any current problem you were faced with that required you to seek information in order to solve it or make a decision?

Q2. Describe the problem you faced.

Q3. Where did you go to seek information from in order to solve the situation?

Q4. How satisfied were you with the information that you were given?

Q5. What do you think are your information needs?

Q7. Among the information needs that you have mentioned, would you kindly state the most important ones and why do you think that way.

Q8. Where do you seek information when faced with a need to resolve situations that you encounter?

Q9. How often do you visit the named sources?

Q10. How satisfied are you with the sources you use?

Q11. Would you state the reasons for using the named information sources?

Q12. What are some of the challenges you face when seeking information?

Thank you

Appendix IIA: Lozi Focus Discussion Guide for Farmers

The University of Zambia

School of Education

Department of Library and information studies

Mualabi ,

Kina mwana asikolo fa University of Zambia. Nibata kubatisisa li'gusa z aba lili balikomu ape nibata kuziba linzila mobanatelanga lin'gusa zeyama miutelo walikomu ni kobayanga. Musebezi o uyezezwa mwa sibaka sa Katima-Mulilo rural constituency ya Zambezi region mwa Namibia. Muketilwe kuli mutuse kwakualaba lipuzo zezinzi mwa pepa ye. Mwapepa ye kunani lipuzo zemuswanela kualaba kamomu bonela lika moziyezezwanga.

Musike mwa n'gola libizo lamina. Munani nimata yakuhana kuzwela pili kualaba lipuzo ze ape mwakona kutuhela nebile fahali amulata. Lin'gusa ze mu fa mwa paper mo, ziiatusisiwa fela kwa sikolo kipeto. Musike mwa saba kualaba kuli mwendi ziya kusili batili, kizakwa sikolofela.

Nitumezi kwa kufumana nako kualaba lipuzo zee.

Mabuku Melba Kabele

- Q1. Kana wahupula butata bone unani nibona bone bukutiselize kubata lin'gusa mwakufelisezwa?
- Q2. Taluhanya butata bone unani bona?
- Q3. Kone uyo kupa kelezo neli kai?
- Q4. Neutwisisize cwani lin'gusa nono wizi fiwa?
- Q5. Zoupula kuli kona zouswanela kuziba kizifi
- Q6. Kwalika zebulezi, zebutokwa ahulu kizifi
- Q7. Kobatanga kelezo kikakai?
- Q9. Ukolwanga cwani batu kappa lika koufumananga likelezo?
- Q10. Bulela mabaka yeuyelanga kwabatu bao?
- Q11. Kana kimatata yafi yemufumananga amuzamaya mubata lin'gusa?

Nitumezi

Appendix II: Interview Guide for Key Informants

The University of Zambia

School of Education

Department of Library and information Studies

Dear Respondent,

I am a post-graduate student at the University of Zambia. I am conducting a research to investigate into the information needs and seeking behaviours of Small-scale cattle farmers of Katima-Mulilo rural constituency in the Zambezi region of Namibia. You have been randomly selected to participate in this study by way of this questionnaire. The questionnaire has a number of questions to which you are requested to supply a wide range of responses.

You may only supply a foster name. You reserve the right to refuse or accept to participate in the study. You may terminate your participation in the study at any time and without prior notice. The responses that you will supply in this questionnaire will be used for entirely academic purposes and your anonymity is hereby fully guaranteed.

I thank you very much for taking time off your busy schedules.

Yours sincerely

Mabuku Melba Kabele

Q1. Sex.....

- a) Male
- b) Female

Q2. Age.....

Q3. What is the highest level of education you have attained?

- a) College certificate
- b) College diploma
- c) University
- d) Other, specify

Q4. What institution/department are you affiliated to?

- a) Government
- b) Private sector

Q5. What position /title do you hold at work?

.....
.....

Q5. What type of information do you provide to the farmers?

Q6. How often do the cattle farmers come to seek for information?

Q6. What media/means of information do you use to disseminate information to the farmers?

Q9. Are the farmers satisfied with the information you give them?

Q10. Have you ever been faced with a situation where you failed to solve a problem concerning the welfare of animals?

Q11. If yes to q7. What did you do?

Q12. What are some of the challenges do you think farmers face when seeking information?

Q13. What do you think should be done to improve the delivery of information to cattle farmers?