FACTORS IMPACTING SMALL-SCALE FARMERS' ACCESS TO HIGH-VALUE LIVESTOCK MARKETS IN THE GREATER GIYANI LOCAL MUNICIPALITY, LIMPOPO PROVINCE, SOUTH AFRICA

BY

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Submitted in accordance with the requirements for

the degree

Master of Science (Agriculture)

in the

COLLEGE OF AGRICULTURE AND ENVIRONMENTAL SCIENCES

DEPARTMENT OF AGRICULTURE AND ANIMAL HEALTH

at the

UNIVERSITY OF SOUTH AFRICA

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June 2023

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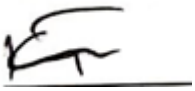
Research topic: An assessment of factors that impact small-scale farmers' access to high-value livestock markets in the Greater Giyani Local Municipality, Limpopo province, South Africa.

I declare that the above dissertation is my work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

Signature_  Date 21 June 2023

Abstract

The study examined the factors impacting small-scale farmers' access to high-value livestock markets. The study's objectives were to (1) determine the socio-economic characteristics of small-scale farmers that impact on access to high-value livestock markets; (2) to explore different channels of communication used by small-scale farmers in accessing high-value livestock markets; (3) explore different marketing strategies used by small-scale farmers on access to high-value markets and (4) identify challenges faced by small-scale farmers. The study adopted a quantitative research approach and employed clustered proportional random sampling. Two hundred and fifteen (215) Greater Giyani Local Municipality livestock small-scale farmers were randomly selected. Primary data were used to address the objective of the study. Data were analysed using descriptive, inferential and Likert-scale analysis techniques. A statistical package for the social science programme (SPSS) was used. The study revealed that the majority of small-scale livestock farmers in the study area were male (62.8%) and old and that they used various communication strategies. Furthermore, the following were identified as major challenges for small-scale livestock farmers in the Greater Giyani Local Municipality: weather conditions, a lack of government support, chemicals and pesticides. One of the recommendations is that farmers should buy medication for their livestock. Besides, small-scale livestock farmers should be encouraged to grow artificial pastures to reduce pressure on the natural veld and make fodder available throughout the year. Also, the government should provide aid with distribution policies that will guarantee that all small-scale livestock farmers can benefit.

Keywords: Agribusiness value chain; barriers; livestock; small-scale farmers; standards

Nkomiso

Ndzavisiso lowu wu languta swiave leswi nghenelelaka eka van'wapurasi va swifuwo vatsongo eka mimakete ya swifuwo ya le henhla. Swikongomelo swa ndzavisiso a ku ri ku (1) humesa swihlawulekisi swa vanhu na ikhonomi swa van'wapurasi vatsongo lava khumbaka mimakete ya swifuwo ya le henhla; (2) ku kumisisa tichanele to hambanahambana ta vuhlanganisi leyi tirhisiweke hi van'wapurasi va swifuwo lavatsongo ku fikelela mimakete leyikulu; (3) ku kumisisa maqhinga mo hambanahambana lama tirhisiweke hi van'wapurasi va swifuwo lavatsongo ku fikelela mimakete leyikulu na (4) ku tiva mitlhontlho leyi van'wapurasi va swifuwo lavatsongo va hlanganaka na yona. Ndzavisiso wu tirhisile maendlelo ma nkoka ma ndzavisiso hi ku tirhisa sampulu ya nkanandzelelo ya mitlawa yo yelana. Van'wapurasi va swifuwo lavatsongo va 215 va Masipalakulu wa Giyani va hlawuriwile hi nkanandzelelo. Data yi tirhisiwile ku humesa swikongomelo swa ndzavisiso. Data yi xopaxopiwile hi ku tirhisa maendlelo ma nxopaxopo ma nhlamuselo na xikalo xa Likert. Phurogireme ya Phakeji ya Nhlayonhlayo ya Sayense ya swa Mahanyelo (PNSM) yi tirhisiwile. Ndzavisiso wu kumile leswaku van'wapurasi va swifuwo vo tala i vaxinuna (62.8%) na leswaku i vakulu nakona va tirhisile maqhinga mo hambanahamana ma vuhlanganisi. Nakambe, leswi landzelaka swi kumiwile swi ri swiphiqo swa nkoka swa van'wapurasi va swifuwo lavatsongo va Masipalakulu wa Giyani: xiyimo xa maxelo, ku kala nseketelo hi mfumo, tikhemikhali na swidlayaswitsongwatsongwana. Swin'wana swa swibumabumelo i swa leswaku van'wapurasi va fanele ku xavela swifuwo swa vona mirhi. Hambiswiritano, van'wapurasi va swifuwo lavatsongo va fanele ku hlohloteriwa ku endla madyelo ku hunguta ntshikilelo wa maxelo no vona leswaku swakudya swi va kona lembe hinkwaro. Nakambe, mfumo wu fanele wu nyika mpfuneto hi tipholisi ta mahangalaselo lama nga ta endla leswaku van'wapurasi va swifuwo lavatsongo va vuyeriwa.

Acknowledgments

I would like to thank everyone who contributed to this study with special thanks to the following:

The Almighty GOD for his grace in my life. Without your grace, favour, mercy, and love, I would not have carried out this study. You made it possible for me; you are indeed a Great GOD.

My supervisor, Professor PK Chauke, and my co-supervisor, Mr. MJ Mamashila, for their expert advice. Your guidance and suggestions were critical in the development and completion of this research project. Your patience and tenacity steered me in the right direction, and I thank you for your honest comments throughout the study. You are my great inspiration.

My former principals, Mr. EM Chabalala, and Mr. Luvhengo, for their support.

My Mom, JP Mhana Fortunate (Lisbeth), and kid brother, Akani, for their encouragement and belief in me.

Prof ET Gwata, how can I forget you?

My support structure, is Robert Shiridza, Suzman Hobjwane, Rhulani Mabunda, Lawrence Chauke, and all my uncles.

My classmates and colleagues who assisted me in various ways.

The Department of Agriculture, Limpopo Province, and the Mopani East Small-scale farmers Association ‘made’ my work at their stations successful.

Unisa’s student funding directorate (DSF) for the funding.

Dedication

This study is dedicated to Mr. PG Nyamazana, my late dad, my mother and my younger brother. You have been the source of my support. To my special friends who were there for me during challenging times, you showed me nothing but love, support and kindness.

TABLE OF CONTENTS

DECLARATION ..... **I**
ABSTRACT ..... **II**
NKOMISO ..... **III**
ACKNOWLEDGMENTS ..... **IV**
DEDICATION ..... **V**
LIST OF TABLES ..... **VIII**
LIST OF FIGURES ..... **IX**
ABBREVIATIONS AND ACRONYMS ..... **X**
CHAPTER 1: INTRODUCTION AND BACKGROUND **1**
1.1 Background of the study 1
1.2 Problem statement 3
1.3 Aim and objectives of the study 3
1.4 Research questions 4
1.5 Hypotheses 4
1.6 Significance of the study 4
1.7 Definition of key terms 5
1.8 Limitations and delimitations of the study 6
1.9 Conceptual framework 7
1.10 Outline of the chapters and overview of chapters 8
CHAPTER 2: LITERATURE REVIEW **9**
2.1 Introduction 9
2.2. Socio-economic characteristics of small-scale farmers that impact their access to high-value markets for livestock 9
2.3 Communication channels used by small-scale farmers to access high-value livestock markets 13
2.4 Marketing strategies used by small-scale farmers to access high-value markets 16
2.5 Challenges faced by small-scale farmers in producing and marketing agricultural products 18

2.6 Conclusion 20
CHAPTER 3: RESEARCH METHODOLOGY 21
3.1 Introduction 21
3.2 Research design and methodology 21
3.3 Study area 21
3.4 Population and sampling techniques 25
3.5 Research instruments 26
3.6 Data collection 27
3.7 Data analysis and modelling 27
3.8 Ethical considerations 35
CHAPTER 4: PRESENTATION AND INTERPRETATION OF RESULTS 36
4.1 Introduction 36
4.2 Descriptive statistics analysis 36
4.3 Inferential statistical analysis 48
4.5 Discussion of results 55
CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS 59
5.1 Summary 59
5.2 Conclusion 60
5.3 Recommendation 62
5.4 Potential future studies 63
REFERENCES 64
APPENDIX1: SURVEY QUESTIONNAIRE 70
APPENDIX 2: ETHICAL CLEARANCE 77
APPENDIX 3: PERMISSION TO CONDUCT A STUDY 78
APPENDIX 4: EDITOR'S CERTIFICATE 79
APPENDIX 5: EDITOR'S CERTIFICATE 80

List of Tables

Table 3.1: Economic activities' contribution to GDP in GGLM, per sector and location Quotient in Mopani and Greater Giyani 22

Table 3.2: Sampling of small-scale farmers per Agricultural service centre 26

Table 3.3: Description of explanatory variables for objective 1 29

Table 3.4: Description of explanatory variables for objective 2 31

Table 3.5: Description of explanatory variables for objective 3 33

Table 3.6: Likert-scale analysing challenges experienced by small-scale farmers in producing and marketing agricultural products used in GGLM 34

Table 4.1: Age and level of education of small-scale livestock farmers in the GGLM per gender 37

Table 4.2: Marital status and household of small-scale livestock farmers in the GGLM per gender..... 38

Table 4.3: Communication strategy used by small-scale farmers to access high-value markets with regard to education background..... 40

Table 4.4: Marketing strategies used by small-scale livestock farmers in the GGLM per year 42

Table 4.5 : Challenges listed by small-scale livestock farmers in the GGLM based on training qualification in farming 44

List of Figures

Figure 1.1: A conceptual framework 7

Figure 3.1: The South African Development Community SADC map showing the Mopani District, Limpopo Province, South Africa Figure 23

Figure 3.2: Limpopo Province map 24

Figure 3.3: Mopani District Municipality showing the Greater Giyani Local Municipality 25

Abbreviations and acronyms

ABET	Adult Basic Education and Training
DAFF	Department of Agriculture, Forestry and Fisheries
GDP	Gross Domestic Product
GVA	Gross Value Added
GGM	Greater Giyani Municipality
GGLM	Greater Giyani Local Municipality
IDP	Integrated Development Plan
ICT	Information Communication Technology
KGALP	Kha RI Gude Adult Literacy Programme
LDA	Limpopo Department of Agriculture
LED	Limpopo Economic Development
QMA	Quality of Marketing Accountability
STATS SA	Statistics South Africa
SPSS	Statistical Package for Social Sciences

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Background of the study

The main forms of land use in the Greater Giyani Local Municipality (GGLM) are the building of human settlements, recreation and the practising of agriculture, such as keeping livestock and growing vegetables, as well as other crops (Phethi & Gumbo, 2019). The Greater Giyani Local Municipality Integrated Development Plan (GGLM IDP, 2020/2021) identified agriculture as the main land use in the Greater Giyani.

The provision of water can be a source of significant difficulty for developing nations to the extent that some regions only receive water for a limited amount of time each day or on a limited number of days each week (Mmbadi, 2019). There are over one billion people who make their living in the fishing, farming, and logging industries, all of which are in danger due to the lack of available freshwater. The lack of available water prevents the cultivation of cash crops in Greater Giyani, although there is sufficient land for such production (GGLM IDP, 2020/2021).

The areas that are now known as South Africa's former homelands continue to have some of the highest rates of unemployment and poverty in the country (Olofsson, 2020). The author goes on to say that national policy has favoured agricultural development as the driving force for rural development by focusing on linking small-scale to national and global commodity chains of specific agricultural commodities that are deemed to have the highest potential for growth and employment.

One of the most crucial steps in the process of agricultural growth and development is the marketing of agricultural products (Al-Kubaisy & Lafta, 2021). They went on to say that marketing reality showed that due to adopting old and primitive methods, a high percentage of crops is lost annually during the production stages in general and marketing stages in particular until the product reaches the final consumer. Al-Kubaisy and Lafta (2021) stated that this was because there was a high percentage of crops lost annually due to the adoption of old and primitive methods. Al-Kubaisy and Lafta (2021) shared that there is a lack of agricultural extension services that provide the knowledge and skills about how to produce crops, how to prepare crops for consumption, and the most effective methods for marketing agricultural products

The Marketing of Agricultural Products Act (No. 47 of 1996), amongst others, aims to increase market access for all participants and enhance the viability of the agricultural sector. It replaced the Marketing Act of 1968 and brought about the deregulation of the South African agricultural industry. The act authorises levies on agricultural products, increased market access for all market participants, efficient marketing of agricultural products, and optimisation of agricultural export earnings (Naggujja et al., 2020).

Awazi *et al.* (2019) suggested that market access by small-scale farmers requires a consideration of global trends in the economic transformation that have a direct bearing on the current small-scale market access situation from a holistic standpoint. Awazi *et al.* (2019) further argued that the forces of globalisation and industrialization in agriculture have prompted new approaches to the agro-food sector organisation. Vertical coordination of food supply chains has attracted much attention.

Small-scale farmers continue to find it difficult to transition to a commercial food system as they struggle to meet the quality and safety standards set by food processors, large retailers, wholesale buyers, and exporters while being constrained by limited support services provided by governments as a result of policy reforms, market liberalisation and fiscal and governance issues (Bienabe *et al.*, 2018).

Access to accurate agricultural information is important for enhancing productivity and market access to farmers (Mazana *et al.,* 2021). They further stated that having the right information at the right time will inform farmers' decisions about the in-demand products, available markets, and prices charged for products. They further specified that the availability of market information gives farmers the power to bargain and improve their income, make improved production plans and make choices about product marketing. In support, Magesa *et al.* (2020) observed that access to markets by small-scale farmers resulted in increased incomes, food security, rural employment, and sustained agricultural growth. Furthermore, the use of information communications technology ICT tools can improve business and networking among farmers, buyers, and extension agents, as well as facilitate access to hidden markets (Mazana *et al.,* 2021).

Small-scale farmers need to increase their market power through grouping initiatives, such as cooperatives that are usually supported by government institutions (Carron

et al., 2017). Carron *et al.* (2017) also noted that groups have the potential to secure terms of trade, such as better prices, lower transaction costs, and greater access to training. Access to high-value markets requires a thorough understanding of marketing strategies that need to be adopted, especially for long-term sustainability (Thaqi & Beqaj, 2017).

As GGLM is in a dry area that can better sustain livestock production compared to the production of crops, the focus of this study is on access to high-value markets for livestock production in GGLM rather than food security.

1.2 Problem statement

Al-Kubaisy and Lafta (2021) indicated that agricultural marketing is one of the most important stages of the agricultural development processes because it is the engine of this process. The Marketing of Agricultural Products Act (no. 47 of 1996) aims to increase market access for all participants and includes small-scale farmers in the broader marketing of agricultural products environment. Previous studies have attested to the minimal participation of small-scale farmers in agricultural activities. For example, a study by Pillay *et al.* (2021) in Gauteng, South Africa, noted substantial non-participation of small-scale farmers in the agro-processing of wheat.

Awazi *et al.* (2019) found that compared to farmers participating in traditional markets, those in high-value or modern markets showed higher earnings per hectare or kilogramme marketed. In accessing high-value markets, small-scale farmers need to be integrated into the value chain and be supported along the chain so that they become competent. This study seeks to assess factors that impact small-scale farmers as they venture into high-value markets for agricultural products. Of concern is how socioeconomic factors, communication channels, and marketing strategies impact small-scale farmers as they venture into high-value markets.

1.3 Aim and objectives of the study

1.3.1 Aim

The main aim of the study is to assess the factors that contribute to small-scale farmers' access to high-value markets for agricultural products.

1.3.2 Specific objectives

- To determine the socioeconomic characteristics of small-scale farmers that have an impact on their access to high-value markets for livestock.
- To explore different channels of communication used by small-scale farmers in accessing high-value livestock markets.
- To describe different marketing strategies used by small-scale farmers to access high-value markets.
- To identify the challenges faced by small-scale farmers in producing and marketing their agricultural products.

1.4 Research questions

- What are the socio-economic characteristics of small-scale farmers within the study area?
- Which channels of communication are used by small-scale farmers to access high-value markets?
- Which marketing strategies are used by small-scale farmers to access high-value markets?
- What are the challenges faced by small scale-farmers in their endeavour to access high-value markets?

1.5 Hypotheses

- Socioeconomic factors have an impact on small-scale farmers' access to high-value markets.
- There are communication channels used by small-scale farmers to accesshigh-value markets.
- There is a marketing strategy adopted by small-scale farmers to access high-value markets.
- There are challenges faced by small-scale farmers to access high-value markets.

1.6 Significance of the study

The findings and recommendations of this study will be useful for policymakers in the Limpopo Department of Agriculture and Rural Development (LDARD) and other

stakeholders to promote small-scale farmers to access high-value markets in the agribusiness value chain. The study will benefit small-scale livestock farmers mostly young farmers.

1.7 Definition of key terms

1.7.1 Marketing: Marketing refers to the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large (McCarthy & Joreme, 2014). The process moves the product from the farm to the consumers (De Fontaine *et al.*, 2017).

1.7.2. Small-scale farmers: Small-scale farmers are defined as farmers owning small plots of land on which they grow subsistence crops and one or two cash crops. They rely almost exclusively on family labour. In many developing countries, a small-scale is a small plot of land with low rental value and is used to grow crops. By some estimates, there are 525 million small-scale farmers in the world. These farms vary in land size, production, and labour intensities (De Fontaine *et al.*, 2017).

Internationally, it has been shown that small-scale farmers produce low-value products, which face falling real prices and rising competition from medium- to large-scale farmers and that small-scale farmers are excluded from high-value markets. As mentioned above, small-scale farmers find it difficult to make the transition to a more commercial food system because they are unable to meet the privacy standards set by food processors, for example, and are constrained by limited government support (Mishra *et al.*, 2018).

1.7.3 Standards: Producing a product, running a process, providing a service, or providing materials are just fewer examples. Standards cover a variety of actions taken by businesses and utilised by their clients (De Fontaine *et al.,* 2017).

1.7.4 Agribusiness value chain: Explains the what, who, how, when and where of agriculture, from farm to branch. Everyone is a part of this value chain, as it pertains to the production, sales, marketing (including branding), and consumption of agricultural produce or products. All people and entities have their parts to play in the agricultural value chain, directly or indirectly (De Fontaine *et al.,* 2017).

1.7.5 Assessment: Making a decision or doing so in a specific situation, evaluating something (Merriam-Webster, 2021).

1.7.6 Subsistence farming: a form of farming in which nearly all the crops or livestock raised are used to maintain the farmer and their family, leaving little, if any, surplus for sale or trade. Re-industrial agricultural people throughout the world have traditionally practised subsistence farming (Merriam-Webster, 2021). It is farming or a system of farming that provides all or almost all the goods required by the farm family usually without any significant surplus for sale or it is farming or a system of farming that produces a minimum, often inadequate, return to the farmer (Merriam-Webster, 2021).

1.7.7 Small-scale farming: This farming method uses little land (usually around one to 10 acres / 0.405 to 4.0486 ha) and often very little to no expensive technologies. Small-scale farming is closely tied with more sustainable agricultural methods, including hobby, organic, biodynamic, and permaculture (Merriam-Webster, 2021).

1.7.8 Commercial farming: This is about the growing of crops and/or the rearing of animals for raw materials, food, or export, particularly for profit (De Fontaine *et al.,* 2017). To achieve the economy of scale, commercial farming needs to be efficient and practised on a large scale as the goal of the farmer is to maximise the profit margin. The crops and livestock in commercial farming are produced on a large scale and grown on large farms, using machinery, irrigation methods, chemical fertilizers, and other technologies. The main aim of producing products on a large scale is to export them to other regions or countries where their demand is high (FAO.org).

1.8 Limitations and delimitations of the study

The study was looking at different small-scale farmers in Greater Giyani in Mopani district, Limpopo Province, South Africa. Mugure (2012) views delimitations of a study to be the set boundaries for the study. The limitations of the study were inadequate funds, time and human resources.

1.9 Conceptual framework

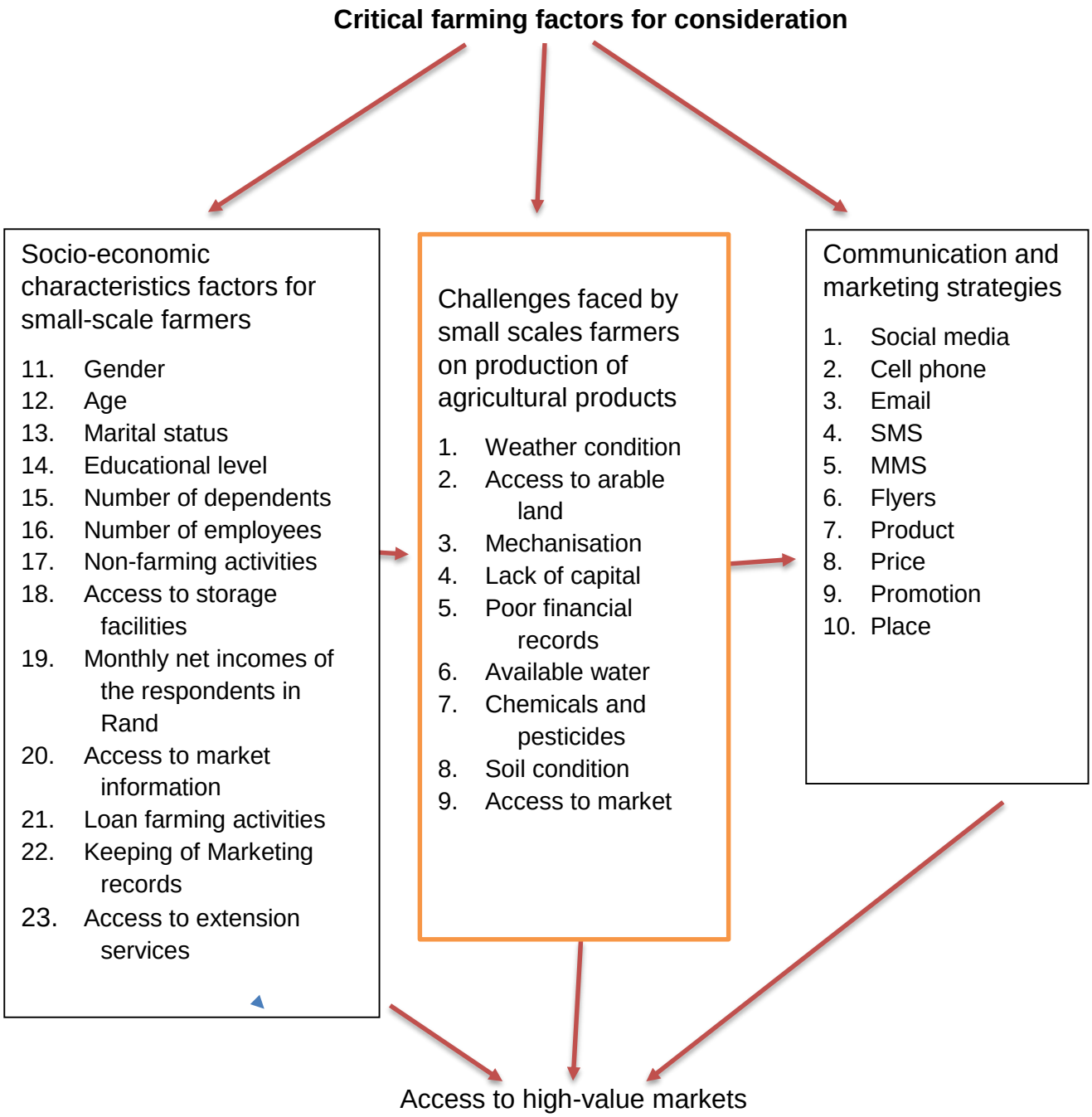


Figure 1.1: A conceptual framework

Source: Compilation from the literature

1.10 Outline of the chapters and overview of chapters

The chapters are divided as follows:

Chapter one: The first chapter provides a general introduction to the study.

Chapter two: The chapter focuses on a review of the literature for the study. The chapter presents the literature related to access to high-value markets.

Chapter three: The chapter presents the research design, area of study, population, sampling, data collection procedures, data collection instruments and ethical considerations.

Chapter four: The chapter includes the research methodology and analysis, presentation of data collected, interpretation of the data and the results of the study.

Chapter five: The final chapter outlines a summary of the research findings, recommendations and the conclusion of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter reviews scholarly works for this study. It focuses on the socio-economic characteristics of small-scale farmers, marketing communication channels and marketing strategies used by small-scale farmers, as well as challenges facing small-scale farmers in marketing their produce.

2.2. Socio-economic characteristics of small-scale farmers that impact their access to high-value markets for livestock

Several factors, such as occupation, education, wealth, income, and residence, affect socio-economic status. Sociologists frequently use socio-economic status to forecast behaviour.

The majority of small-scale farmers in the Mahikeng Local Municipality, South Africa, were older than 40 years and had fewer younger people (Setshedi & Modirwa, 2020). This was confirmed by Myeni *et al.* (2019) who noted low participation of young people in the sector. It was also shown that most small-scale farmers in the Mahikeng Local Municipality were male, married, and have a high school education (Setshedi & Modirwa, 2020). The means that these farmers can read and write. The study further showed that there was a high level of farming experience among a majority of small-scale farmers (Setshedi & Modirwa, 2020). Furthermore, Setshedi and Modirwa (2020) stated that fewer small-scale farmers had had contact with public agricultural extension workers even though the local public agricultural extension officer is responsible for supporting all farmers within its area with relevant information and tools to empower farmers to make profits and produce food for local people.

A study conducted by Nkonki-Mandleni *et al.* (2019) highlighted that majority of respondents consisted of adult small-scale cattle and sheep farmers between the ages of 38 and 57, with educational levels of up to standard six (grade 8). Furthermore, majority (87.6%) of the respondents were male farmers, while only 12.4% were female small-scale cattle and sheep farmers. Only about 1.6%of the respondents had more than ten occupants per household. Besides, larger percentages (80.8%) of the respondents were married, while the remaining 19.2%

were single, divorced or widowed. Nkonki-Mandleni *et al.* (2019) further stated that a lower percentage of the respondents had between 1 and six years of experience in cattle and sheep farming. Majority (47.2%) of the respondents had between 7 and 12 years of experience, while about 38.8% had more than 12 years of experience in cattle and sheep farming.

Another study conducted in the Limpopo Province, South Africa, revealed that marital status, education level, loan repayment, price of an animal, household income, herd size, farm size, and distance travelled to the market, were significant factors influencing market participation and thus profitability in the study area (Nkadimeng, 2019). Additionally, the outcomes of the livelihood model indicated that recent improvements in farm income and farm size were significant in different ways, at different probability levels, and with different signs in terms of their influence on the improvement of small-scale farmers' livelihoods in Limpopo province.

A study conducted in southern Ghana found differences between young and older farmers in terms of socio-economic factors, including the educational level, household size, income generated, and institutional support services which include certification, credit, extension services, and group membership (Akrong *et al.*, 2020). Similarly, Oduniyi *et al.* (2021) suggested that participation in high-value markets was significantly affected by age, household size, years of farming, and difficulty accessing high-value markets. In addition, a study conducted in southern Ghana using the results generated from an econometric model discovered that age, educational level, and access to credit and extension services motivate young farmers to participate in agriculture (Akrong *et al.,* 2021). Easy access to credit facilities and ownership of transportation encouraged the participation of elder small-scale farmers in southern Ghana in high-value markets (Akrong *et al.,* 2020). Besides, the study recommended that young farmers' participation in high-value markets will be enhanced as a result of development partners' provision of credit facilities and capacity development achieved through agricultural training and extension services, respectively (Akrong *et al.,* 2020).

A study conducted in Uganda by Okelle *et al.* (2022) found that the farmers' location, experience, group membership, pesticide/chemical use, crop and livestock production diversity, and information source diversity all affect their access to

agricultural extension services. A study by Okelle *et al.* (2022), showed that farmers' choices of service providers for agricultural extension at the farm level are primarily influenced by many factors, including marital status, gender, farming experience, credit availability, group membership, and the variety of livestock production. Mapiya *et al.* (2018) stated that majority of respondents were male (87%) and older than 45 years old (88%), and only a minimal (47%) of them have completed tertiary education.

Okelle *et al.* (2022) stated that farmers' geographic location, gender, marital status, educational level, years of experience, amount of land they own, access to credit, group membership, ownership of mobile phones, and the variety of market information sources are the primary factors that determine whether or not they have access to agriculture for their farm businesses. Mauti (2021) found that the selection of ICT tools in vegetable marketing is influenced by factors such as age, education level, market distance, ICT knowledge, willingness to pay, product prices, farmers' income, and vegetable production.

Saleh *et al.* (2018) found that the average mean age of livestock marketers was between 40 and 59 years, majority (96.70%) of males small-scale livestock farmers, (86.81%) were married, and they were from (87%) a family size ranging from one to 20 persons. Moreover, Salah *et al.* (2018) revealed that 57.14 percent of the sheep merchants also worked at other jobs to supplement the income they brought into their households from trading sheep (livestock).

A Nigerian study by Dokuboba and Nene (2019) showed that majority of farmers were female (58%), most of them were married (74%), and within the average age group of between 31 and 40 years. Most belonged to the Christian religion (92%), with the Igbo tribe, these farmers had a university degree (58%), and they come from household size of 6-10 people (6-10). They further stated that the majority depended on farming as their primary occupation, with one to five (1-5) years of experience.

A study conducted by Hlatshwayo *et al.* (2021) revealed that they were more male farmers (54.6%) compare to female farmers (45.4%). In terms of marital status, majority of the small-scale (60.7%) were married, followed by those that were single (33.9%) and lastly, minimal (5.4%) were divorced. The findings in terms of the distributions of the respondents based on age were as follows: majority of the

farmers were (38.5%) between the age of 16-35 years (26.3%) and fewer were between 36-45 years, followed by farmers (19.9%) between 46-55 years whereas the remaining percentage (15.3%) of the participants were above 55 years. Furthermore, Hlatshwayo *et al.* (2021) revealed that the in terms of educational level attained by farmers was distributed as follows: farmers that had no formal education (20.2%), followed by farmers that had primary education (31.6%), then farmers that had secondary education (36.2%), followed by farmers that had an Ordinary National Diploma/National Certificate Examination holders (6.4%) and lastly, farmers that had a Bachelor of Science / Higher National Diploma holders/ postgraduate degrees.

A study conducted in North-West Bangladesh by Skarker *et al.* (2021) revealed that age, farming experience, household head's education, income, access to markets, land ownership, the proportion of hired labour, savings, food self-sufficiency, and off-farm income affect the acceptance of new agricultural technologies. Skarker *et al*.'s (2021) study further revealed that (i) well-equipped farmers are mostly dependent on agriculture and less reliant on off-farm activities, (ii) reasonably resourced households are headed by an older male with greater farming experience and are engaged in both on-farm and off-farm activities, (iii) resource-constrained households have cattle as the main livestock and have income generated from the sale of livestock products, and (iv) severely resourced households are headed by young farmers or men where well-equipped farmers are predominantly dependent on agriculture It was hoped that the development of this farm household typology would assist the extension service in providing appropriate extension advice that will benefit the farming community. These four farm categories represent the diversity of farms found in North-West Bangladesh.

A study conducted in Limpopo and Mpumalanga provinces, South Africa, by Hlatshwayo *et al.* (2021) found that the gender of the household, the number of family members who worked on the farm, the wealth index, and the amount of assistance received from agricultural organisations all had a positive and significant impact on the decision-making process of small-scale farmers regarding their participation in markets. In addition, the age of the household, as well as the presence of a family member living with HIV, had a negative and significant impact on decision-making. In addition, Hlatshwayo *et al.* (2021) mentioned that factors such as the level of market participation among small-scale farmers were

significantly impacted negatively by marital status, household education level, wealth index, and access to agricultural assistance. However, factors like household size, age and having a family member with HIV had a big positive impact.

Amare *et al.* (2019) indicated that the possibility of participating in export markets was positively influenced by household size and the age of the household head. Amare *et al.* (2019) further stated that older farmers may have better access to information and farmer groups because they have more social connections, which is one explanation that has been put forth and the fact that household size has a positive and statistically significant impact on the participation in export markets suggests that labour availability is crucial.

Biswas *et al*. (2018) showed that in the Parganas district of West Bengal, the majority of farmers (88.33%) were between the ages of 31 and 60, and most came from nuclear (63.33%) and large families (58.33%). They further state that the majority of farmers had a formal education level ranging from medium to primary and upper primary, majority of farmers had more than 15 years of experience (Biswas *et al.,* 2018).

Rana and Maharjan (2022) suggest that the number of years of education a person has, the size of their farm, the distance from their farm to large wholesale markets, the quality of the road that connects their farm to the markets, access to extension services, market information, group marketing, trust-based credit, yield, and transportation costs all play a significant role in the decision of whether or not to participate in a large wholesale market. Still, Rana and Maharjan (2022) revealed that participation in a large comprehensive market had a positive effect on producer prices.

2.3 Communication channels used by small-scale farmers to access high-value livestock markets

Wiefels (2002) defined marketing communication as an essential and intricate component of the marketing efforts that a company undertakes. To put it another way, the procedure can be summed up as the dissemination of all messages and media to communicate with the markets. It includes things like advertising, direct marketing, branding, packaging, printed material, activities related to public relations,

sales presentations, sponsorships, trade shows, and appearances at trade shows. (Wiefels, 2002). Traditionally, in India, agricultural information exchange has been dominated by modern media such as newspapers, television, and magazines (Khou & Suresh, 2018). However, in recent years, technological awareness, computer literacy, and the use of smartphones and the internet have been increasing across the board in India, regardless of demographic (Khou & Suresh, 2018).

Market information helps farmers determine production and market opportunities to maximise profit (Syahza *et al.,* 2021). Farmers in rural areas will face fewer risks as a result of access to accurate market information, which will also enable traders to function with lower marketing margins, to the mutual benefit of the traders, the producers, and the consumers (Syahza *et al*., 2021). Besides, Syahza *et al.* (2021) argued that limited market information is related to remote farming locations, limited knowledge, and market analysis skills. Moreover, this may cause farming to be conducted without careful planning, resulting in traders with no knowledge about the markets' macro conditions.

Convenient delivery of vital market information to small-scale farmers via smartphone could serve as an impetus for economic development, poverty alleviation, and increased food security in sub-Saharan Africa (Sikundla *et al.,* 2018). Several studies conducted in Ethiopia, Uganda, Tanzania, Zimbabwe, and China have confirmed that mobile phones can be used to provide information to farmers and rural households through short Message Service SMS and multimedia support systems (Sikundla *et al.,* 2018).

The propensity for the adoption of digital communication tools is low and widespread adoption can eliminate challenges with trust, satisfaction, and imperfect markets concerning information in the relationship context (Aladenika, 2022). Furthermore, advancement to using other means of communication, including social media, teams, zoom meetings, and videoconferencing, can help farmers solve some of the issues around the buyer-seller relationship (Aladenika, 2022).

The efficient use of mobile phones in facilitating information access among farmers is far-reaching as it provides communication links even in isolated circumstances and aids in reaching farmers living in remote areas (Sikundla *et al.,* 2018). Mobile phones can facilitate agricultural decision-making, marking of agricultural products,

and provide information related to crops, weather prediction, seeds, fertilizers, bio-pesticides, soil fertility, pest and disease diagnoses, demand and supply of agricultural products, different schemes and technologies (Sikundla *et al.,* 2018).

A study conducted by Okediran, (2019) in Nigeria found that agriculture is an information sector, and there is a continuous need for farmers to have access to the right information, in an accurate timeframe, in a correct format, and through the right channels, which in turn can improve broad development of the agricultural high-value chains (Okediran, 2019). In Sub-Saharan Africa and Nigeria, in particular, one of the major problems currently incurred by livestock farmers is poor access to information on markets, market prices, productivity, and profits (Okediran, 2019). Passing on information can be challenging, due to the highly localised nature of agriculture, which means that information must be personalised specifically to distinct conditions (Okediran, 2019). Additionally, information needs can be fulfilled by the effective use of information and communication technologies (ICTs) in agriculture which is often referred to as e-Agriculture. The definition of e-Agriculture includes delivering agricultural information and knowledge services by using modern information, communication tools, and technologies for agricultural marketing, product pricing, logistics, trade, and financial inclusion that increases agricultural productivity, efficiency, and sustainability (Okediran, 2019).

Small-scale vegetable farmers in Kirinyaga County, Kenya, have access to market information via mobile phones, radio, and television because of ICT (Mauti, 2021). Furthermore, the study suggests that the markets that are mostly accessed through the use of ICT are municipal markets, followed by local markets, and lastly city markets (Mauti, 2021). The Farmer-Middlemen-Consumer marketing channel was the one that was used the most, followed by the Farmer-Broker-Consumer marketing channel, and then the Farmer-Direct market-Consumer marketing channel (Mauti, 2021).

Farmers and business owners frequently have to travel several kilometres to designated markets due to the prevalence of limited market access, particularly in rural areas and inadequate communication infrastructure (Sikundla *et al.,* 2018). Small-scale farmers thus frequently rely on intermediaries who normally exploit their ignorance of market information. Therefore, accurate and timely market information

for perishable agricultural produce has been identified as a means of significantly reducing transaction and travel costs. The delivery of valuable market information using face-to-face interaction, crumbling extension services and poor market information has a high cost (Baloyi, 2010).

The developed e-Agriculture framework can make use of user-centric mobile (IVR, SMS and USSD) and web-based platforms that coordinate and link farmers, buyers, financial intermediaries, and logistics (Okediran, 2019). This framework can present a platform via which farmers, the targets for inclusion in the agricultural value chain, can have easy and cheap access to information on markets and market prices. Also, the communication infrastructure provided by mobile network operators and the applications developed on the framework links the farmers, buyers, transporters, financial institutions, and the system administrator through the integrated marketing and payment system (Baloyi, 2010).

2.4 Marketing strategies used by small-scale farmers to access high-value markets

The marketing strategy has many elements, specified according to the main goal of the organisation and associated elements, and referred to as the 4 'Ps' product, price, place, and promotion (Thabit & Raewf, 2018). Marketing strategies are critical for strengthening customer satisfaction.

Product refers to the goods and services presented by the organisation. The product is a pack of advantages that a marketer presents to the customer for a price (Blut *et al.,* 2018). The primary function of a retailer is to assemble a selection of goods and services and to make those goods and services readily available to customers to satisfy the customers' various wants and requirements. The product might also come in the form of a service, such as a trip by train or a form of communication, for example. As a result, the product is the primary focus of each marketing strategy (Thabit & Raewf, 2018).

Price is the second most significant element in the marketing strategy. It is known as the value charged for any product or service (Thabit & Raewf, 2018). Pricing translates into a certain image that becomes a salient store attribute (Blut *et al.,* 2018). Fixing the product's price is a difficult job as the marketer has to be familiar

with factors, such as the need or demand for a product, the cost involved, the consumer's ability to pay, government restrictions, and prices charged by competitors for comparable products. In fact, pricing is a very critical decision zone as it has an impact on the need for the product and also on the profitability of the organisation (Thabit & Raewf, 2018).

A suitable location and time must be chosen to prepare agricultural products for sale (Thabit & Raewf, 2018). The marketing process includes a chain of persons and organisations such as distributors, wholesalers, and retailers who shape the distribution network of the organisation (Thabit & Raewf, 2018). Besides, the organisation must choose whether to sell directly to the consumer or through distributors (Thabit & Raewf, 2018). This set of instruments involves satisfying demands by making products and services available to customers at the point of sale, and it also involves channel and location management within the context of a retail environment (Blut *et al.,* 2018).

Promotion is one of the strongest elements of marketing strategies. Sales promotion actions include publicity, public relations, fairs and demonstrations (Thabit & Raewf, 2018). The level of marketing expenditures for promotions is decided by the marketing manager. The primary goals of promotional activities are to support personal selling, advertising, and publicity (Thabit & Raewf, 2018). In addition, promotion is dependent on many different combinations of its components, all of which are used to realise the organisation's marketing goals. Promotion helps the trader show the product to the customers in an effective manner and encourages them to purchase it. The mix of promotional activities includes advertising, which plays a significant role (Thabit & Raewf, 2018).

The four variables of marketing approaches are interconnected, and when increasing the product's price, the product demand will be decreased, and lesser distribution points will be desired (Thabit & Raewf, 2018). Overall marketing strategies can result in dynamic modelling based on customer response for improving a product which can be launched as the upgraded product and to enhance the quality of marketing accountability (QMA) (Thabit & Raewf, 2018).

The primary objective of advertising is to make and advance the image of a product in the market zone. It is one of the significant tools of competition that results in the

dynamism of the industry (Thabit & Raewf, 2018). The promotion mix determines the positioning of the product in the target market. It should be considered an expense and hence added to the cost of a product (Thabit & Raewf, 2018).

2.5 Challenges faced by small-scale farmers in producing and marketing agricultural products

The participation of small-scale farmers in high-value livestock markets is constrained by many challenges which include a lack of access to finance, on-farm infrastructure, market information, barriers to entrance and training by small-scale farmers (Ullmann & Grimm, 2021). In addition, small-scale farmers are mostly situated far from the markets and have poor access to infrastructure (KO, 2021). Due to the relatively limited financial and technical resources available, historically, Black farmers have operated small-scale farms. This is in contrast to large corporate farms, which have traditionally enjoyed competitive advantages over small farms when it comes to the production and marketing of their goods (KO, 2021). In addition, Black-owned small farms have generally been marginalised (KO, 2021).

A study conducted in Mexico by Borbolla-Perez *et al*. (2017) showed that most of the challenges and limitations incurred by small-scale farmers result from the lack of training to improve production, processing and marketing (Borbolla-Perez *et al.,* 2017). In addition, various restrictive aspects were identified in the production process that affects crop productivity, such as cultivation in small parcels, high incidence of diseases, premature fruit dropping, and low tolerance of plants to stress (Borbolla-Perez *et al.,* 2017). A study conducted in Free State, South Africa, indicated that the high cost of fuel and transportation, poor market price, competition, a lack of equipment and grazing land management, animal health, animal loss and water supply impact negatively on livestock production (Nkonki-Mandleni *et al*., 2019).

In South Africa, the biggest constraints faced by farmers in the Thulamela Local Municipality were identified as follows: a lack of storage facilities, transport to markets, high climatic unpredictability and change, and a lack of agro-processing farmers (Maponya, 2021). Ndlovu and Masuku (2021) revealed that there was limited access to formal markets by small-scale farmers due to limited knowledge about the market and capacity to meet market requirements. Ndlovu and Masuku

(2021) further confirmed that poor marketing skills, institutional support services, and limited access to arable land have a direct negative impact on achieving livelihood outcomes.

A study conducted in Assam, India, discussed nutritional and management issues such as poor availability of fodder and grazing land while meeting attendees preferred to concentrate discussions on animal health issues, and the study found that livestock keepers were adept and consistent at describing disease syndromes (Hopker *et al.,* 2020). The key challenges identified by these farmers were foot-and-mouth disease, Newcastle disease, haemorrhagic septicaemia, chronic fascioliasis, diarrhoea, bloating diseases, goat pox, and sarcoptic mange (Hopker *et al.,* 2020). For small-scale farmers to supply supermarkets or wholesalers, they need to understand the size of production, high-quality products, size and type of product, consistency in quality, and supply requirements (Slamet *et al.,* 2017).

As a result of insufficient capital, farmers' ability to offer their products is still restricted. This results in products being sold at low prices, while traders enjoy higher profits (Syahza, 2021). The lack of available capital can be attributed to two different factors. The first of these is the mind-set of farmers who are content to receive loans from intermediaries. Although this makes farmers dependent on intermediary traders and puts them in a vulnerable position, farmers are happy to accept these loans. The second issue is that the government's credit facilities have not been utilised to their full potential (Syahza, 2021).

A Kenyan study suggested that significant differences in the live weight of cattle, prices, livestock selling channels, and cost of production occur (Mwangi, 2020). Small-scale farmers' productivity was hindered by drought, livestock diseases, invasive plant species, water scarcity, and human-wildlife conflict (Mwangi, 2020).

Inadequate access to market information, high transactional costs, poor animal conditions, and limited market access were identified as obstacles for small-scale farmers in the South African province of Limpopo (Nkadimeng, 2019). Furthermore, Nkadimeng (2019) recommended that policymakers should develop policies that support small-scale farmers with formal training, seminars, and workshops to improve the profitability of the farmers.

A study conducted in South Africa by Mapiye *et al.* (2018) lists the most significant environmental and production challenges as drought (96%), rangeland degradation (94%), diseases (89%), feed shortage (86%) and inadequate water (82%). A little less than half of the people who took the survey rated the severity of these difficulties as high to very high. Besides, the study revealed that poor access to funding, a lack of infrastructure, and poor access to markets were some of the key restrictions reported by respondents (80%). The findings of the recent study in South Africa suggest that small-scale sheep farmers in the study area are faced with abundant production constraints which inhibit their productivity and competitiveness, including marketing, stock theft, a lack of capital, diseases, parasites and high-feed cost (Nyam *et al.,* 2022).

It has been asserted that low-quality production is caused by less intensive handling activities from pre-harvest to post-harvest activities, including standardisation and grading, which are the activities during which quality is determined (Syahza, 2021). Syahza (2021) further argued that standardisation streamlines the loading and unloading process and saves space, while grading eliminates the need for inspection. Likewise, grading facilitates price comparisons, reduces fraudulence, and accelerates the buying and selling process. As a result, these two activities prevent the goods from being damaged, which lowers the costs associated with transportation and storage. On the other hand, the application of the appropriate technology for small-scale farmers results in an improvement in production quality. This is because innovation must be an ongoing process (Syahza, 2021).

2.6 Conclusion

The review of the literature showed that most farmers are adults with experience in farming, have less exposure to agricultural advisors, are uneducated, married and involved in farming to provide for their families. The communication channels used on a small scale were mostly ICT. Marketing strategies include the four markets ‘P’s: product, price, promotion and place where the product will be marketed. Challenges faced by small-scale farmers are insufficient capital, price fluctuation, perishable product market risk and low product quality.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter elaborates on the research methodology and model specification of the study and describes the methods and techniques used to arrive at the results discussed in the next chapter.

3.2 Research design and methodology

Ntlhare (2015) defines a research design as a strategy or blueprint for conducting a study. Bless and Higson-Smith (1995) define a research design as a programme that guides a researcher in collecting, analysing, and interpreting observed facts, as well as a detailed plan that outlines how the scientific investigation into the research problem is conducted. Nesengani (2017) indicated that a research design is a plan in which the researcher obtains research participants and collects information from them.

A quantitative research method involves the statistical, mathematical, or computational examination of phenomena (Denzin & Lincoln, 2011). Its objective is, therefore, to develop and employ mathematical models, theories, and hypotheses about phenomena. On the other hand, qualitative research is when the researcher relies on the views of participants that emanate largely from words that are grouped into themes (Hanson *et al.*, 2005). As attested by McMillan and Schumacher (2014), qualitative research conducts the inquiry in a subjective, biased manner, using face-to-face or observation techniques within natural settings. The research study used a quantitative approach, and cross-sectional approach data collection was employed. Responses from the participants were analysed using descriptive statistics and inferential statistics. Data were analysed as follows; for objectives one to four, descriptive statistics was employed; inferential statistics was used to analyse objectives 1-3, and lastly, Likert-scale was used to analyse objective 4. Cross-sectional studies are characterised by the gathering of relevant data at a given point in time (Kesmodel, 2012).

3.3 Study area

The Greater Giyani Local municipality served as the location for the research project. The GGLM is made up of 31 different wards that are organised into five different

clusters and have a combined population of 256 300 people. Of the five local municipalities that make up the Mopani District Municipality in Limpopo Province, South Africa, the GGLM is one of them. Greater Tzaneen, Greater Letaba, Ba-Phalaborwa, and Maruleng are the other four local Municipalities in this area. Giyani Town serves as the GGLM's primary centre of commercial activity. Mozambique, Zimbabwe and Botswana are the countries where Limpopo Province of South Africa shares its borders. Limpopo Province is the Northern Province in South Africa. The total land area of the municipality is approximately 2,967.27 square kilometres, but there is only one semi-urban area. As can be seen in Table 3.1 (GGLM IDP, 2020/2021), agriculture is an extremely important part of the GGLM economy.

Table 3.1: Economic activities' contribution to GDP in GGLM per sector and location Quotient in Mopani andGreater Giyani

Economic activity	Mopani	Greater Giyani
Agriculture, forestry and fishing	3.8%	1.6%
Mining and quarrying	15.5%	3.3%
Manufacturing	4.6%	3.0%
Utilities	3.5%	3.5%
Trade and accommodation	14.1%	17.3%
Construction	2.2%	1.6%
Transport and communication	10.2%	7.7%
Finance and real estate	19.7%	25.1%
Personal services	5.7%	6.4%
Government	20.6%	30.5%
Total	100%	100%

Source: Greater Giyani Municipality IDP (2020/2021)

The figures below show the location of GGLM, in South Africa (Figure 3.1), the Limpopo Province (Figure 3.2) and the Mopani District Municipality (Figure 3.3).

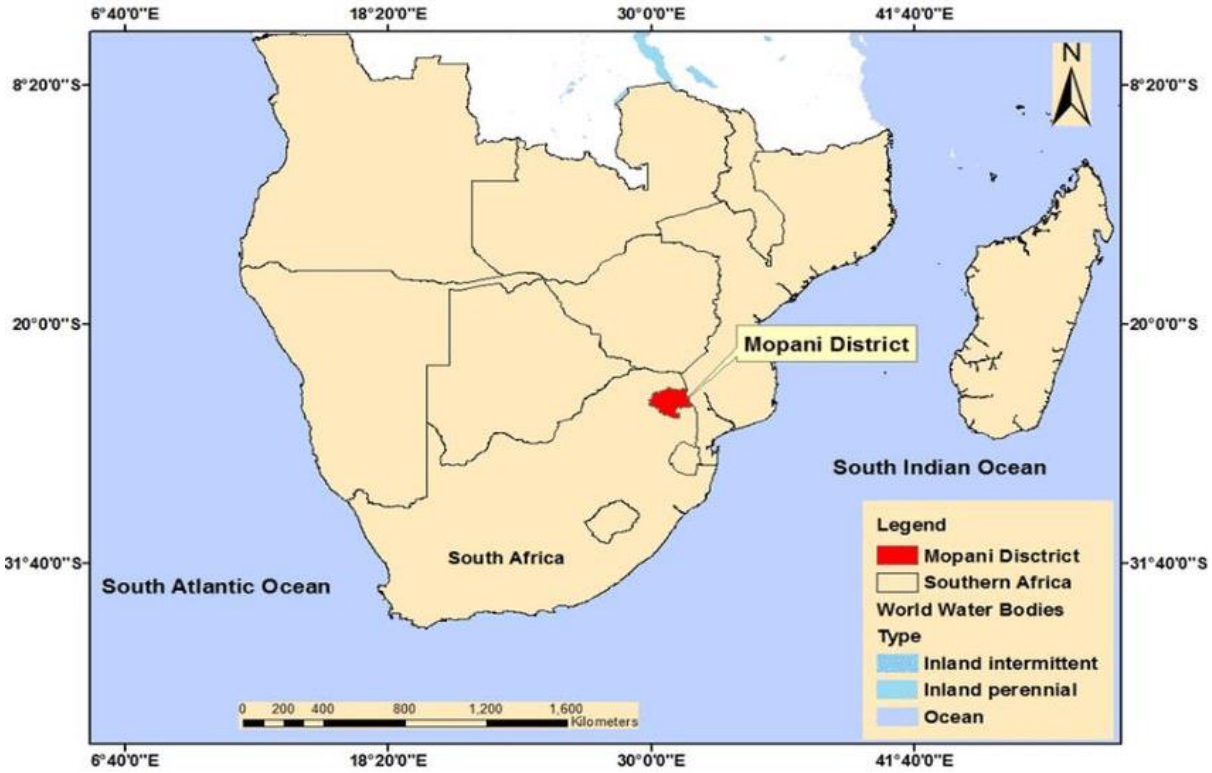


Figure 3.1: The South African Development Community SADC map showing the Mopani District, Limpopo Province, South Africa Figure

Source: google maps

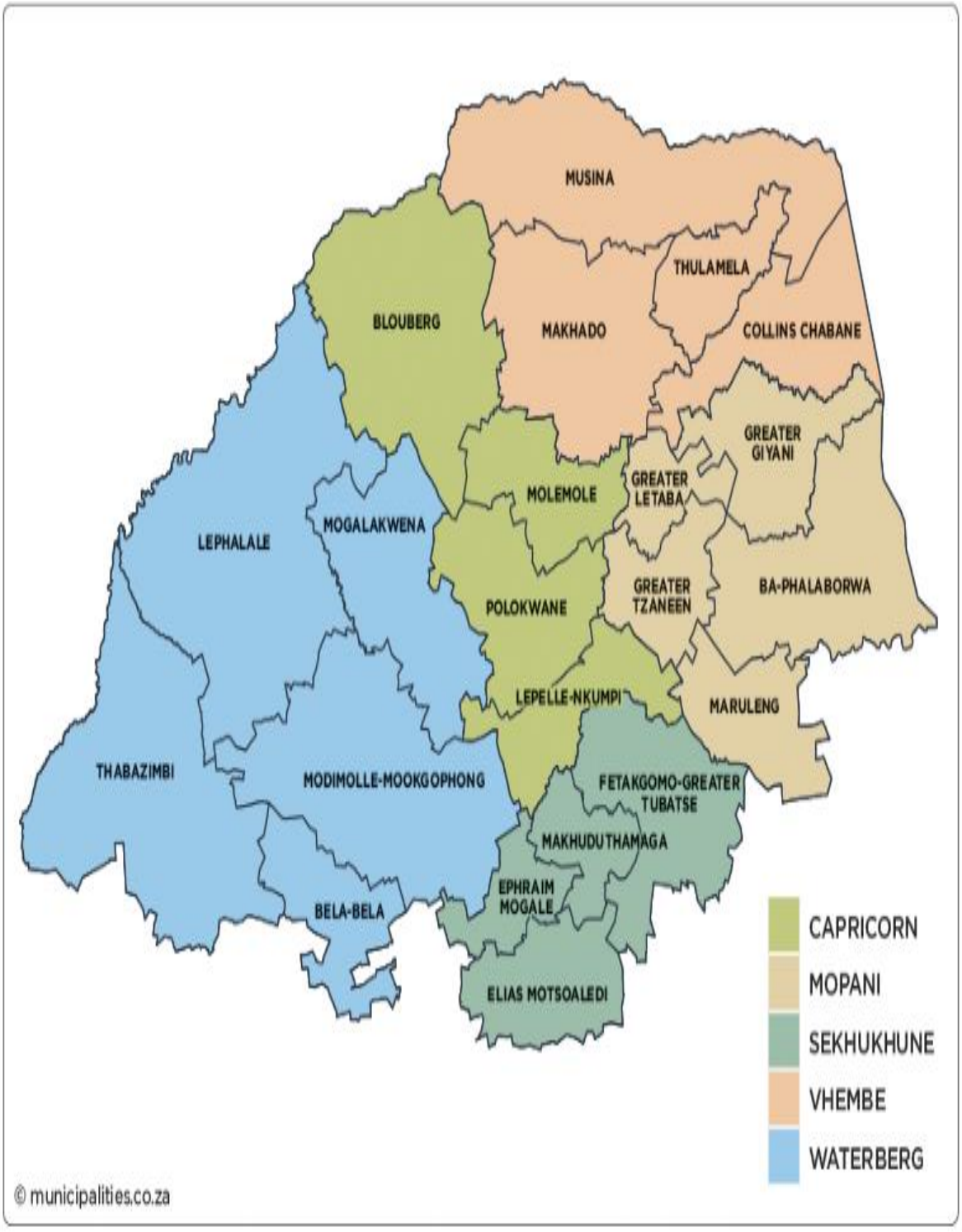


Figure 3.2: Limpopo Province map

Source: google maps

Figure 3.3: Mopani District Municipality showing the Greater Giyani Local Municipality

Source: google maps

3.4 Population and sampling techniques

Sampling is a process of selecting units from a population of interest, so that by studying the sample, the results obtained may be generalised to the population from which the sample had been chosen (Leedy & Ormrod, 2004). As the Department of Agriculture in Giyani confirmed that the majority of farmers in the GGLM practise livestock farming due to the area being very dry for crop farming, the study focused on livestock farming. The Department of Agriculture in Giyani further highlighted that there were 484 livestock farmers in the local municipality, as shown in Table 3.2. Thus, the study adopted a clustered proportional random sampling as follows:

- The 484 farmers were firstly clustered according to the three Agricultural service centres.
- A proportion of farmers according to farming type (livestock) within the Agricultural service centre were determined.
- A sample size of 215 from the population of small-scale farmers was randomly selected, following this link sample size calculator. The confidence level for this study was 95, and the margin of error was 5%.

Table 3.2: Sampling of small-scale farmers per Agricultural service centre

Agricultural service centre	No. of livestock farmers	Sample
Mhlava Willem service centre	178	79
Nhlaniki service centre	90	40
Giyani service centre	214	96
Total	**482**	**215**

3.5 Research instruments

3.5.1 Reliability and validity of the questionnaires

Reliability is the consistency with which a research instrument gives certain results when the phenomenon being measured has not changed (Leedy & Ormrod, 2014). The reliability of an instrument is a measure of the consistency with which the instrument measures what is supposed to be measured (Holmes, 2000). Mugure, (2012) stated that a reliable instrument will give similar results if administrated many times under similar conditions in the study area.

The questionnaires had to address all the critical issues which were part of the study. Before the empirical data collection, the questionnaires were pre-tested with a group of farmers who were not part of the sampled population in the study area. This was to assess the effectiveness and efficiency of the tools and to identify and eliminate any flaws that may influence the responses of participants.

The questionnaires were administrated to non-sampled participants and the data collected were analysed manually. After three weeks, the same participants were given the same instruments, and the data which were collected and analysed showed the same responses which meant that the questionnaire was reliable.

3.6 Data collection

3.6.1 Primary data

Questionnaires were used to collect primary data for the study from 215 small-scale livestock farmers randomly selected from the Greater Giyani local municipality. This municipality is segmented into three service centres, and the sample comprised a comparable number of small-scale livestock farmers from each of those service centres.

As a method for gathering quantitative information, a questionnaire with both closed and open-ended questions was used to collect primary data. The questionnaire was used to collect data on the four objectives elaborated in Chapter 1.

After that, primary data were used to determine the socio-economic characteristics of small-scale farmers in the study area, as well as the channels of communication used to access high-value markets, marketing strategies, and difficulties that small-scale farmers face in their efforts to access high-value markets.

3.7 Data analysis and modelling

3.7.1 Objective 1: To determine the socio-economic characteristics of small-scale farmers that have an impact on accessing high-value markets for livestock

The data from completed questionnaires were coded, captured, and analysed using the Statistical Package for Social Sciences (SPSS) version 28. A binary regression model was used to analyse the data based on the following model: The relationship between the dichotomous dependent variable, which in this case was access to high-value markets, and a set of independent variables, which were socio-economic characteristics of small-scale livestock farmers shown in Table 3.3, was modelled with the help of binary logistic regression.

The regression model was specified as:

$$Z_i = \log\left(\frac{\pi_i}{1-\pi_i}\right) \quad (1)$$

(Tshikororo, 2020 citing Norusis, 1993)

Where, π_i= probability of the i^{th} case; Z_i = value of the independent variable for the i^{th} case.

The relationship between the binary status variable (Zi) and its determinants Xi is specified as $Zi = \beta Xi + \varepsilon$

(2)

Z_i = Dependent variable (0 forward to high-value markets)

βi = vector of the respective parameter which is estimated using the maximum likelihood method. ε = error term.

According to Norusis study (as cited in Tshikororo 2020); the probability of small-scale livestock farmers forwarding the livestock is estimated as follows:

Probe (event) =1/ (1+e-z) (3)

Because the cut-off value is 0.5; if the estimated probability of the event is less than 0.5, it is predicted that the event will not occur, if it is greater than 0.5, the prediction is that the event will occur and in an unlikely event that the probability is exactly 0.5, one can flip a coin for prediction (Tshikororo, 2020 citing Norusis, 1993).

$$\text{The odds that an event will happen} = \frac{\text{Prob. of the event occurring}}{\text{Prob. of the event not occurring}} \quad (4)$$

Z is the linear combination and is expressed as

$$Z = (\beta_0 \text{ (constant)} + \beta_{\text{Gender}} + \beta_{\text{Age}} + \beta_{\text{Marital status}} + \beta_{\text{Level of education}} + \beta_{\text{Household size}} + \varepsilon) \quad (5)$$

.

Table 3.3: Description of explanatory variables for objective 1

Variable	Variable description	Variable categories					Expected signs
Π(x)*(dependent variable)	Access to high-value markets	Forward livestock to auction = 0	otherwise = 1				-/+
Independent variables							
X_1 = Gender	Gender	Male = 0	Female = 1				-/+
X_2 = Age	Age spread	Youth (18-35) = 0	Young adults (36-55 years) = 1	Adults (56-65 years) = 2	Elderly (above 65 years)		-/+
X_3 = Marital status	Marital status	Single = 0	Married = 1	Divorced = 2	Cohabiting = 3	Widow/widower = 4	-/+
X_4 = Level of education	Level of education	No formal education = 0	Primary education = 1	Secondary = 2	Tertiary = 3		-/+
X_5 = Household size	Number of people in the family	Less than 5 people = 0	5-10 people = 1	Over 10 people = 2			-/+

Note: (1) Access to high-value markets was determined as follows: (Yes) if livestock is forwarded to livestock auctions code was (0), otherwise (No) code was (1). (2) Youth refers to farmers who are equal to or less than 35 years.

3.7.2 Objective 2: To explore the channels of communication used by small-scale farmers in accessing high-value livestock markets

This objective was analysed using the binary logistic regression model with the dependent variable being access to high-value markets and various communication channels as independent variables.

The ensuing modelling was as follows and the variables are depicted in Table 3.4: The relationship between the dichotomous dependent variable, which in this case was access to high-value markets, and a set of independent variables, which were channels of communication used by small-scale livestock farmers shown in Table 3.4.

The regression model was specified as:

$$Z_i = \log\left(\frac{\pi_i}{1-\pi_i}\right) \quad (1)$$

(Tshikororo, 2020 citing Norusis, 1993)

Where, π_i= probability of the i^{th} case; Z_i = value of the independent variable for the i^{th} case.

The relationship between the binary status variable (Zi) and its determinants Xi is specified as Zi = βXi + ε

(2)

Z_i = Dependent variable (0 forward to high-value markets)

βi = vector of the respective parameter which is estimated using the maximum likelihood method. ε = error term.

According to Norusis study (as cited in Tshikororo 2020); the probability of small-scale livestock farmers forwarding the livestock is estimated as follows:

Probe (event) =1/ (1+e-z) (3)

Because the cut-off value is 0.5; if the estimated probability of the event is less than 0.5, it is predicted that the event will not occur, if it is greater than 0.5, the prediction is that the event will occur and in an unlikely event that the probability is exactly 0.5, one can flip a coin for prediction (Tshikororo, 2020 citing Norusis, 1993).

$$\text{The odds that an event will happen} = \frac{\text{Prob. of the event occurring}}{\text{Prob. of the event not occurring}} \quad (4)$$

Z is the linear combination and is expressed as

$$Z = (\beta_0 \text{ (constant)} + \beta_{\text{cell phones}} + \beta_{\text{Other farmers}} + \beta_{\text{Radio}} + \beta_{\text{Television}} + \beta_{\text{newspaper}} + \beta_{\text{farmers unions}} + \beta_{\text{cooperative}} + \varepsilon) \quad (5)$$

Table 3.4: Description of explanatory variables for objective 2

Variable	Variable description	Variable categories		Expected signs
Π(X) (dependent)	Access to high-value markets	Forward livestock to auction = 0	otherwise = 1	-/+
Independent variable				
X1 = cell phone	Use cellphone	Use = 0	Other = 1	-/+
X2 = Other farmers	Via other farmers	Use = 0	Other = 1	-/+
X3 = Radio	Use radio	Use = 0	Other = 1	-/+
X4 = Television	Use television	Use = 0	Other = 1	-/+
X5 = Newspapers/magazines/ leaflets	Use newspapers	Use = 0	Other = 1	-\+
X6 = farmer unions	Farmer unions	Use = 0	Other = 1	-\+
X7 = cooperatives	Cooperative	Use = 0	Other = 1	-/+

NB: (1) Access to high-value markets was determined as follows: Yes if livestock is forwarded to livestock auctions, otherwise No. (2) Communication channels include the following: ICT, printed media and agents.

3.7.3 Objective 3: To explore the marketing strategies used by small-scale farmers to access high-value markets

This objective was analysed using the binary logistic regression model with the dependent variable being access to high-value markets and various marketing strategies as independent variables (product, price place and promotion strategy).

The ensuing modelling was as follows and the variables are depicted in Table 3.5: The relationship between the dichotomous dependent variable, which in this case was access to high-value markets, and a set of independent variables, which were marketing strategies used by small-scale livestock farmers shown in Table 3.5.

The regression model was specified as:

$$Z_i = \log\left(\frac{\pi_i}{1-\pi_i}\right) \quad (1)$$

(Tshikororo, 2020 citing Norusis, 1993)

Where, π_i= probability of the i^{th} case; Z_i = value of the independent variable for the i^{th} case.

The relationship between the binary status variable (Zi) and its determinants Xi is specified as $Z_i = \beta X_i + \varepsilon$

(2)

Z_i = Dependent variable (0 forward to high-value markets)

βi = vector of the respective parameter which is estimated using the maximum likelihood method. ε = error term.

According to Norusis study (as cited in Tshikororo 2020); the probability of small-scale livestock farmers forwarding the livestock is estimated as follows:

Probe (event) =1/ (1+e-z) (3)

Because the cut-off value is 0.5; if the estimated probability of the event is less than 0.5, it is predicted that the event will not occur, if it is greater than 0.5, the prediction is that the event will occur and in an unlikely event that the probability is exactly 0.5, one can flip a coin for prediction (Tshikororo, 2020 citing Norusis, 1993).

$$\text{The odds that an event will happen} = \frac{\text{Prob. of the event occurring}}{\text{Prob. of the event not occurring}} \quad (4)$$

Z is the linear combination and is expressed as

$$Z = (\beta_0 \text{ (constant)} + \beta_{\text{product strategy}} + \beta_{\text{Prices strategy}} + \beta_{\text{place strategy}} + \beta_{\text{promotion strategy}} + \varepsilon) \quad (5)$$

Table 3.5: Description of explanatory variables for objective 3

Variable	Variable description	Variable categories				Expected signs
Π(X) (dependent)	Access to high-value markets	Forward livestock to auction = 0	otherwise = 1			-/+
Independent variable						
X1 = product strategy	Letting customers know of the various livestock that is kept such as cattle and goats.	Once per year = 0	Twice per = 1	Thrice per year = 2	Four times per year = 3	-/+
X2 = price strategy	Selling livestock at prices that do not look expensive e.g., R4 999 instead of R5 000	Once per year = 0	Twice per = 1	Thrice per year = 2	Four times per year = 3	-/+
X3 = place strategy	Selling livestock along major roads during festive seasons	Once per year = 0	Twice per = 1	Thrice per year = 2	Four times per year =3	-/+
X4 = promotion strategy	Inviting potential customers to demonstrations of livestock on-farm e.g., at shows	Once per year = 0	Twice per = 1	Thrice per year = 2	Four times per year = 3	-/+

NB: (1) Access to high-value markets determined as follows: Yes, if livestock is forwarded to livestock auctions, otherwise No. (2) Communication channels include the following: ICT, printed media, and agents.

3.7.4 Objective 4: To identify challenges faced by small-scale farmers in the production and marketing of agricultural products

A Likert scale was used to collect and analyse the data, which asked respondents to choose between four different scales of increasing intensity. Because the researcher needed honest feedback from the participants, neither of them was disqualified from the study. When conducting research surveys or administering aptitude tests, the Likert scale is frequently utilised to score the respondents' answers to questionnaires. It is a technique that is used frequently and is considered an important rating format for the measurement of quality (Allen & Seaman, 2007).

Table 3.6: Likert-scale analysing challenges experienced by small-scale farmers in producing and marketing agricultural products used in GGLM

Statement	Strongly agree	Agree	Disagree	Strongly disagree
1. Weather condition				
2. Lack of capital				
3. Poor financial records				
4. Unavailability of water				
5. Chemicals and pesticides				
6. Markets information				
7. Far from the auction				
8. Lack of training				
9. Transport to auction				
10. Poor grazing area				
11. Inconsistency in quality and supply requirement				
12. High transportation costs				
13. Lack of support from the government				
14. Access to markets				
15. Drought and disease				
16. Access to animal health				

Bipolar Likert-scale was used to rate the statements above, which are some of the challenges experience by livestock farmers in Greater Giyani Local Municipality. A

Likert-scale assumes the strength of an attitude is linear on a continuum from strongly agree to strongly disagree and makes the assumption that attitude can be measured (Likert, 1932).

3.8 Ethical considerations

The research followed all ethical procedures for informing and safeguarding the people who participated in the study. The research was conducted in accordance with COVID-19 protocols, as required by the Disaster Management Act. In addition to washing their hands and keeping a social distance of 1.5 metres, the researcher and all of the participants were required to wear face masks during the experiment. Application with the number 2022/CAES HREC/022 was submitted to the UNISA-CAES Health Research Ethics Committee to receive approval for the study.

Through the use of a letter that identified the researcher and provided information about who could be contacted regarding the study, permission was obtained in advance from several gatekeepers, including the Municipal Manager of the Greater Giyani Municipality, the Limpopo Department of Agriculture, the ward council and the Headman. This was done to conduct the study. It was requested that officials from the GGLM provide the names and contact information of all small-scale livestock farmers operating within the municipality. Following the ethics guidelines outlined in the questionnaire and the Covid-19 protocols, a random sample of small-scale livestock farmers was selected through the local farmers' association and approached either in their farming units or via telephone to participate in the study. This was done while adhering to the guidelines outlined in the questionnaire.

It was made abundantly clear to the respondents who had been chosen at random that they would be taking part in an investigation but that their contribution was entirely voluntary. The participants in the study were given an explanation of the study's purpose, and their written consent was collected. The respondents' rights to privacy, confidentiality, and anonymity were upheld throughout this research. During the interviews, we did not make use of any microphones, microphone recorders, video cameras, or one-way mirrors.

CHAPTER 4: PRESENTATION AND INTERPRETATION OF RESULTS

4.1 Introduction

This chapter aimed to present and interpret the results of the study.

4.2 Descriptive statistics analysis

This section responds to the first objective of the study by outlining the socio-economic characteristics of livestock farmers in the study area. Using the SPSS software programme, version 28.0.1.0, Table 4.1 was generated from the study results comprising variables, such as gender of the livestock farmers, age of the farmers, marital status, level of education, and the number of people in the family (family size). Cross-tabulation is a method to quantitatively analyse the relationship between multiple variables; cross-tabulation between gender and the age of livestock farmers was generated using SPSS.

4.2.1 Socio-economic characteristics of small-scale livestock farmers in the GGLM

The gender variable was cross-tabulated with age spread, level of education (Table 4.1), marital status, and household size (Table 4.2). Gender cross tabulation with these variables was used to determine how the selected variables were distributed per the two gender categories, using the SPSS programme, version 28.0.1.0. Results from Table 4.1 revealed that the majority of small-scale livestock farmers in the study area were male (62.8%).

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Table 4.1: Age and level of education of small-scale livestock farmers in the GGLM per gender

Gender	Male	Female	Total
Age spread			
18-35 years (youth)	7.9%	4.2%	12.1%
36-55 years (young adults)	5.6%	4.7%	10.2%
56-65 years (adults)	31.6%	0.9%	32.6%
Above 65 (elderly)	17.7%	27.4%	45.1%
Level of education			
No formal education	37.2%	30.7%	67.9%
Primary education	11.2%	3.7%	14.9%
Secondary education	10.7%	0.0%	10.7%
Tertiary education	3.7%	2.8%	6.5%
Gender Total	62.8%	37.2%	100.0

n=215.

Source: Generated from study results.

In terms of age spread, majority of livestock farmers (45.1%) were elderly (above 65 years) and female livestock farmers (27.7%), followed by the adult age spread (32.6%) falling within the age range of between 56 and 65 years and mostly were male responded (31.6%). Youth participation (12.1%) was minimal. The above analysis raises two concerns, that is, the dominance of the elderly and low youth participation in livestock farming in the GGLM.

Table 4.1 also revealed that a significant proportion (67.9%) of livestock farmers in the GGLM had no formal education, followed by those with a primary education level (14.9%) and those with tertiary qualifications (6.5%). This contrasts with the findings of a study conducted by Hlatshwayo *et al.* (2021), which revealed that the educational level attained by farmers was distributed as follows: farmers had no

formal education (20.2%), followed by farmers that had primary education (31.6%), lastly farmers that had secondary education (36.2%).

Table 4.2: Marital status and household of small-scale livestock farmers in the GGLM per gender

Gender	Male	Female	Total
Marital status			
Single	10.7%	6.5%	17.2%
Married	25,1%	7.0%	32.1%
Divorced	19.5%	10.2%	29.8%
Cohabiting	14.2%	11.6%	15.8%
Widow/widower	3.3%	1.9%	5.1%
Household size			
Less than 5	38.6%	32.6%	71.2%
5 - 10 people	23.7%	3.3%	27%
Over 10 people	0.5%	1.4%	1.9%
Gender Total	62.8%	37.2%	100.0

n=215. Source:

Generated from study results.

In terms of the marital status of livestock farmers in the GGLM, it was revealed that most were married (32.1%) and more males farmers were married (25.1%), followed by divorced farmers (29.9%), followed by single (never married) (17.2%) livestock farmers, then cohabiting (15.8%), and lastly, widow/widower (5.1%). Household sizes were also analysed, which indicated that majority (71.8%) of small-scale farmers were from a family with less than five people per household, followed by five to 10 people in a household (27%), and lastly the nuclear or a big family or household of over 10 people (1.9%). This implied that most of the farmers were stable in their places of residence and had access to more family labour. Similarly, Myeni *et al.* (2019) and Setshedi and Modirwa (2020) noted low participation of youth in the sector and that most small-scale farmers in the Mahikeng Local Municipality were males, while fewer were female farmers, and the majority of small-

scale farmers were married. A study conducted by Hlatshwayo *et al.* (2021) revealed that the educational level attained by farmers was distributed as follows: farmers that had no formal education (20.2%), followed by farmers that had primary education (31.6%), then farmers that had secondary education (36.2%), followed by farmers that had an Ordinary National Diploma/National Certificate Examination holders (6.4%), and lastly, farmers that had a Bachelor of Science / Higher National Diploma holders/ postgraduate degrees.

4.2.2 Descriptive analysis for communication strategies used by small-scale farmers in the GGLM

Table 4.3 was generated showing the different communication strategies used by small-scale livestock farmers in the GGLM. The communication strategies were cross-tabulated with training in agriculture and the users of these methods where farmers indicated either yes or no, to the following communication strategy, that is, cell phones, other farmers, radio, television, newspapers, magazine, leaflets, farmers unions, extension worker or cooperatives. The first observation was that majority of small-scale farmers had no formal education (67.9%), with fewer farmers having a primary (14.9%) and secondary (10.7%) education levels, while farmers that had tertiary qualifications were at minority (6.5%) (Table 4.3).

Table 4.3: Communication strategy used by small-scale farmers to access high-value markets with regards to education background

Response	No formal	Primary	Secondary	Tertiary	Total
Cell phone					
Yes	57.7%	11.6%	8.4%	6.5%	84.2%
No	10.2%	3.3%	2.3%	N<5	15.8%
					100.0%
Radio					
Yes	33.0%	11.6%	7.9%	4.2%	56.7%
No	34.9%	3.3%	2.8%	2.3%	43.3%
					100.0%
Television					
Yes	37.2%	4.7%	3.7%	2.8%	48.4%
No	30.7%	10.2%	7.0%	3.7%	51.6%
					100.0%
Newspaper					
Yes	19.1%	6.5%	4.2%	n<5	31.2%
No	48.8%	8.4%	6.5%	5.1%	68.8%
					100.0%
Magazine					
Yes	5.6%	5.6%	n<5	n<5	13.0%
No	62.3%	9.3%	9.3%	6.0%	87.0%
					100.0%
Leaflets					
Yes	19.5%	6.5%	3.3%	n<5	30.7%
No	48.4%	8.4%	7.4%	5.1%	69.3%
					100.0%
Farmer unions					
Yes	55.8%	7.0%	7.0%	5.1%	74.9%
No	12.1%	7.9%	3.7%	n<5	25.1%
					100.0%
Other farmers					
Yes	8.4%	n<5	n<5		10.2%
No	59.5%	13.5%	10.2%	6.5%	89.8%
	TOTAL EDUCATION LEVEL				
	67.9%	14.9%	10.7%	6.5%	100.0%

N=215.

Source: Generated from study results (2022)

Table 4.3 revealed the communication strategy used by livestock farmers in the GGLM. As stated above, the first observation relates to the level of education attained by livestock farmers, with the majority of the livestock farmers (67.9%) having no formal education, and only a fewer of the livestock farmers (6.5%) having obtained a tertiary education level. Cell phone usage by livestock farmers (requiring minimal education) was however quite high (84.2%) It is unsurprising then that almost three-quarters of the livestock farmers (74.9%) rely on their farmer unions for farming information, followed by radio broadcasts (56.7%). Other farmers (10.2%) and magazines (13.3%) were the least utilised strategies for obtaining market information. Consequently, almost all livestock farmers reported non-use of other farmers (89.8%), followed by those that avoided the use of magazines (87%), leaflets (69.3%) and newspapers (68.8%). It was unsurprising for most livestock farmers not to rely on printed media information since it was found that the majority of them had no formal education.

4.2.3 Descriptive analysis of marketing strategies used by small-scale farmers in the GGLM

Cross-tabulated marketing strategies used by small-scale livestock farmers include promotion, price, place, and products and how they use this marking strategy per year. How often do small-scale livestock farmers use marketing strategies per year? The study revealed that majority of livestock farmers use a price strategy (91.6%), followed by the use of a promotion strategy (75.8%), and lastly, the use of a product strategy once per year (52.5%). It was further revealed that the place strategy was used by small-scale livestock mostly twice per year (60.5%).

Sikundla *et al.* (2018) noted that due to limited market access, livestock farmers and entrepreneurs in rural areas must often travel several kilometres to designated markets. Small-scale livestock farmers frequently rely on intermediaries who normally exploit their ignorance of market information (Sikundla *et al*. 2018).

Table 4.4: Marketing strategies used by small-scale livestock farmers in the GGLM per year

Response	YES	NO	TOTAL
Product strategy			
Once per year	39.1%	13.5%	52.6%
Twice per year	27.4%	0%	27.4%
Thrice per year	12.1%	2.3%	14.4%
Four times per year	5.6%	0%	5.6%
Price strategy			
Once per year	76.3%	15.3%	91.6%
Twice per year	3.7%	1.0%	4.7%
Thrice per year	0%	0%	0%
Four times per year	2.3%	0%	2.3%
Place strategy			
Once per year	13.0%	9.8%	22.8%
Twice per year	55.8%	4.7%	60.5%
Thrice per year	12.6%	0.9%	13.5%
Four times per year	2.8%	0.5%	3.3%
Promotion strategy			
Once per year	65.6%	10.2%	75.8%
Twice per year	10.2%	3.3%	13.5%
Thrice per year	1.0%	1.3%	2.3%
Four times per year	7.4%	2,6%	10%
Total farmers using marketing strategy			
	84.2%	15.8 %	100

n=215.

Source: Generated from study results.

Table 4.4 indicated that small-scale livestock farmers in Greater Giyani Local Municipality (84.2%) as affirmative on the use of marketing strategies. Either, they used it once, twice, thrice or four times per year, while only just a minimal number (15.8%) of the small-scale livestock farmers did not agree (said no) to the use of marketing strategies.

Besides, Table 4.4 revealed that small-scale livestock farmers used product strategy once per year (52.2%). It was further noted that out of those small-scale livestock farmers, some farmers said yes to the use of product marketing strategy (39.1%) and only fewer livestock farmers (13.5%) did not agree to use the product marketing strategy. This was followed by using the product marketing strategy twice per year (27.45%). The use of a product marketing strategy thrice per year by small-scale livestock farmers was minimal (14.4%). Lastly, a minimal portion (5.6%) of the small-scale livestock farmers used the product marketing strategy four times per year.

Table 4.4 also revealed that the price marketing strategy was mostly used once per year (91.6%) by small-scale livestock farmers, majority (76.3%) said yes, and just minimal (9.8%) did not agree to the use of the price marketing strategy once per year on access to high-value markets. Furthermore, Table 4.4 revealed that fewer (4.7%) small-scale livestock farmers used the price marketing strategy twice per year.

Place marketing strategy constitutes of majority (60.5%) of small-scale livestock farmers, with most (55.8%) agreeing to use place marketing strategy and a minimal (4.7%) did not agree to the use of place marketing strategy once per year. The study further revealed that place strategy was used by a minimal portion of small-scale livestock farmers once per year (22.8%).

A promotion marketing strategy was mostly used once per year by three-quarters (75.8%) of small-scale livestock farmers. In terms of distribution between small-scale livestock farmers who said no and yes to the use of promotion marketing strategy, majority of the respondents said yes (65.6%) and only fewer (10.2%) said no once per year. Besides, a minimal number (13.5%) of the small-scale livestock farmers used the promotion strategy twice per. lastly minimal (2.3%) of these respondents used this promotion strategy thrice per year. The study results revealed that majority of small-scale livestock farmers used price strategy (91.6%), promotion strategy (75.8%) and products strategy (52.2%) once per year.

In a study conducted in Nigeria, Okediran (2019) states that agriculture is an information-intensive sector, and there is a continuous need for farmers to have access to the right information, at the right time, in an accurate format, and through the right medium, which in turn can improve broad development of the agricultural high-value chains.

4.2.4 Descriptive analysis for challenges faced by small-scale livestock farmers in the GGLM

Using the SPSS computer programme 28, a cross-tabulation of challenges in Table 4.5 details how the small-scale livestock farmers responded when asked if they strongly agree, agree, disagree, or strongly disagree with challenges described below as one of the challenges they were currently experiencing in livestock farming at the GGLM.

Table 4.5 a: Challenges listed by small-scale livestock farmers in the GGLM based on training qualification in farming

Response	No training in agriculture	Attendance at a workshop	Certificate in Agriculture	Total
Weather condition				
Strongly agree	72.8%	1,6%	6.5%	80.9%
Agree	6.5%	0.0%	0.0%	6.5%
Disagree	6.0%	2.8%	0.5%	9.3%
Strongly disagree	3.3%	0.0%	0.0%	3.3%
Lack of capital				
Strongly agree	25,6%	4.7%	7.0%	37.2%
Agree	50.2%	0.05	0.0%	50.2%
Disagree	10.7%	0.0%	0.0%	10.7%
Strongly disagree	1.9%	0.0%	0.0%	1.9%
Poor financial records				
Strongly agree	10.2%	1.4%	0.05	11.6%
Agree	53.5%	0.0%	0.0%	53.5%
Disagree	21.4%	1.9%	0.0%	23.3%
Strongly disagree	3.3%	2.8%	5.6%	11.6%

N= 215 Source:

Generated from study results.

Table 4.5 b: Challenges listed by small-scale livestock farmers in the GGLM based on training qualification in farming

Unavailability of water				
Strongly agree	40.9%	0.0%	0.0%	40.9%
Agree	42.8%	4.7%	7.0%	54.4%
Disagree	0.0%	0.0%	1,9%	1.9%
Strongly disagree	2.8%	0.0%	0.0%	2.8%
Chemical and pesticides				
Strongly agree	75,3%	1.4%	0.0%	76.7
Agree	9.8%	1.1%	5.8%	16.7%
Disagree	1.1%	1,7%	0.0%	2.8%
Strongly disagree	1.1%	1.9%	0.7%	3.7%
Market information				
Strongly agree	55,8%	0,0%	3.7%	59.5%
Agree	4.2%	1.3%	3.3%	8.8%
Disagree	20.5%	0.0%	0.0%	20.5%
Strongly disagree	7.9%	3.3%	0.0%	11.2%
Far from auction				
Strongly agree	21.9%	0.6%	0.0%	22.5%
Agree	25.6%	0.0%	0.0%	25.5%
Disagree	40.5%	4.7%	6.0%	51.2%
Strongly disagree	0.0%	0.8%	0.0%	0,8%
Lack of training				
Strongly agree	36.3%	0.0%	0.0%	36.3%
Agree	20.9%	4.7%	7.0%	32.6%
Disagree	15.8%	0.0%	0.5%	15.3%
Strongly disagree	15.3%	0.0%	0.0%	15.3%
Transport to auction				
Strongly agree	43.3%	4.7%	7.0%	54.9%
Agree	7.9%	0.0%	0.05	7.9%
Disagree	35.3%	0.0%	0.0%	35.3%
Strongly disagree	1.1%	0.8%	0.0%	1.9%

n=215

Source: Generated from study results.

Table 4.5 C**: Challenges listed by small-scale livestock farmers in the GGLM based on training qualification in farming**

Poor grazing area				
Strongly agree	11.2%	2.3%	0.0%	13.5%
Agree	26.0%	0.0%	0.0%	26.0%
Disagree	19.1%	0.8%	7.0%	27.9%
Strongly disagree	32.1%	0.5%	0.0%	32.6%
Inconsistency in quality and requirement				
Strongly agree	30.7%	3.3%	0.05%	34.0%
Agree	30.2%	1,1%	4.7%	36.%
Disagree	11.6%	0.1%	2.3%	14.0%
Strongly disagree	15.8%	0.0%	0.0%	15.8%
High transport cost				
Strongly agree	11.6%	4.7%	7.0%	23.3%
Agree	67.9%	0.0%	0.0%	67.9%
Disagree	5.6%	0.0%	0.0%	5.6%
Strongly disagree	3.3%	0.0%	0.0%	3.3%
Lack of support from the government				
Strongly agree	75.8%	4.7%	7.0%	85.1%
Agree	3,3%	0.05%	0.0%	3.3%
Disagree	6.5%	0.0%	2.3%	8.8%
Strongly disagree	2.8%	0.0%	0.0%	2.8%
Access to market				
Strongly agree	18.1%	4.7%	7.0%	29.8%
Agree	52.6%	0.0%	0.0%	52.6%
Disagree	13.0%	0.0%	0.0%	13.0%
Strongly disagree	4.7%	0.0%	0.0%	4.7%
Drought and disease				
Strongly agree	59.1%	4.7%	5.1%	68.8%
Agree	16.7%	0.0%	0.0%	16.7%
Disagree	4.2%	1.1%	0.75%	6.0%
Strongly disagree	4.7%	0.0%	0.0%	4.7%

n=215

Source: Generated from study results.

Table 4.5 d: Challenges listed by small-scale livestock farmers in the GGLM based on training qualification in farming

Access to animal health				
Strongly agree	60.5%	4.7%	7.0%	72.1%
Agree	10.2%	0.0%	0.0%	10.2%
Disagree	14.0%	0.0%	0.0%	14.0%
Strongly disagree	3.7%	0.0%	0.0%	3.7%
Training qualification in farming				
	88.4%	4.7%	7.0%	100%

n=215.

Source: Generated from study results.

It was observed in Table 4.5 (a, b, c, and d) that majority (88.4%) of the small-scale livestock farmers had no training in agriculture, followed by those that had once attended a workshop in agriculture (47%), and lastly, those that had a certificate in agriculture (7.0%). This shows that the majority had no formal training in rearing livestock. The study revealed that majority of small-scale livestock farmers have a lack of government support (85.1%), weather conditions (80.95%), access to animal health (72.1%), drought and diseases (68.8%), market information (59.5%), transport to the auction (54.4%) and a lack of training (36.35%), were statements that were strongly agreed upon as some of the challenges faced by small-scale livestock farmers in GGLM.

The following was agreed upon as one of the challenges currently experienced by small-scale livestock farmers in GGLM: high transportation cost (67.9%), unavailability of water (54.9%), poor financial records (53.5%), access to markets (52.6%) and inconsistency in quality and supply requirements (36%). Far from the auction (51.2%) and poor grazing area (32.6%), small-scale farmers respectively disagreed and strongly disagreed with them as the challenges they were facing in the GGLM concerning access to the high-value markets.

In Mexico, Borbolla-Perezo *et al.* (2017) showed that most of the challenges faced by small-scale farmers resulted from the lack of training to improve the production of livestock. A study conducted in the Limpopo Province indicated that market participation by small-scale farmers was hindered by challenges such as a lack of access to finance, in-farm infrastructure, and a location far away from the markets,

as well as poor access to infrastructure and market information (Nkadimang, 2019). This was in agreement with KO (2021), Okediran (2019), and Mapiye *et al.* (2018).

A study conducted in Free State, South Africa, indicated that the high cost of fuel and transportation, poor market price, competition, a lack of equipment and grazing land management, animal health, animal loss and water supply impact negatively on livestock production (Nkonki-Mandleni *et al.*, 2019).

4.3 Inferential statistical analysis

4.3.1 Socio-economic characteristics of small-scale livestock farmers that have an impact on their accessing high-value markets for livestock

Table 4.6 reflects the impact of various socio-economic factors such as gender, age of the respondent, marital status, level of education, and household size on access to high-value markets. As reflected in that section, access to high-value markets (the dependent variable) was to be determined based on whether farmers sold their livestock at auction markets (category 1) or otherwise (category 0).

Table 4.6: Logistic regression results for the impact of socio-economic characteristics of small-scale farmers on access to high-value markets (auctions) in the GGLM

Independent variable	B	S.E.	Wald	Df	Sig.	Exp (B)
Female gender (1)	0.388	0.589	0.434	1	0.510	1.475
Young adults (1)	2.022	1.149	3.096	1	0.078 *	7.556
Adults (2)	1.211	0.668	3.289	1	0.070 *	3.356
Elderly (3)	1.330	0.635	4.386	1	0.036 * *	3.779
Educational level (1)	-1.052	0.581	3.284	1	0.070 *	0.349
Educational level (2)	-0.644	0.655	0.965	1	0.326	0.525
Educational level (3)	18.930	10485.83	0.000	1	0.999	166457282.358
Household size (1)	-0.770	0.529	2.117	1	0.146	0.463
Household size (2)	-2.187	1.120	3.813	1	0.051 *	0.112
Constant	1.234	.556	4.923	1	0.027 * *	3.434
Model summary						
(-2) Log likelihood	144.900					
Cox & Snell R Square	0.111					
Accuracy of prediction: overall ()	86.5%					
Nagelkerker R Square	0.202					

Take note that the symbols: **, and * denote significance levels at 5%, and 10%, respectively.

Source: Survey findings

A -2Log likelihood of 144.900 in Table 4.6 indicates the null hypothesis was accepted. Cox and Snell R-square showed good data fit. Any Cox and Snell R square value less than 1 indicated a good data model fit. Nagelkerke value of 0.202 indicated an 86.5% relationship between independent and dependent variables. A higher Nagelkerke value indicated a more consistent measure of dependent-independent relationships. The results showed that household size affected access to high-value markets by small-scale livestock farmers. Also, age helped access high-value markets. Below are all the important variables.

a) Age of farmers

The age groups of 36-55 years and 56-65 years were significant at 10% level of significance, whilst, the age group above 65 years (elderly people) was significant at 5% level of significance. This meant that age had a direct influence on access to high-value markets by small-scale livestock farmers in the GGLM. This variable was found to be significant at 5% and 10% levels of significance with a positive coefficient of 2.003, 1.211, and 1.330, respectively. The positive coefficient may indicate that the older the farmers, the higher the possibility of access to the high-value markets by livestock small-scale farmers in the GGLM.

b) Household size

The household size which was above 10 people per household had an indirect influence on access to high-value markets by the small-scale livestock farmers in the GGLM. This variable was found to be significant at 10% level of significance with a negative coefficient of -2.187 when compared to access to high-value markets by small-scale livestock farmers. The negative coefficient may suggest that with larger-sized households, there is less access to high-value markets. Similarly, Mayikiso (2021) previously indicated that household size is significant in accessing high-value markets.

c) Level of education

The level of education of the small-scale livestock farmers that had attained a primary school level was found to be negative -1.052 and statistically significant at 10% level (Table 4.6). This indicates that as the level of education increased, there was a higher likelihood of access to high-value markets by small-scale livestock

farmers in the GGLM. Oduniyi *et al.* (2021), Sarker *et al.* (2021), Hlatshwayo *et al.* (2021), and Amara *et al.* (2019) all agreed that the participation of farmers in high-value markets was significantly affected by age, household size, level of education, years of farming and difficulty accessing high-value markets.

4.3.2 Channels of communication used by small-scale farmers in accessing high-value livestock markets

Table 4.7: Inferential statistical analysis of different channels of communication used by small-scale farmers in the GGLM

	B	S.E.	Wald	Df	Sig.	Exp(B)
Cell phone	19.859	6557.039	0.000	1	0.998	421342420.579
Other farmers	0.298	0.868	0.118	1	0.731	1.347
Radio	0.380	0.652	0.339	1	0.560	1.462
Television	-1.907	0.797	5.725	1	0.017 **	0.148
Newspaper	0.639	0.570	1.257	1	0.262	1.895
Magazine	0.852	0.677	1.584	1	0.208	2.343
Leaflets	-0.364	0.879	0.171	1	0.679	0.695
Farmer unions	1.157	0.621	3.467	1	0.063 *	3.180
Cooperate	-0.175	0.702	0.062	1	0.804	0.840
Extension worker	19.206	4148.925	0.000	1	0.996	219212970.941
Agent	1.273	0.717	3.155	1	0.076 *	3.571
Constant	-41.090	7759.404	0.000	1	0.996	0.000
Model summary						
(-2)Log likelihood	92.216					
Cox & Snell R Square	0.304					
Accuracy of prediction: overall	88%					
Nagelkerker R Square	0.557					

Take note that the symbols: **, and * denote levels significance at 5%, and 10%, respectively.

Source: Survey findings

Based on the summary of the model provided in Table 4.7, a -2Log likelihood of 92.216 indicated a probability at which it was determined that the null hypothesis was incorrect. The Cox and Snell R-square was 0.304, which indicated that the

model was a good job of fitting the data. This is because a value of the Cox and Snell R square that is less than 1 indicates that the model does a good job of fitting the data. The value of Nagelkerke was 0.557, and this indicated that there was a strong relationship to the extent of 88% between the independent variables and the dependent variables. A higher Nagelkerke value indicates a more consistent measurement of the relationship between the dependent variable and the independent variable. When compared to access to high-value markets, the findings demonstrated that television was associated with a negative influence. On the other hand, farmers' unions and agents/intermediates had a positive influence on the farmers' ability to access high-value markets. Below, each of the significant variables was broken down into greater detail.

a) Use of television

The use of television had a negative influence on access to high-value markets by small-scale livestock farmers in the GGLM. This variable was found to be significant at 5% level of significance with a negative coefficient of -1. The negative coefficient may suggest that with the use of television to market their products, there will be reduced access to high-value markets.

b) Use of farmer unions

The use of farmers' unions had a positive influence on access to high-value markets by small-scale livestock farmers in the GGLM. This variable was found to be significant at a 10% level of significance with a positive coefficient of 1.157. The positive coefficient may suggest that with the use of farmers' unions to market their products, there is an increased possibility of access to high-value markets.

c) Use of agent/intermediaries

The use of agents/intermediaries directly influenced access to high-value markets by small-scale livestock farmers in the GGLM. This variable was found to be significant at 10% level of significance with a positive coefficient of 1.273. The positive coefficient may suggest that, with the use of agents/intermediaries to market their products, there is a higher possibility of accessing high-value markets.

4.2.3 Marketing strategies used by small-scale farmers to access high-value markets

Table 4.8: Logistic regression results on how different marketing strategies used per year by small-scale farmers in GGLM impact their access to high-value markets (auctions)

Strategy	No. of times	B	S.E.	Wald	Df	Sig.	Exp(B)
Product	Twice (1)	3.009	1.079	7.771	1	0.005***	20.261
	Thrice (2)	1.593	0.846	3.545	1	0.060**	4.917
	Four times (3)	-3.590	1.239	8.391	1	0.004***	0.028
Price	Twice (1)	0.362	1.334	0.074	1	0.786	1.436
	Thrice (2)	-21.268	20096.485	0.000	1	0.999	0.000
	Four times (3)	-1.627	32755.093	0.000	1	1.000	0.197
Place	Twice (1)	-2.454	0.812	9.136	1	0.003***	0.086
	Thrice (2)	2.492	1.922	1.681	1	0.195	12.089
	Four times (3)	20.040	28420.721	0.000	1	0.999	505031112.676
Promotion	Thrice (2)	-1.325	1.335	.985	1	0.321	0.266
	Four times (3)	-2.272	1.532	2.199	1	0.138	0.103
Constant		3.435	0.767	20.050	1	<0,001	31.017
Model summary							
(-2)Log likelihood		110.853					
Cox & Snell R Square		0.241					
Accuracy of prediction: overall ()		86.60%					
Nagelkerker R Square		0.441					

Note that the symbols: ***, **, and * denote significance levels at 1%; 5%, and 10%, respectively.

Source: Survey findings

According to the model summary in Table 4.8, there is a probability that the null hypothesis was rejected -2Log likelihood of 110.853. A good model fit for the data is indicated by the Cox and Snell R-square value of 0.241. The dependent variable and independent variables had a strong relationship of 86.6%, as indicated by the

Nagelkerke value of 0.441. Additionally, a higher Nagelkerke value denotes a more accurate way to quantify the correlation between dependent and independent variables. The findings showed that product strategy twice and thrice per year positively impacted access to high-value markets, whereas product strategy four times per year and place strategy twice per year negatively impacted access. The following provides a detailed explanation of each important variable.

a) Product strategy

The use of product strategy as defined in section 2.4 twice per year to market agricultural products had a positive influence on access to high-value markets by small-scale livestock farmers in the GGLM. This variable was found to be significant at 1% level and had a positive coefficient of 3.009. The positive coefficient may suggest that with the use of the product strategy, marketing a product twice per year has an impact on access to high-value markets.

In addition, applying the product strategy thrice per year had a positive impact on accessing high-value markets. The variable was found to be significant at 10% level with a positive coefficient value of 1.590. The implication could be that with the use of this strategy three times per year, their access to high-value markets could also be increased although at a lower value compared to using the strategy twice a year. The latter was confirmed by the observation that the use of the product strategy four times a year significantly 5% level reduced access to high-value markets by small-scale livestock farmers.

b) Place strategy

Application of the place strategy twice per year indirectly influenced access to high-value markets by small-scale livestock farmers in the GGLM. This variable was found to be significant at 1% level with a negative coefficient value of -2.454 when compared to access to high-value markets. The negative coefficient may suggest that, with the use of a place strategy twice per year to market their products, there is less possibility of access to high-value markets.

4.2.4 Challenges faced by small-scale farmers in producing and marketing agricultural products

Table 4.9: Likert-scale analysing challenges experienced by small-scale farmers in producing and marketing agricultural products used in GGLM

Statement	Strongly agree	Agree	Disagree	Strongly disagree
17. Weather condition	80.9%	6.5%	9.3%	3,3%
18. Lack of capital	37.2%	50.2%	10.7%	1.9%
19. Poor financial records	11.6%	53.5%	23.3%	11.6%
20. Unavailable of water	40.9%	54.4%	1.9%	2.9%
21. Chemicals and pesticides	76.7%	16.7%	2.8%	3.7%
22. Markets information	59.5%	8.8%	20.5%	11.2%
23. Far from the auction	22.8%	25.5%	51.2%	0.5%
24. Lack of training	36.3%	32.6%	15.8%	15.3%
25. Transport to auction	54.9%	7.9%	35.3%	1.9%
26. Poor grazing area	13.5%	26.0%	27.9%	32.8%
27. Inconsistency in quality and supply requirement	34.0%	36.3%	14.0%	15.8%
28. High transportation costs	23.3%	67.9%	5.6%	3.3%
29. Lack of support from the government	85.1%	3.3%	8.8%	2.8%
30. Access to markets	29.8%	52.6%	13.0%	4.7%
31. Drought and disease	68.8%	16.7%	6.0%	8.4%
32. Access to animal health	72.1%	10.2%	14.0%	3.7%

n=215

Sources: Research survey results.

The results obtained indicated that the majority of small-scale livestock farmers in the GGLM strongly agreed that the following challenges were affecting their livestock production activities (Table 4.9):

- Weather conditions (80.9%)
- Lack of support from the government (85.1%)
- Availability of chemicals and pesticides (76.7%)
- Lack of access to animal health (72.1)
- Prevalence of drought and diseases (68.8%)
- Markets information (59.5%)
- Transport to auctions (54.9%)

Some of the above constraints were noted by Ullmann and Grimm (2021) who stated that the participation of small-scale farmers in high-value markets is constrained by many challenges which farmers have to consider. A variety of impediments to market participation were identified, including a lack of access to finance, on-farm infrastructure, market information, and barriers to entrance and training (Ullmann & Grimm, 2021).

4.5 Discussion of results

This section discusses the results of the study in context with the literature.

4.5.1 Socio-economics characteristics of small-scale livestock farmers in the GGLM

It was revealed that majority of small-scale livestock farmers in the study area were male (62.8%). The dominance of males confirmed the findings of an earlier study by Setshedi and Modirwa (2020). In terms of age spread most, (45.1%) of the small-scale livestock farmers were elderly people (above 65 years old) who were in the majority. The latter finding is of concern as people who are 65 years and above are supposed to be pensioners in South Africa. In contrast, it was previously found that the majority of small-scale farmers were mostly around 40 years old or above (Setshedi & Modirwa, 2020).

The study further revealed that majority (67.9%) of the livestock small-scale farmers in the GGLM had no formal education, with mainly male participants who were dominant (37.2%). A study by Mauti (2021) confirmed that socioeconomic factors such as age, educational level, market distance, and knowledge were a factor in access to high-value markets. Youth participation in livestock farming was disappointing (12.1%), and people with tertiary education were quite minimal (6.5%). This was in partial agreement with Myeni *et al.* (2019) who also confirmed the low participation of youth in the agricultural sector.

The study further revealed that minimal livestock farmers in GGLM were married (32.1%), while fewer (29.9%) were divorced. The study also revealed that most of the participants' household size was less than five per family (71.2%) and fewer were from (27%) families of sizes 5 to 10. Most male farmers were highlighted as heads of households.

Inferential statistical analysis revealed that young adults and elderly small-scale livestock farmers significantly impacted on access to high-value markets. This shows that age has a direct influence on access to high-value markets by small-scale livestock farmers in the GGLM. For the impact of educational level attained by farmers on accessing high-value markets, the variable, primary educational level, was found to be negatively significant at 5% level of significance thus reflecting that it indirectly influenced access to the high-value markets.

4.5.2 Different communication used by small-scale farmers in GGLM

The study's descriptive statistics revealed that small-scale livestock farmers in GGLM obtained information about the markets mostly through cell phones (84.2%), farmers' unions (74.9%), extension workers (62.3%), and radio (56.7%). In the study, the majority of the farmers had no formal education, and it was unsurprising that they were depending more on word of mouth than on written information about the markets.

The study further revealed that farmers did not trust information from other farmers because the majority of small-scale farmers (89.8%) responded negatively to obtaining information from other farmers. A study conducted in Kenya by Mauti (2021) confirmed the effect of the use of ICT on the choice of marketing channels and market access in the marketing of agricultural products among small-scale farmers who had access to market information through the use of mobile phones, radios, and televisions. Furthermore, Sikundla *et al.* (2018) confirmed that mobile phones can be used to provide information to farmers and rural households through SMS and multimedia support systems.

Inferential statistical analysis revealed that the use of television was significant at 5% significance level, and it had a negative influence on access to high-value markets. Farmers' unions and agents were significant at 5% and 10% levels of significance, with a positive influence on access to the high-value markets by small-scale livestock farmers in the GGLM. This concluded that most GGLM small-scale farmers depended on the traditional way of obtaining information about the markets.

Similarly, Sikundla *et al.* (2018) noted that when there is the predominance of limited market access, particularly in rural areas, it often necessitates farmers and

entrepreneurs to travel several kilometres to designated markets due to poor communication facilities.

4.5.3 Different marketing strategies used by small-scale farmers to access high-value markets

The study revealed that the majority of livestock farmers in the study area use a price strategy (91.6%), a promotion strategy (75.8%), and a product strategy (52.6%) once per year respectively. Place strategy was used mostly twice per year (60.5%). Thabit and Raewf (2018) confirmed that the four variables of marketing strategies are interconnected. By increasing the product's price, the product demand will decrease, and lesser distribution points will be desired (Thabit & Raewf, 2018). Finally, the overall marketing strategies can result in dynamic modelling based on customer feedback for improving a product, and the same product can then be launched as the upgraded product, in addition, to enhancing the quality of marketing accountability (QMA) (Thabit & Raewf, 2018).

The inferential statistical analysis revealed that product strategy was significant at 1% and 5% levels of significance, twice and thrice, respectively, and had a positive influence on access to high-value markets. Place strategy was significant at 1% level of significance and had a positive influence on access to high-value markets. The study revealed that product strategy was the strategy used by small-scale farmers in the study area. Place strategy was significant when used twice per year. Rana and Maharjan (2022) revealed that participation in large wholesale markets had a positive effect on producer prices.

4.5.4 Challenges experienced by small-scale farmers in producing and marketing agricultural products used in the GGLM

In the descriptive analysis when cross-tabulating the training of farmers in agriculture with challenges incurred, the following challenges were listed by small-scale farmers: a lack of support from the government (85.1%), weather conditions (80.9%), chemicals and pesticides (76.7%), access to animal health (72.1%), drought and disease (68.8%), market information (59.5%), transport to the auction (54.9%) and a lack of training (36.3%). A study conducted in Mexico showed that most of the challenges and limitations referred to by small-scale farmers resulted from the lack of

training to improve production, processing and marketing (Borbolla-Perez *et al.,* 2017).

Farmers strongly agreed with the lack of support from the government, weather conditions, chemicals and pesticides, access to animal health, drought and disease, market information, transport to the auction, and a lack of training as the major challenges currently experienced in the GGLM. These challenges harmed the production of livestock and their end products. The study further revealed that farmers agreed with the statements that unavailable water (54.4%), lack of financial records (53.5%), access to the markets (52.6%) and lack of capital (50.2%) were current challenges faced by small-scale livestock farmers in the GGLM. A variety of impediments to market participation were identified, including a lack of access to finance, on-farm infrastructure, market information, and barriers to entrance and training (Ullmann & Grimm, 2021).

The majority of small-scale farmers disagreed that being far from an auction was a challenge. In contrast, Ndlovu and Masuku (2021) discovered that small-scale farmers had restricted access to formal markets as a result of their limited knowledge of and ability to satisfy the requirements of the markets. Ndlovu and Masuku (2021) further confirmed that having poor marketing skills, institutional support services, and limited access to arable land, have direct negative effects on achieving livelihood outcomes. Small-scale farmers are mostly located far away from the markets and have poor access to infrastructure (KO, 2021).

4.6 conclusion

Chapter 4 highlighted the descriptive analysis of the four objectives. The chapter also covered the inferential statistical analysis of the first three objectives, and lastly, the Likert-scale analysis of objective four.

Chapter 5: Summary, conclusion and recommendations

5.1 Summary

Below is a summary of the major findings based on the study objectives:

- To determine the socio-economic characteristics of small-scale livestock farmers that have an impact on accessing high-value markets.

  The study revealed that the majority of the small-scale livestock farmers in the GGLM were male (62.8%) and elderly people (above 65 years) (45.1%). The study further revealed that the majority (67.9%) of the livestock farmers in the GGLM had no formal education. Youth participation in livestock farming was disappointing (12.1%).

  Inferential statistical analysis revealed that young adults and elderly small-scale livestock farmers were all significant and had a direct influence on access to high-value markets.

- To explore different channels of communication used by small-scale farmers in accessing high-value livestock markets.

  The study's descriptive statistics revealed that small-scale farmers in GGLM obtained information about the markets mostly through cell phones (84.2%), farmers' unions (74.9%), extension workers (62.3%), and radio (56.7%). As noted in the study, the majority of farmers had no formal education level, so it was unsurprising that they were depending more on word of mouth than on written information about the markets.

  Inferential statistical analysis revealed that the use of television was significant and had a negative influence on access to high-value markets. Furthermore, the study revealed that farmers' unions and agents were all significant and had a positive influence on access to the high-value markets by small-scale livestock farmers in GGLM, which meant that most GGLM small-scale farmers depended on the traditional (word of mouth) way of obtaining information about the markets.

- To explore different marketing strategies used by small-scale farmers on accessing high-value markets.

  The study revealed that the majority of livestock farmers in the study area used price strategy (91.6%), promotion strategy (75.8%) product strategy (52.6%) once per year. Place strategy was mostly used twice per year (60.5%).

  Product strategy was significant at 1% and 5% levels of significance and had a positive influence on access to high-value markets.

- To identify challenges faced by small-scale farmers in producing and marketing agricultural products.

  The study revealed the challenges as lack of support from the government (85.1%) weather conditions (80.9%), chemicals and pesticides (76.7%), access to animal health (72.1%), drought and disease (68.8%), market information (59.5%) and transport to the auction (54.9%).

  The study further revealed that farmers agreed with the statements that unavailability of water (54.4%), poor financial records (53.5%), access to the markets (52.6%) and a lack of capital (50.2%), were challenges currently faced by small-scale livestock farmers in GGLM. The majority of small-scale farmers disagreed that being far from an auction is a current challenge. Small-scale livestock farmers strongly agreed with the listed challenges as major current challenges in the GGLM.

5.2 Conclusion

- It was revealed in the study area that most of the small-scale farmers were male and had no formal education. It was not astounding that most of the participants had no formal education because agriculture is usually associated with manual labour, and most of the young people do not want to be associated with it. Besides, most old people did not attend formal education due to the apartheid era where black people were disadvantaged to access formal education.
- It was revealed in the study that the majority of small-scale farmers relied on cell phones (84.2%), farmers' unions (74.9%), extension workers

(62.3%) and radios (56.7%) when communicating or passing on information about the markets. Since most of the livestock farmers were old people, it was unsurprising that they depended on the use of the word of mouth to communicate because they were not exposed to technological methods of communication. This was expected because most of the livestock farmers had no formal education, and they were not exposed to technological channels of communication.

- The study revealed that price strategy (91.6%), promotion strategy (75.8%) and product strategy (52.6%) were used once per year respectively by small-scale farmers on access to high-value markets. Since farmers did not keep records, it was unsurprising that almost all depended on price strategy to market their products because it was easy for them to remember the price they last sold their products (livestock). It is commonplace that most farmers sell their products when there is a need to sell it, for example, they might want to send their children to school or there is a funeral or something that is is pushing them to sell the products. In the study area, there is a monopoly (one buyer and many sellers) market where farmers can sell their products to 'one buyer' if they want a good price.
- A lack of support from the government (85.1%), weather conditions (80.9%), chemicals and pesticides (76.7%), access to animal health (72.1%), drought and disease (68.8%), markets information (59.5%), transport to the auction (54.9%) and a lack of training (36.3%) were major challenges highlighted in the study. The study highlighted many factors such as barriers to accessing high-value markets, staying far from the government office, staying far from the market and poor road infrastructure. Livestock produced was below the market set standards due to bad weather, drought and diseases. Since GGLM is one of the dry regions with below average rainfall due to poor weather, their livestock quality is usually below the market-set standards, which affects farmers negatively because they have to sell their products at very low prices. The study area was a red zone (foot and mouth zone), which made it even harder for farmers to sell their products outside of their area.

5.3 Recommendation

- The findings from the study revealed that there were more elderly males (above 65 years), who had no formal education and were actively involved in agriculture. This study recommends the involvement of youth and improving the educational achievement of livestock farmers. Since the Department of Basic Education has a programme for people who never attended school to obtain an Adult Basic Education and Training (ABET) certificate, livestock farmers should be encouraged to enrol in such programmes. Farmers can also enrol for Kha RI Gude Adult Literacy Programme (KGALP) whose main objective is to educate adults. The Department of Agriculture, Land Reform and Rural Development is encouraging the youth to be job creators. It will be wise for young people to start taking part in livestock farming.
- The study revealed the challenges facing the farmers as weather conditions, chemicals and pesticides, market information, a lack of support from the government, a lack of training, access to animal health, drought and disease, and transport to the auction. Since farmers are currently facing many challenges when accessing high-value markets, the farmers and agricultural advisors should have a good working relationship. Farmers should be encouraged to frequently visit the Department of Agriculture and Rural Development for information about the markets, funding programmes, and how to access high-value markets.

  Farmers should be aware that they are in a red zone, so they must know that their livestock is either a carrier or infected with foot and mouth disease. The Department of Agriculture and Rural Development should make public awareness about the outbreak of foot and mouth disease and should encourage farmers to take care of their livestock's health by vaccinating that livestock and burning carcasses. If they found the animals dead, they should run the tests and call a veterinary officer for medical advice. It was indicated that GGLM is a dry region which negatively affects livestock farmers. Farmers should buy supplement feeds for their livestock during a period of shortage of feeds. Livestock farmers must take precautionary measures in terms of animal health and feeding. Besides, farmers are advised to buy medication for their livestock. Also, small-scale livestock farmers should be encouraged

to grow artificial pastures to reduce pressure on the natural veld and make fodder available throughout the year. Moreover, government should provide aid with distribution policies that will guarantee that all small-scale livestock farmers can benefit.

5.4 Potential future studies

- Future studies could focus on animal health and stock theft since the study area is a red zone.

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http://www.googlemaps.

Appendix1: SURVEY QUESTIONNAIRE

.

I am Kulani Tyrone Nyamazana from the College of Agriculture and Environmental Sciences at UNISA. I am hereby researching the following topic: an assessment of factors that impact small-scale farmers' access to high-value livestock markets in the Greater Giyani Local Municipality, Limpopo Province, South Africa**.** You are humbly requested to participate in this study but note that you are not forced to do so and may indicate at any time when you need to rest or discontinue this research. Your name will never be divulged to anybody while your input will be summarised with that of other participants to produce a general report that will be presented to all participating farmers and interested stakeholders. We only request your cell phone number for ease of contact in case we require further information from you.

Thank you for agreeing to participate.

Signed:

Respondent: _____Date: _____

Researcher: _____Date_____

The contact number of the respondent: _____

Tick in the appropriate box [√]

A. Socioeconomic characteristics of farmers

A.1. Gender: of person farming

0. Male	1. Female

A. 2. Age:

Age spread	**Code**
18 to 35 (youth)	0
36 to 55 (young adults)	1
56-65 (Adults)	2
Above 65 (Elderly)	3

A. 3 Racial group:

Racial group	**Code**
Black	0
Coloured	1
Indian	2
White	3

A.4. Marital status:

Status	Code
Single	1
Married	2
Divorced	3
Widow	4
Cohabiting	5

A.5. Educational level:

Education level	**Code**
No formal education	0
Primary education	1
Secondary education	2
Tertiary education	3

A.6. Training qualification in farming e.g. degree (name): _____

Qualification	Code
No training in agriculture	1
Attendance to workshops	2
Certificate in Agriculture	3
Diploma in Agriculture	4
Degree in Agriculture	5
Other: Name	6

A.7. Head of the family

Yes [ ] No [ ]

A.8. Household size.

Less than 5 [ ] 5-10 people [ ] over 10 people [ ]

A.9. Livestock farming income

Livestock Units	The number at the beginning of the year	Number of new livestock (birth)	Number bought	Total for the year	Number sold	Selling Price (R)	Gross Income generated
Cattle							
Goats							
Poultry							
Sheep							
Pigs							
Other (name)							

A.10. Experience in farming

Less than a year [ ] 2-5 [ ] 6-10 [ ] more than 10 years [ ]

A.12. other sources of income (tick)

[ ] salaried employment

[ ] business

[ ] social grants

[ ] Other

A.11. Number of employees employed in the farm

Below 5 employees [ ] 5-10 employees [ ] over 10 employees [ ]

A.12. Access to extension worker in a month

No access	
Once per month	
More than once per month	

A.13. Keeping farm records

No record [ ] keep records [ ]

B. Methods of communication

B1 Method of communication	**Use of method**	
	Yes	**No**
B1.1 Cell phone		
B1.2 Other farmers		
B 1.3 Radio		
B 1.4 Television		
B 1.5 Newspaper		
B 1.6 Magazine		
B 1.7 Leaflets		
B 1.8 Farmer unions		
B 1.8 Cooperative		
B 1.9 Extension worker		
B 1.10 Agent/intermediaries		

B2. Communication methods used by small-scale farmers to receive information about the following, tick the one you use.

	ICT	Printed media	Agent/ intermediaries	Extension worker
B 2.1 Provision of information				
B 2.2 Pest and disease diagnosis				
B 2.3 Different markets				
B 2.4 Demand and supply of agricultural products				
B 2.5 New breeds				

N.B. printer media includes magazines, newspapers, and leaflets. ICT: includes cell phones, social media, and online.

C. Marketing strategies

C.1

Marketing Strategy	**Number of times used in a year**
C 1.1 Letting customers know of the various livestock that is kept such as cattle, goats	
C 1.2 Selling livestock at prices that do not look expensive e.g. R4 999 instead of R5 000 (Price strategy)	
C 1. 3 Selling livestock along major roads during festive seasons (Place strategy	
C 1.4 Inviting potential customers to demonstrations of livestock on-farm e.g. at shows (Promotion strategy)	

C. 2 indicates how you are currently selling your livestock

Where livestock is sold	Code
Mostly at Auctions	1
Others (directly to customers, butcheries, etc.)	2

C.3 How much are the products at the local markets [ ], national markets [ ], and international markets [ ]

C.4. Marketing channels (rank by order of importance: 1 most frequently used, 2 moderately used, 3 never used

C 4.1 Farm gate marketing	
C 4.2 Stock sales/ livestock auction	
C 4.3 Direct/ contract	
C 4.4 Internet marketing	

C.5. Distance from the markets

Local market [ ] national market [ ] international market [ ]

D. Challenges you are currently experiencing:

	Strongly agree	Agree	Disagree	Strongly disagree
D1.1 Weather condition				
D1.2 Lack of capital				
D1.3 Poor financial records				
D1.4 Available water				
D1.5 Chemicals and pesticides				
D 1.6 Market information				
D 1.7 Far from the auction				
D 1.8 Lack of training				
D1.9 Transport to auction				
D 1.10 Poor grazing area				
D1.11 Inconsistency in quality and supply requirement				
D 1.12 High transportation cost				
D 1.13 Lack of support from the government				
D 1.14 Access to market				
D1.15 Drought and disease				
D 1.16 Access to animal health				

D.2 List other challenges you are currently facing

_____

_____

_____

_____

_____

_____

_____

Appendix 2: Ethical clearance

UNISA

UNISA-CAES HEALTH RESEARCH ETHICS COMMITTEE

Date: 04/03/2022

NHREC Registration # : REC-170616-051
REC Reference # : 2022/CAES_HREC/022
Name : Mr KT Nyamazana
Student #: 58066888

Dear Mr Nyamazana

Decision: Ethics Approval from 03/03/2022 to 28/02/2025

Researcher(s): Mr KT Nyamazana
kulaninyamazana@gmail.com; 078-877-9704

Supervisor (s): Prof PK Chauke
chauke5511@gmail.com; 079-496-3140

Mr MJ Mamashila
mamasmj@unisa.ac.za; 011-471-2440

Working title of research:

An assessment of factors that impact small-scale farmers' access to high-value livestock markets in the Greater Giyani local municipality, Limpopo Province, South Africa

Qualification: MSc Agriculture

Thank you for the application for research ethics clearance by the Unisa-CAES Health Research Ethics Committee for the above mentioned research. Ethics approval is granted for three years, **subject to submission of yearly progress reports. Failure to submit the progress report will lead to withdrawal of the ethics clearance until the report has been submitted.**

The researcher is cautioned to adhere to the Unisa protocols for research during Covid-19.

Due date for progress report: 28 February 2023

The progress report is available on the college ethics webpage: https://w2.unisa.ac.za/www.unisa.ac.za/sites/corporate/default/Colleges/Agriculture-%26-Environmental-Sciences/Research/Research-Ethics.html

University of South Africa
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PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
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Appendix 3: permission to conduct a study

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
AGRICULTURE AND RURAL DEVELOPMENT

Ref: 12R
Enquiries: Dr T. Raphulu 20 January 2022

Nyamazana Kulani Tyrone (58066888)
University of South Africa

RE: APPLICATION TO CARRY OUT RESEARCH UNDER THE DEPARTMENT OF AGRICULTURE & RURAL DEVELOPMENT: GREATER GIYANI LOCAL MUNICIPALITY.

1. Kindly take note that your request to conduct research titled "*An assessment of factors that impact small-scale farmers' access to high-value livestock markets in the Greater Giyani Local Municipality, Limpopo Province, South Africa.*", has been granted. The permission to conduct research is valid from 24th January 2022 to 30th November 2022 and entails interviewing livestock farmers in Greater Giyani Local Municipality.

2. It is your responsibility, in conjunction with your institution to ensure that all research activities carried out comply with the laws and regulations of South Africa e.g. human and animal subjects, copyright and intellectual property protection, and other regulations or laws, as appropriate.

3. The Research team is required to conform to lockdown regulations in order to mitigate the spread of COVID 19.

4. The Department is prepared to embark on any activity that could assist our livestock farmers to improve farming systems and production at large.

5. Kindly take note that you will be expected to hand over a copy of your final report to the Department for record purposes as well as for reporting. You may also be invited to share your findings in the Departmental Research Forum.

6. Hoping that you will find this in order.

Kind regards

Dr. T. Raphulu
Chairperson: Research Committee

20/01/2022
Date

67/69 Biccard Street, POLOKWANE, 0700, Private Bag X9487, Polokwane, 0700
Tel: (015) 294 3135 Fax: (015) 294 4512 Website: http://www.lda.gov.za

The heartland of Southern Africa - development is about people!

Appendix 4: Editor's certificate

103 Kieser Street
Rietondale
Pretoria
Gauteng
0084
South Africa

15 November 2022

To Whom It May Concern,

RE: Language Editing of MSc thesis to be Submitted

This letter serves as confirmation that the thesis titled below, has undergone professional language editing. The following items were reviewed and corrected: spelling, grammar, punctuation, sentence structure, and phrasing of the document.

Title: 'An assessment of factors that impact small-scale farmers' access to high-value livestock markets in the Greater Giyani Local Municipality, Limpopo Province, South Africa.'

Author: Kulani Tyrone Nyamazana

Copies of the manuscript with markup can be made available upon request. Should you require further information, kindly contact me on AbedaDawood7@gmail.com.

Yours Sincerely,

Abeda Dawood
Academic Editor
(Professional Editors' Guild Membership No: DAW005)

Appendix 5: Editor's certificate

Registered with the South African Translators' Institute (SATI)

Reference number 1000686

SACE REGISTERED

20 June 2023

FACTORS IMPACTING SMALL-SCALE FARMERS' ACCESS TO HIGH-VALUE LIVESTOCK MARKETS IN THE GREATER GIYANI LOCAL MUNICIPALITY, LIMPOPO PROVINCE, SOUTH AFRICA

This serves to confirm that I edited substantively the above document including a Reference list. The document was returned to the author with various tracked changes intended to correct errors and to clarify meaning. It was the author's responsibility to attend to these changes.

Yours faithfully

Dr. K. Zano

Ph.D. in English

kufazano@gmail.com/kufazano@yahoo.com

+27631434276