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VALUE CHAIN ANALYSIS OF SMALLHOLDER BROILER FARMING IN BUFFALO CITY MUNICIPALITY, EASTERN CAPE PROVINCE OF SOUTH AFRICA

By

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DECLARATION

I, Mphana Zimi, hereby declare that the research reported in this dissertation is a product of my original work. This dissertation has not been previously submitted for a degree at the University of Fort Hare or elsewhere. All the sources used have been cited and acknowledged accordingly.

(Miss) Z Mphana — 22 November 2024

…… ……..

(Title) Initial & Surname **Date**

(Dr) Anele Mayekiso — 22 November 2024

……. ……

Supervisor **Date**

DEDICATION

This dissertation is dedicated to:

My mother, Ntombifikile Beauty Mphana;

My daughter Simingalo Mphana;

My sisters, Pholisa Fanti (late), Nothabo Landu, and Siphamandla Mphana;

My nieces and nephews, Qhawekazi Fanti, Masibulele Fanti, Sinokuhle Fanti (late), Zozibini Mphana, Sithenkosi Landu, Ngezinwe Mphana, and Nakanye Mphana;

And to all smallholder broiler farmers.

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ABSTRACT

The Value Chain Analysis (VCA) is an instrument that has been used globally to examine the internal and external operations of different industries. The main aim of the VCA approach is the improvement of relations between actors along the chain. In this study, the Broiler Value Chain Analysis (BVCA) was employed. The BVCA has the potential to improve the livelihoods of smallholder broiler farmers through increased incomes, low production costs, and market participation. However, the Value Chain (VC) of smallholder farmers differs greatly from that of large commercial farmers who supply integrated companies. The smallholder farmers in South Africa are highly challenged by limited resources, poor infrastructure, and limited access to formal markets. Therefore, it is in this regard that the smallholder farmers in South Africa are characterized by low levels of productivity and low returns compared to large commercial farmers. The main aim of the study was to analyse the value chain of smallholder broiler farmers in Buffalo City Municipality, Eastern Cape Province of South Africa.

This study employed a quantitative research approach and cross-sectional research design. Purposive and snowball sampling procedures were used to sample 125 smallholder broiler farmers in the study area. The primary data was collected using a structured questionnaire through face-to-face interviews with the farmers. The quantitative data was analysed using descriptive statistics and a Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis matrix tool.

The findings revealed that there were more male broiler farmers (64%) in the study area than female broiler farmers (36%). It was also discovered that broiler farming in BCM constitutes young and middle-aged farmers (62.5%) who are still active enough to run broiler farming. The findings of the study revealed that the value chain actors involved in smallholder broiler farming are input suppliers, customers, extension officers, the Department of Social Development, Banks, and the Department of Agriculture, Land Reform, and Rural Development. However, only a small proportion of smallholder broiler farmers had an interaction with all the smallholder broiler value chain actors.

For the SWOT Analysis matrix, correlation analysis was employed for the strengths, weaknesses, opportunities, and threats variables. The results for the strengths and weakness were as follows; training and knowledge showed a positive correlation (0.24), free services offered by the government and knowledge had a correlation of 0.28, skilled labour and knowledge had a

correlation of 0.02, poor housing facilities had a correlation of 0.15 with farm business revenue, the ability to meet consumer preferences and farm business revenue had a correlation coefficient of 0.17. For the opportunities and threats variables, the correlation coefficients were positive and negative values. Furthermore, the results of the SWOT Analysis were divided into Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrix. It was discovered that the difference in scores of the IFAS was –0.1 and the difference in scores of the EFAS was –0.84. Based on the results of the SWOT Analysis, the study found that smallholder broiler farmers in BCM are vulnerable to threats and weaknesses. As a result, the sustainability of smallholder broiler farms is threatened. Therefore strategies aimed at minimizing threats and weaknesses must be implemented. The challenges experienced by smallholder broiler farmers at different levels of the value chain in BCM were also analysed and it was discovered that the main challenges were the difficulty in acquiring inputs due to limited capital and limited information on where and how to access some of the inputs, difficulty in finding nearby suppliers, and poor infrastructure.

Keywords: Value Chain, Broiler Value Chain Analysis, smallholder broiler farmers, SWOT Analysis

LIST OF ABBREVIATIONS

BCM	Buffalo City Municipality
BVC	Broiler Value Chain
BVCA	Broiler Value Chain Analysis
DAFF	Department of Agriculture Forestry and Fisheries
DALRRD	Department of Agriculture, land Reform, and Rural Development
DOCs	Day-Old Chicks
EC	Eastern Cape
EFAS	External Factor Analysis Summary
FAO	Food and Agriculture Organization of the United Nations
FCR	Feed Conversion Ratio
GPS	Grandparent Stock
IFAS	Internal Factor Analysis Summary
NAMC	National Agricultural Marketing Council
PS	Parent Stock
SAPA	South African Poultry Association
SASSA	South African Social Security Agency
SHFs	Smallholder farmers
SMAT	Smallholder Market Access Tracker
USAID	The United States Agency for International Development
VC	Value Chain
VCA	Value Chain Analysis

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Smallholder farmers (SHFs) play a key role worldwide in terms of economic and rural development. Despite the key role SHFs play in promoting economic development, this group of farmers is a vulnerable group often neglected by development policy and accounts for most of the world's poor and hungry (Kamel et al., 2020). Nonetheless, SHFs are the engine for growth, employment, and food security particularly in rural areas. The SHFs do not only produce food for the market but for consumption. The production of food by smallholder farmers in rural communities becomes very important because of its income generation and the supply of food for the family, therefore contributing to the rural economy (Carelsen et al., 2021).

The contribution of SHFs towards food security in rural areas has resulted in the government and private sector acknowledging the smallholder sector as important in South Africa. However, these farmers are characterized by limited resources to acquire production inputs, with some SHFs having access to less than one hectare of land for agricultural production (Tshuma, 2014). These characteristics pose challenges for the farmers to continue to produce sustainably. It is in this regard that the South African government is committed to supporting SHFs through interventions such as the provision of land and water. Despite these efforts, SHFs remain vulnerable as they are not homogeneous; instead, they are diverse, and their farming needs also differ according to their livelihood needs (Carelsen et al., 2021). Due to the diversity of SHFs, it is difficult for the government to effectively respond to their needs.

The SHFs differ in terms of what they produce, some rear livestock, raise fish, and cultivate crops. Livestock farming is one of the dominant farming practices in South Africa with poultry, pigs, cattle, sheep, and goats (Department of Agriculture, Land Reform and Rural Development [DALRRD], 2021). At this point, poultry production has the potential to provide nutrition, food security, and cash income to households (Yitayih et al., 2023). Also, poultry production in South Africa is widely known to be the largest contributor to the agricultural sector as compared to other production sectors (South African Poultry Association [SAPA], 2019). For example, in 2021, the poultry industry accounted for 16.6% of the total agricultural gross value and 39.9% of animal product gross value (SAPA, 2021). In addition, the poultry sector employs over 110,000 people in

the country (SAPA, 2021). The poultry industry consists of the day-old chick supply industry, and the broiler and egg industry (AgriSeta, 2021). This study mainly focused on meat production, specifically known as broiler farming. Broilers are defined as chickens that are bred and raised specifically for meat production, and broiler production is the process of growing broiler birds for meat, with the feed conversion ratio (FCR) as a crucial performance indicator (Ettah et al., 2021). After two to three months, broilers are said to be marketable, requiring adequate nutrition to maintain their physical weight (Thibane, 2022).

Adeyoni and Odozi (2022) stipulate that broiler meat is the most consumed of all white meat (other poultry, pork, and rabbit) globally, this is mainly because of its affordability, nutritious benefits, and limited cultural and religious barriers compared to other meat products. Existing studies in South Africa have confirmed that broiler farming provides employment and regular income for farmers through its value chain (VC) activities, particularly in developing countries (Goga and Bosiu, 2019; De Brauw and Bulte, 2021). Considering its affordability and nutritional benefits, broiler is currently one of the best sources of animal protein for the poor (Erdaw and Beyene, 2022). Despite the advantages that smallholder broiler farming promises, the broiler sector needs to be profitable and sustainable.

The profitability and sustainability of smallholder broiler farming are under threat due to constraints associated with the smallholder broiler VC such as rising input costs (day-old chicks, feed, veterinary services, equipment), limited access to markets, and poor infrastructure. Therefore, improving the productivity of smallholder broiler farmers by analyzing their VC was crucial.

The concept of VC was first introduced by Michael Porter in 1985 during his studies on competitive advantage (Ricciotti, 2020). Additionally, Ricciotti (2020) further states that the main purpose of the value chain theory is to understand how firms can create, sustain, and maximize value for their customers. The United States Agency for International Development (USAID) defines VC as the full range of undertakings that are required to bring a good or service from its outset to its end use, including all the distribution channels available to all businesses. In addition, Los et al., (2015) define a VC as the series of events that are required to bring a good or service from production to the final consumers in the desired form and at their utmost disposal after use. For the simplicity of this study, a VC is defined as a sequence of events from production,

processing, and marketing that brings each actor together to partake in activities to add value to a product until it gets to the final consumer in a desired form. The Value Chain Analysis (VCA) involves a methodical way of identifying, describing, and estimating the functions and associations of persons and establishments that exist in diverse and dynamic settings and systems (Haggblade et al., 2020). The value chain comprises knowing the movements of resources, goods, and value-adding activities among the different actors in the VC.

Few studies have been conducted on broiler VC in developed and developing countries like South Africa. For example, Joubert (2017) examined the broiler VC in South Africa. The main objective of the study was to analyze the South African commercial broiler industry both quantitatively and qualitatively. The findings demonstrate that the industry was complex, with several role actors interacting with one another through the VC system. Commercial broiler farmers, breeders, and processors who prepare chicken for export and local consumption are among the major players that have been identified. Additionally, Value Chain Analysis (VCA) was used by Irvine (2015) to evaluate the poultry veterinary surveillance system in Great Britain. According to the study, the primary participants in the chain are input suppliers, producers, traders, processors, and consumers. Moreover, Ncube (2018) examined the BVC (Broiler Value Chain) in Southern Africa and focused on linkages between corporate strategies, investments, and agro-industrial policies. Likewise, Carron et al. (2017) explored the VC framework to study animal and product flows, governance, and sanitary risks in the broiler meat system in Kenya. The main participants identified in the Broiler Value Chain (BVC) as indicated in the study were hatchery operators, veterinary service providers, broiler farmers, processors, brokers, retailers, and consumers.

Mensah-Bonsu et al. (2019) further analyzed the BVC in Ghana from a gender perspective. According to the study, the main actors in the BVC were farmers and traders. While males dominated the production stage, females dominated the trading stage. In addition, male actors contributed more value than female actors. The results regarding return on investment (ROI) revealed that producers added the highest value in BVC. This was because males generally operated on larger scales than their counterparts. However, it is to be noted that several studies focused on the analysis of the VC of large-scale broiler farmers and did not completely analyze the VC of smallholder broiler farmers. Therefore, an analysis of the BVC of smallholder farmers in

Buffalo City Municipality, Eastern Cape province of South Africa was necessary, hence the study was conducted.

1.2 Problem Statement

Most researchers have stipulated that smallholder broiler farmers are the drivers of the economy, yet these farmers are still under threats and challenges. As highlighted by the National Agricultural Marketing Council [NAMC] (2020), challenges that hinder the production efficiency of smallholder broiler farmers include, rising feed costs, disease outbreaks, import penetrations, rising electricity tariffs, and access to reliable supply, and access to finance and markets. Given the challenges smallholder broiler farmers face, success and achieving their farm vision seem impossible. This points to the fact that generally, SHFs in South Africa are underdeveloped and are characterized by low levels of productivity (Food and Agriculture Organization of the United Nations [FAO], 2018).

The unsustainability and low productivity levels of smallholder broiler farmers pose a question of whether smallholder broiler farmers can interact effectively with other chain actors in the VC. For example, the Department of Agriculture, Land Reform and Rural Development (DALRRD) is committed to providing support to resource-poor farmers, yet their productivity remains low (Myeni et al., 2019). A study conducted by Widadie et al., (2021), found that some of the production constraints that SHFs face can be alleviated using a VC approach. A VC approach brings chain actors, such as producers, marketers, processors, and other service providers together to gain control over activities at each node of the chain to reduce transaction costs and promote the competitiveness of the whole chain.

From the background section, it is evident that most agricultural studies on VCA have focused on large-scale commercial broiler farmers, and little has been reported for SHFs in South Africa. As a result, the information on the VC of smallholder broiler farmers is very sparse. In some provinces of South Africa, limited studies have been conducted on the market participation and economic analysis of smallholder broiler production such as the study by Thibane (2022) in the Amatole District Municipality, Eastern Cape Province of South Africa. The study conducted in the Limpopo Province by Busayo et al. (2016) mainly focused on the profitability and efficiency of smallholder broiler farming in the Limpopo Province of South Africa. The findings of the studies by Thibane (2022) and Busayo et al. (2016) both highlight that smallholder broiler farming is economically

important and a profitable farming enterprise. However, no studies have been conducted on the VC of smallholder broiler farmers in the Eastern Cape province, particularly, in Buffalo City Municipality.

As broiler farming is economically important in the Eastern Cape province, a study that focuses on its VC was of considerable value for the agricultural sector and smallholder farming systems. It is in this regard that this study aimed to analyse the VC of smallholder broiler farming in the study area to understand the challenges broiler farmers face at each level of the VC so that strategies to develop and support sustainability and profitability are implemented. As a result, the information from this research is of key significance to the provincial government as it has been dedicated to promoting the sustainability of the SHFs.

1.3 Rationale of the Study

South Africa's agricultural sector is characterized by dualism: a modern commercial farming sector alongside SHFs, mostly found in the former homeland areas. Like many other developing countries, South Africa is highly challenged by unemployment, food insecurity, and low economic growth (World Bank, 2018; Ngumbela, 2021). Smallholder agriculture is found to be the most important sector in agriculture, as a result, the Department of Agriculture Forestry and Fisheries [DAFF], (2016) identified that smallholder farms are the most effective form of production that creates employment and improves food security and economic status in South Africa. The profitability of broiler production enterprises is essential for the enterprises' long-term viability and sustainability; thus, knowing their VC is essential.

Previous research has merely focused on providing solutions to production constraints such as feed shortage, lack of quality day-old chicks, low production inputs, poor and low output, low to minimal biosecurity, lack of slaughter facilities, lack of production skills, lack of extension support and weak market linkages (Ramukhithi et al., 2023). It has become a common understanding that an analysis of the BVC helps farmers identify factors that create or hinder cost efficiency during production. Literature also suggests that input suppliers, producers, traders, processors, and consumers are the main actors of the VC in South Africa (Das Nair, 2021). The VCA looks beyond the farm and investigates business relations and linkages among the farm to improve and develop the performance of the VC by reducing transaction and marketing costs, reducing production losses, and improving product quality (Ndlovu, 2020).

The study followed Michael Porter's VCA. Porter breaks the VCA into five primary activities. Then, further breaks those primary activities down into four activities that help support primary activities. The main focus of the study was on the primary activities of Porters' VC which are inbound logistics (the initial phase of the distribution channel which starts with receiving inputs such as chicks, feed, equipment, and veterinary services), operations (procedures required to bring a product from raw material to end-product), outbound logistics (activities required to distribute broilers to the consumer), marketing sales (strategies to enhance visibility and target appropriate consumers), and service (activities required to enhance consumer experience after sale of broilers).

In the Eastern Cape province, the analysis of smallholder broiler farmers' VC has not been clearly defined. This could be because there is little, or no research conducted on the smallholder broiler VC with a particular focus on the Eastern Cape province. Thus, this study was very important to analyse the VC of smallholder broiler farmers and identify challenges experienced by smallholder broiler farmers at different levels of the VC in Buffalo City Municipality (BCM) of the Eastern Cape province, South Africa.

1.4 Objectives of the Study

1.4.1 Main Objective

The main objective of the study was to analyse the value chain of smallholder broiler farmers in Buffalo City Municipality, Eastern Cape Province of South Africa.

1.4.2 Specific Objectives

i. To identify and describe the socio-economic characteristics of smallholder broiler farmers in BCM, Eastern Cape province of South Africa.
ii. To identify actors along the VC (primary activities) and analyze the VC of smallholder broiler farmers.
iii. To identify and analyze challenges experienced by smallholder broiler farmers at different levels of the VC.

1.5 Research Questions

i. What are the socio-economic characteristics of smallholder broiler farmers?
ii. Who are the actors in the VC and how does the VC of smallholder broiler farmers work?

iii. What are the challenges experienced by smallholder broiler farmers at different levels of the VC?

1.6 Significance of the Study

Preceding studies on broiler production did not widely explore smallholder broiler farmers' VC in South Africa, especially in the Eastern Cape province. Thus, this study was very crucial because it clearly defined the VC of smallholder broiler farmers as well as understanding the challenges experienced by smallholder broiler farmers at different levels of the VC. The information gathered in the study could assist farmers in providing insights about the challenges that hinder the SHF's production efficiency and perhaps commercial market participation. When smallholder farmers fully understand the challenges they encounter at each level of the VC, this may help them understand where they need to improve in their broiler farming activities. This may eventually lead to increased incomes, contribute to food security, and create employment opportunities. The findings of this study are also significant to the different stakeholders, and government entities like DALRRD in South Africa which has invested in numerous agricultural projects in support of smallholder farming systems, from crop to livestock farming. Some of these projects are said to have failed due to the lack of comprehensive research before the initiation of the projects (Ncube, 2018). Thus, the results of this study could also assist in the improvement of the broiler farming VC since it gave an in-depth analysis of the smallholder BVC.

1.7 Limitations of the Study

Research on the analysis of the smallholder BVC in the Eastern Cape province has not been widely investigated. The SHFs in the study area were scattered, therefore time was the major challenge of this study. Moreover, it was quite difficult to reach some farmers in areas that have poor roads. Accessibility to some of the rural areas by vehicles was also a limiting factor, in that the enumerators were bound to walk long distances to reach some farmsteads. The population size of smallholder broiler farmers was unknown, as a result, the respondents were asked to give referrals to other farmers. The study was limited to smallholder poultry farmers who have kept broilers for saleable purposes.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The VCA is a tool that can be used to examine and evaluate industries and individual firms. The primary focus of the VCA is on the improvement of relations between the actors along the chain. The actors include input suppliers, transport services, extension services, farmers, and customers. Likewise, the BVCA (Broiler Value Chain Analysis) has been employed globally to examine the internal and external operations within the broiler industry by different scholars. The BVCA has the potential to create opportunities for smallholder broiler farmers such as increasing their profitability and improving sustainability. This study aimed to analyse the value chain of smallholder broiler farmers. From this section, the literature is critically analysed about the broiler industry. This introduction is followed by a definition of the key terms of the study. The definition of key terms is followed by the socio-economic characteristics of smallholder broiler farmers in South Africa and other countries.

2.2 Definition of key terms

2.2.1 Smallholder Farmers (SHFs)

The concept of Smallholder Farmers (SHFs) can be approached from a variety of angles, depending on the context, country, and even ecological zones. Nyambo et al., (2019) characterize SHFs according to resource availability. The term "smallholder" is often used interchangeably with "small-scale" farming. Fan and Rue (2020) further define SHFs as farmers who rear livestock and cultivate crops on a limited scale. The simplest meaning of SHFs is the case where there is limited land and resources for the farmer. According to Seti (2017), there are three types of SHFs:

- Subsistence farmers – These farmers cultivate crops and grow livestock for their consumption, without any surplus for trade.
- Emerging SHFs – These farmers are market-orientated and have the desire to commercialize.
- Commercial SHFs – Though these farmers are characterized by limited land, they mainly aim to sell their produce for income.

2.2.2 Broilers

Broilers are chickens that are a result of engineered technology which has economic characteristics, are characterized by rapid growth, and are bred and raised specifically for meat production. Broiler meat is distinguished from other poultry meat because its fibers are soft, and its breasts are bigger and have soft skin (Oktavera, 2013).

2.2.3 Value Chain Analysis

According to den Broeder (2018), the VCA is a tool that provides both quantitative and qualitative data and describes the perpetual flux of activities, and the inter-relationships between actors involved in the input supply, production, processing, marketing, and consumption of a commodity.

2.3 Socio-economic factors of broiler smallholder farmers in South Africa

Smallholder broiler farming in South Africa is commonly associated with low levels of production, limited resources, and sales to informal markets. As a result, the sustainability of smallholder broiler farming is uncertain. To get a better understanding of smallholder broiler farmers it is important to first investigate the socio-economic factors that are associated with broiler farming. Socio-economic factors of smallholder broiler farmers could be relevant in influencing broiler production (Mulaudzi, 2015). In addition, socioeconomic status and one's perceived social standing are factors of social class. For instance, a study conducted by Mulaudzi (2015), on socioeconomic analysis and profitability of small-scale broiler farming in the Limpopo Province of South Africa, discovered that the main socioeconomic factors of smallholder broiler farmers include gender, age, education, experience, and training among other key factors that influence broiler farming.

2.3.1 Gender

In a study that was carried out on the economic and marketing analysis of smallholder broiler production in the Limpopo Province of South Africa by Machethe (2016), it was found that smallholder broiler farming is dominated by males. The study further alluded that the domination of males over their counterparts is because most household heads in the study area are males. A similar study conducted by Seti (2017) in Buffalo City Municipality also discovered that there are more males than females in the study area. The findings of the study were in line with an earlier study by Randela (2005) who discovered that chicken farming is dominated by males since they constitute most of the financial decisions in the household. These findings, however, conflict with

those of a study that was carried out on the Smallholder Market Access Tracker (SMAT) in South Africa by the NAMC (2020), which found that, in South Africa, a typical smallholder broiler farmer is most likely to be a female. This implies that broiler farming in South Africa is gender sensitive. Most women keep broilers because they are easily manageable, and require less labour compared to other types of farming.

2.3.2 Age

The age of the farmer has a significant impact on the production efficiency of broiler farming, as age is related to the farmer's skills and knowledge (Soek et al., 2018). Most studies on chicken farming found that a larger group of smallholder chicken farmers are between 40 and 59 years old in South Africa (Machethe, 2016; Yusuf and Popoola, 2022; Mdletshe and Obi, 2023). This implies that broiler farming is practiced mostly by farmers who are still active enough to run broiler farming and are most likely to adopt new technologies and innovations. In addition, youth are not keen to participate in broiler farming because they view farming as a backward activity that is suitable for older people (Ali et al., 2021).

2.3.3 Education

The education level of a farmer is crucial in broiler farming given that it plays an important role in the adoption of new technologies. According to Phiri et al., (2023), education assists farmers to participate effectively in agricultural activities. Also, education may raise the abilities and skills of a farmer and increase allocative efficiency which leads to more productive performance (John et al., 2020). A study conducted by NAMC (2020), it was discovered that about 75% of farmers in South Africa have obtained a high school certificate or higher. These results agree with the result of an earlier study by Okeoghene (2013) who reported that the poultry sector is no longer a sector for less literate farmers. These findings, therefore, insinuate that the success of a broiler farmer is highly influenced by the level of education obtained by a farmer because educated farmers are more equipped with knowledge.

2.3.4 Farming Experience

Farming experience significantly impacts the production efficiency of an enterprise. The more years of experience a farmer has, the more exposed they are, and the more productive they become (Ramukhithi et al., 2023). Farmers who are experienced in broiler farming are more cost-effective than farmers who do not fit this description (Adeyonu and Odozi, 2022). These findings were in

line with the findings of a study that was conducted by Mulaudzi (2022) in the Limpopo Province of South Africa, and the study discovered that the profitability of broiler farms is positively correlated with farming experience. Therefore, it is to be noted that the number of years a farmer has in running a farm affects the profitability of the farm. Experienced farmers can withstand the changing farm business dynamics and avoid risks associated with losses because they are more exposed to the farm business.

2.3.5 Training

For smallholder broiler farmers to produce sustainably and efficiently, they must be properly trained (Olumide-Oyaniyi and Ajayi, 2019; Hassan et al., 2021; Khan et al., 2022). According to Ramukhithi et al., (2023), farmers who have received formal training for broiler farming are more profitable and effective than those who did not receive any training. Moreover, the present literature highlights that the training received by smallholder broiler farmers is perceived to influence farm size. In this respect, a study conducted by Yusuf and Popoola (2022) in Raymond Mhlaba Municipality, Eastern Cape Province of South Africa on the evaluation of the effectiveness of the training offered to smallholder scavenging chicken farmers showed that there was a significant difference in the number of chickens kept by the farmers before and after training; the farmers had larger flocks after training. These studies imply that training is an important feature of farming. Training received by a farmer strengthens the farmer's knowledge and skills, thereby allowing farmers to be more effective.

2.4 Broiler Value Chain Systems in Africa

According to the United States Agency for International Development [USAID], (2016), mapping a VC is the process of developing a visual representation of the underlying structure of the chain. A VC map shows the steps involved in the manufacturing of a product, its operations, and the activities it engages in. The map illustrates how the industry operates from the raw material to the final markets and consumers. A VC is a compressed visual diagram of the data collected at different stages of the VCA and supports the narrative description of the chain (Joubert, 2017). The purpose of a visual tool in the analysis process is to develop a shared understanding among VC stakeholders of the industry. A VC of an industry tells a story about the interrelationships, role players, activities, and products between supply and demand.

A Value Chain Analysis (VCA) of the broiler industry shows a lot of different actors in each stage of the VC. In Nigeria, for example, Adeyonu et al., (2021) discovered that the Nigerian Broiler Value Chain (BVC) is simple, with only five main actors; Grandparent stock (GPS) farmers, Parent stock (PS) farmers, commercial farmers, mature broiler marketers, and processors. The GPS farmers supply PS farmers with Day Old Chicks (DOCs), in turn, PS farmers supply DOCs to commercial broiler farmers. Commercial broiler farmers sell 63% of mature live broilers to marketers and 37% to processors. Processors sell 12% of processed meat to local households and 88% to fast food outlets, hotels, restaurants, and supermarkets with no exports. From the findings of Adeyonu et al., (2021), it is evident that a larger percentage of broiler chickens in Nigeria are sold to large commercial enterprises. One of the reasons could be that large commercial enterprises buy in bulk whilst local households buy in small quantities.

With the realization that Brazil has one of the established BVCs and is one of the largest producers of poultry worldwide. A study by Waker and Nääs (2018) revealed that the excellent performance of the BVC in Brazil reflects the process of industrial restructurings, such as the adoption of new forms of industrial organizations on a large scale, technological improvement, and management techniques. The study further revealed that the BVC of Brazil is highly structured, and the main actors are vertically integrated. The main actors of the VC identified are the hatchery, broiler farmer, processing plant, feed mill, market, and the government. The Brazilian government plays a crucial role in the BVC since it is connected to all the actors of the VC, and has the attributes to take charge of taxation, infrastructure, and biosecurity (Waker and Nääs, 2018). Therefore, the high level of coordination in the Brazilian BVC results in the competitiveness of the chain in the world market.

However, the VC of the broiler industry in South Africa is complicated and sophisticated. To get to the final product, the industry integrates intermediate products at various stages of the chain (Joubert, 2017). As a result, some sectors, including the soybean and yellow maize sectors, form part of the BVC (SAPA, 2021). These two sectors are of paramount importance in the broiler industry as they partake in feed production. The VC of the broiler industry in South Africa portrays high levels of integration and cooperation (NAMC, 2017). The NAMC further states that the industry requires a high level of investment to produce efficiently and sustainably. As a result, the broiler industry is dominated by large commercial farms, such as Astral and RCL Foods

(DALRRD, 2016). These two producers represent almost half of the industry. Whereas the other five medium-sized farms combined accounted for almost 70% of the total production in 2016. The production statistics by DALRD insinuate that medium-sized farms in South Africa are on the rise. The growth of medium-sized farms can be influenced by several factors, such as rapid population growth, urbanization, and rising incomes which have contributed to a high demand for food in South Africa. Secondly, it can be that many South Africans with resources found broiler farming to be a lucrative investment opportunity. Figure 2.1 below provides a visual representation of the South African BVC.

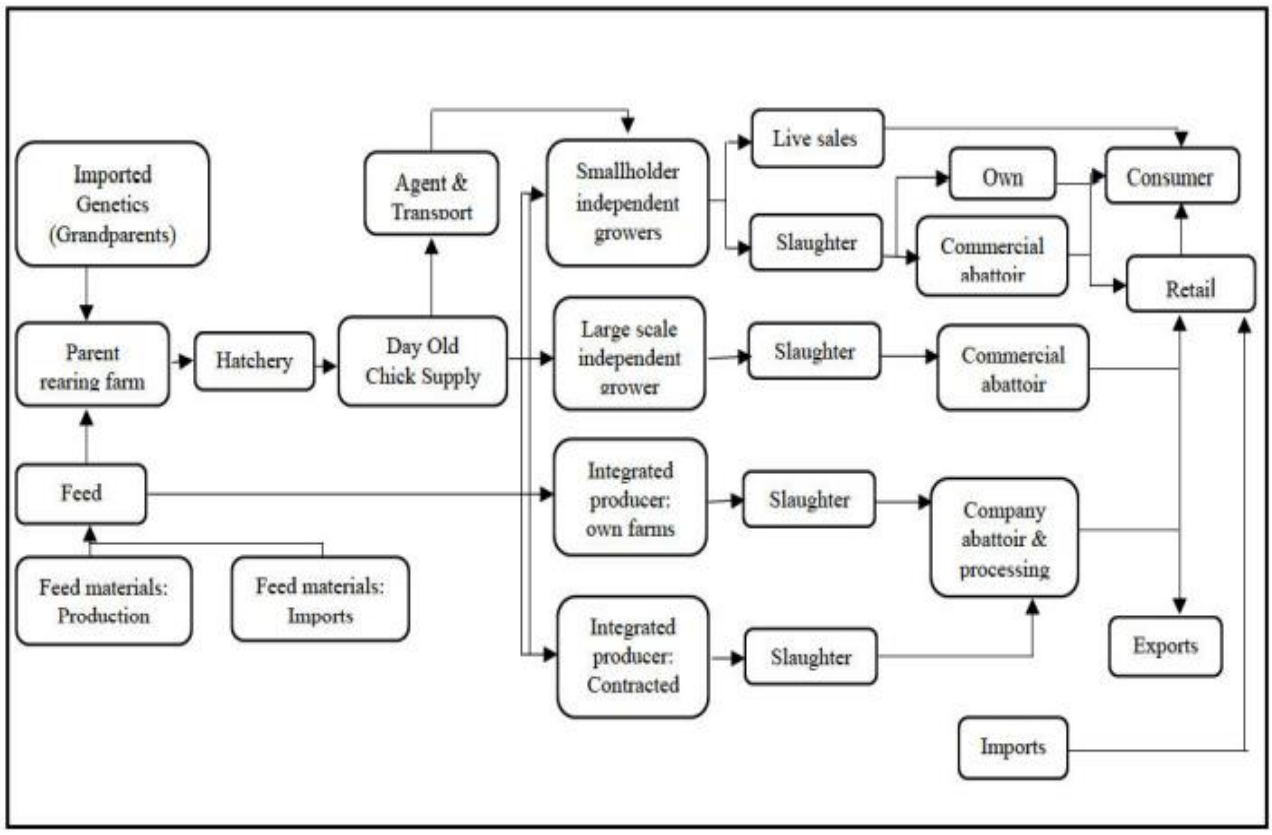

Figure 2.1: The South African BVC

Source: NAMC (2020)

The South African BVC is highly industrialized but dualistic (Queenan et al., 2020). This industry consists of vertically integrated primary and secondary subsectors (NAMC, 2020). A small number of firms dominate the broiler industry, and their main aim is to supply input to large commercial farms. NAMC (2020) describes the VC of the broiler industry as encompassing primary subsectors such as meat farms, feed companies, breeders, and contract growers. Abattoirs, importers,

exporters, retailers, and consumers form part of the secondary sub-sector of the chain (SAPA, 2021). Among the BVC actors, SHFs exist and the majority of SHFs market live birds directly to consumers.

2.4.1 Value chain for broiler smallholder farmers

Smallholder broiler farmers form part of the commercial VC in the sense that they procure some of their inputs from commercial, integrated producers (Council, 2017). However, limited access to these inputs remains a concern and a substantial share of smallholder broiler farmers' VC remains independent and isolated from the intrinsic efficiencies of the commercial chain (Barret et al., 2022). Figure 2.2 represents a flow diagram illustrating the smallholder BVC structure.

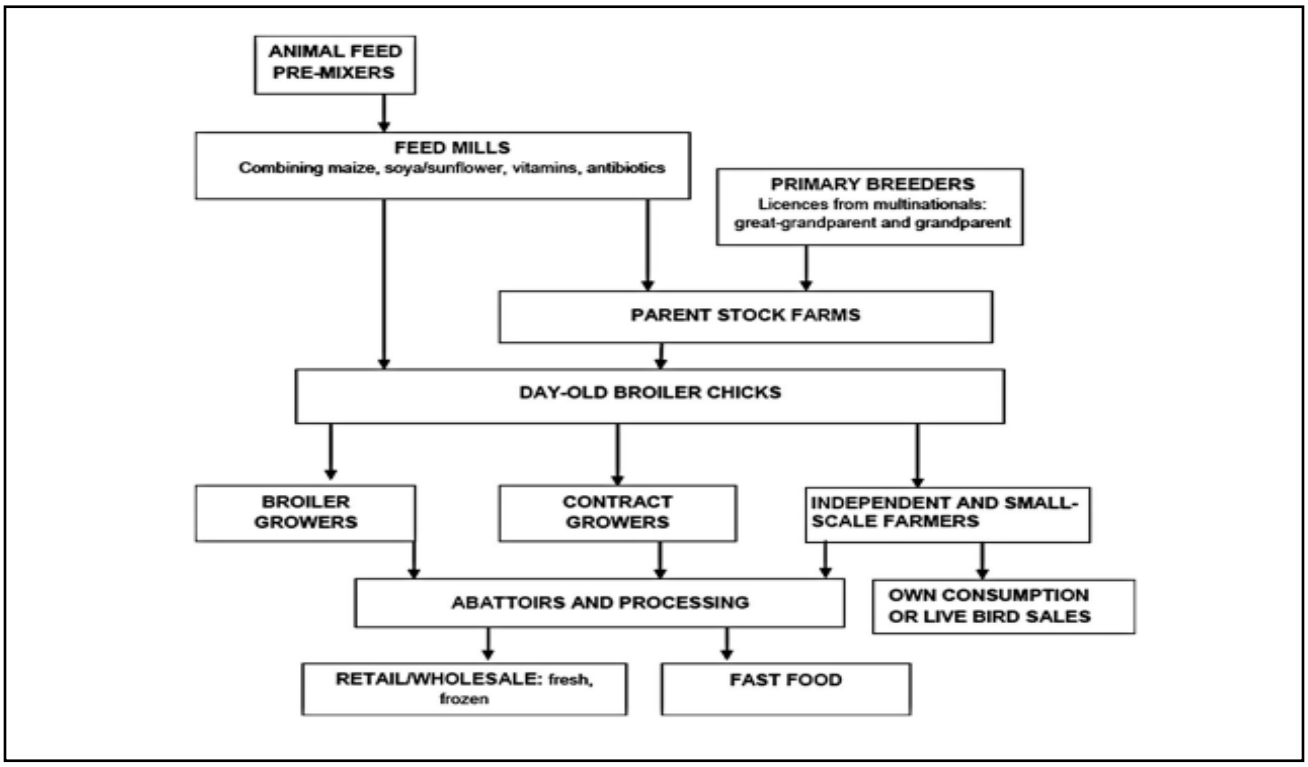

Figure 2.2: The smallholder BVC

Source: Ncube (2018)

As shown in Figure 2.2, it is evident that the VC for smallholder broiler farmers differs greatly from that of large-scale commercial farmers who supply integrated companies. The significant difference in operation size between smallholders and commercial farmers delivering for integrated companies highlights the growing challenges within this system. According to the NAMC (2020) and Smidt and Jokonya (2020), restrictions on the number of chickens that can be

successfully marketed at a given time have hindered the growth of SHFs, requiring substantial investment to reach the necessary scale for contract production. However, access to credit for such investments is limited for SHFs (Langyintuo, 2020). The SHFs in South Africa are challenged by the lack of resources such as the lack of financing, and the unwillingness of commercial organizations to lend credit to SHFs. As a result, there is a dualistic nature in the industry where SHFs focus on live bird production while larger commercial growers contribute to a vertically integrated chain that involves processing and distributing broiler products (May et al., 2022). Therefore, it is in this regard that the SHFs are often characterized by low returns and low levels of production compared to large commercial farmers.

Moreover, the participation of smallholder broiler farmers in high VC markets is very low due to high market standards they cannot abide by, leading to exclusion from supplying their products to high-value markets. The exclusion of SHFs from modern agricultural VC leads to reduced productivity, profitability, and the growth of SHFs (Von Loeper et al., 2016). However, despite these disadvantages, SHFs offer affordable prices while making a profit by bypassing supermarkets, which keep a substantial proportion of value added in mainstream VC, and by supplying niche markets, often selling live birds. Broiler farming is a lucrative business venture; therefore, productivity increases when farmers use farm resources effectively and efficiently.

2.4.2 Value Chain Analysis

Niemi et al., (2020) define a VC as the series of individuals and activities involved in taking a raw agricultural product from the field to its final consumption, with each stage adding value to the product. For smallholder farmers, key participants in the VC of South Africa include suppliers of inputs, farmers themselves, traders, processors, and consumers (Christian et al., 2024). Additional stakeholders can be broadly categorized into policymakers, academic experts, and professionals providing services to farmers (such as veterinarians or other professionals providing extension services and training for farmers) (Cuevas et al., 2021). The value chains are complex due to multiple channels and various actors involved. Figure 2.3 below presents a simplified representation of an agricultural VC.

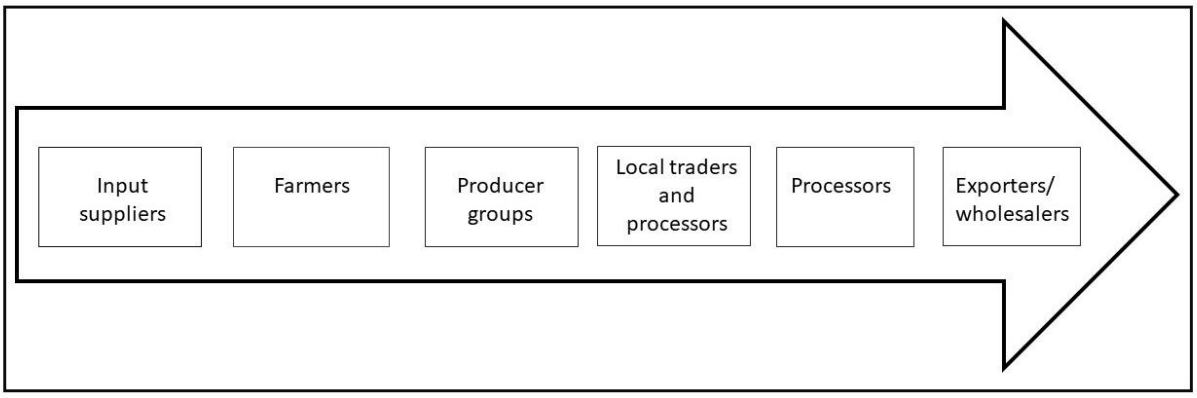

Figure 2.3: An Agricultural Value Chain

Source: Sugathadasa et al., (2016)

The VCA focuses on assisting SHFs in improving market development within value chains at a local, regional, and national level. The VCA aims to enhance understanding of the connections between producers and markets. According to Llorente et al., (2022), VCA consists of four main parts: mapping the VC, analyzing governance structures, identifying opportunities for improvement, and evaluating the distribution of benefits within the VC. Inclusive VCA is crucial for comprehending markets, actor roles, and barriers to competitiveness (Larson et al., 2022). Widadie et al., (2021) proposed a framework for value analysis in Indonesia, which includes identifying constraints for VC development, defining key elements of the VC, and specifying options for development related to value addition, market discovery, network structures, and governance mechanisms. The findings of the study by Widadie et al., (2021) discovered that producer organizations upgrade their VCs by linking SHFs with the retail market. The study further alludes that upgrading governance structures in the VC is achieved through contracts. Therefore, it is worth noting that the VCA analysis is an area of significant importance as it assists SHFs to be at a marketing advantage. The VCA approach enables the SHFs to access high-value markets, gain access to product information, reduce transaction costs, increase productivity, and ultimately deliver high-quality products.

Senyolo et al., (2018) conducted a study in the Limpopo province of South Africa which found that farmers in the area face numerous challenges due to weak relationships and contractual agreements with VC actors. These challenges included lack of access to markets, inadequate technical advice for production, poor infrastructure, limited financial resources, and high costs associated with marketing and transactions. To improve the performance of the VC, it is important

to consider the relationships and linkages among all actors involved, not just individual firms. This approach could reduce transaction and marketing costs, minimize production losses, enhance product quality, and strengthen agreements among VC participants (Findlay and Hoekman, 2021). However, one limitation of this approach is that it does not provide insights into changes over time, making it difficult to assess the long-term effects of interventions (Lie, 2017). The approach suggested by Findlay and Hoekman (2021) is of paramount importance for broiler farmers. However, the impact of value chain interventions should be evaluated to check for the success of an intervention that has been implemented.

2.4.3 Broiler Value-Added Analysis in South Africa

The demand for value-added poultry products is rising due to various factors such as market behavior, consumer preferences, and supermarkets (Köpcke, 2020). In a continuously expanding global consumer base for chicken meat, it has become crucial to provide high-quality produce. Value addition of broiler chickens includes processing them into readily consumable forms by plucking or de-feathering, washing, cleaning, grading & sorting followed by packaging and labeling. Stare and Jaklič (2020) explain that to add value effectively one must invest in avenues like logistical support systems along with quality control procedures that mostly involve strategic planning and cooperation with VC partners. Transforming broiler meat into higher-value chicken does not however only depend on investments in time and labor but also on VC systems and capabilities that can be put in place to reduce transaction costs while still improving competitiveness (NAMC, 2020). Moreover, the success of value addition of broiler chickens does not solely depend on farm resources, but it can be achieved by linking the broiler farmer with other chain actors to meet the market demand.

2.5 Factors influencing the competitiveness of the smallholder broiler value chain in South Africa

The smallholder BVC in South Africa is technically competitive, however, it lags in terms of economic efficiency (Cuevas et al., 2021). Despite constituting a relatively small share of the market, SHFs play an important role in sustaining rural livelihoods (Birhanu et al., 2021). Additionally, smallholder broiler farmers also provide an affordable protein that is accessible to vulnerable groups of the population in South Africa (Queenan et al., 2021) such as those residing within underprivileged communities or remote regions. This includes farming households without

modern amenities like electricity and refrigeration (Wilson, 2021). These farmers rely on live chickens that they regularly purchase and then subsequently slaughter based on their needs rather than purchasing processed meats from conventional outlets.

The literature has described the cost structures and challenges faced by small producers in the South African broiler industry, with a particular emphasis on their potential integration into mainstream VCs (Louw et al., 2017; Nacimento, 2023). Louw et al. (2017) found that limited opportunities exist for integrating smallholders into commercial VCs due to economies of scale linked to the efficient production of broilers. Despite such limitations, SHFs offer affordable prices while making some profits since they avoid selling through supermarkets and keep a substantial proportion of value added in mainstream VCs. The SHFs frequently provide live birds sold mainly via niche markets rather than abattoirs instead (Ma and Sexton, 2021).

The competitiveness of the smallholder BVC is influenced by various factors that can be effectively managed by producers operating within a business environment and the supporting functions and services within the VC. The following factors have the potential to enhance or constrain the competitiveness of the smallholder BVC.

2.5.1 Reliable access to affordable inputs and credit

An important barrier for SHFs is the issue of the cost increase of feed, day-old chicks, availability of the exclusive franchise for the genetics of the two main commercial breeds of broiler, Ross and Cobb, farm equipment, and restricted access to credit. This was specifically identified as a barrier for SHFs wanting to scale up beyond a certain size and compete in the formal market with established integrators (Cuevas et al., 2021). The limited access to affordable inputs and finance affects the performance and functioning of broiler SHFs and limited resources affect the availability and affordability of broilers.

2.5.2 Transaction costs, liquidity gaps, and coping strategies

High transaction costs such as transportation costs and lack of bulk-buying are important factors driving up feed prices for SHFs (Das and Mandal, 2021). In the absence of liquidity and credit, farmers have no choice but to resort to coping strategies that can ultimately aggravate the issue of high transaction costs, undermine efficiency, and perpetuate existing challenges. Cuevas (2021) suggests that mixing commercial feed with maize might cut costs in the short term and splitting planned feed purchases across several trips to manage cash flow. The strategy of reducing costs

on feed formulations as suggested by Cuevas signifies that profitability in broiler farming could therefore increase. It is a well-documented theory that, the lower the costs of production, the higher the returns.

2.5.3 Price Formation

The pricing strategy of agricultural products is an important factor that does not only affects the product demand and purchasing behavior of consumers but also the income distribution of node enterprises and the overall profit of the agricultural supply chain (Wang et al., 2022). When pricing an agricultural commodity such as broiler chicken there are a lot of factors to consider. One of the factors that influence price formation is input costs as mentioned above. Therefore, it is of utmost importance to mitigate strategies that aim to cut the cost of production. A decrease in input costs ultimately reduces the price of chicken, thereby incurring a higher demand.

2.5.4 Market Access

According to Von Loeper et al., (2018), a significant challenge faced by smallholders is the absence of reliable markets for their output. Current channels available for formal commercialization are deemed unsuitable for selling small to medium batches due to the perceived lack of interest from large integrators and supermarkets in including smallholder farmers in their supply chains. To address this issue, several scholars have discussed parallel marketing systems as potential solutions such as aggregation schemes or independent abattoirs, which preserve premiums obtained by farmers through live sales market-based cooperatives (Cuevas, 2021; Queenan et al., 2022). The parallel marketing system for broiler farmers poses many advantages as it allows the farmer to sell broilers across different platforms, thereby increasing the customer base.

2.5.5 Knowledge, information, and skills

Lack of business and technical knowledge has been emphasized as a challenge for smallholders in the literature. The lack of knowledge and skills is not necessarily an independent issue, but rather an underlying issue that aggravates other challenges faced by SHFs. Escamilla et al., (2021) suggest that SHFs can increase productivity by developing their business skills to meet market expectations. Similarly, Yusuf and Popoola (2022) note that knowledge facilitates growth in any economic sector. Therefore, training farmers is one of many ways of increasing their knowledge base and skills to improve production performance. According to Escamilla et al., (2021), business

skills could reduce excess capacity by aligning expectations with actual market shares for small producers.

In simple terms, training aims to educate farmers to enable them to acquire new knowledge, skills, and zeal to improve production efficiencies (Aremu et al., 2019; Sajeev and Singha, 2021). Yusuf and Popoola (2022) observed that many studies had shown that training and capacity building of SHFs was important in helping them grow their production capacities. However, the production capacities of broiler SHFs are negatively affected by little contact with extension services. The majority of SHFs in South Africa are not registered and visible. As a result, that could pose a challenge for government support services to assist them by offering training and workshops as they are not easily accessible.

2.6 Implications for smallholder broiler farmers' value chain Integration

The dual nature of the South African agricultural sector is therefore also apparent in the broiler industry as well. As reported by Neves (2020), there appear to be two distinct VCs: one is a commercial VC characterized by high levels of integration (as apparent from Figure 2.1). The other is an informal market characterized predominantly by live sales that are a common practice, especially for smallholder farmers. Consequently, the commercial VC, in turn, requires high production volumes, whereas the informal market is serviced by smallholder farmers (Liverpool-Tasie et al., 2020).

In a study by Louw et al., (2017), it was found that integrating into commercial VC has significant size implications that would necessitate considerable growth in production capacity for smallholder farmers. The study by Louw et al., (2017) also revealed that efficiency levels are primarily determined by the size of operations, as access to advanced production technologies demands substantial capital investment. This requires an extensive volume of output to maintain a low average cost per unit produced (Rayna and Striukova, 2021). Wang et al., (2022) support these findings since producer remuneration within the commercial VC is heavily influenced by operational efficiency. Without sufficient scale requirements being met efficiently, farm profitability may not be sustainable for smallholder farmers.

The SHFs who consider expanding their farms face significant challenges, including difficulty procuring inputs in bulk due to their limited operation size and higher input costs compared to commercial producers (Wens et al., 2021). Although SHFs are competitive in the live bird market,

small-scale broiler farming operations can only sell a realistic number of chickens at one time which limits growth potential (Chibanda et al., 2022). Due to this production ceiling, it seems unlikely that gradual organic growth from smallholders will lead them toward large-scale commercial production (Baxter et al., 2022). This means that there is an operational range for SHFs where being profitable is not feasible and it is this range that divides the industry into two distinct categories. Considering this dualistic nature of smallholders' struggle with expansion efforts, the VC integration strategies should be developed accordingly as well.

According to Ncube (2020), the emphasis of present grant programs must be on SHFs to augment the production share held by them in the industry. This could necessitate not only an increase in their numbers but also a guarantee that SHFs already established are working at full capacity (Bizikora et al., 2020). In terms of establishing new farmers, government assistance should be focused on areas that are conducive to growth in live bird sales. This could typically be areas with farmers' limited resources.

2.7 Challenges for the value chain of smallholder broiler farmers in South Africa

There are major constraints and challenges that SHFs face at different levels of the VC. Ola and Manepace (2020) assert that SHFs are faced with market imperfections and there are not enough actors that can provide linkages to retail sectors and provide technical and financial assistance to assist SHFs to overcome market imperfections. That is, the SHFs are unable to meet all the requirements of high-value markets, and this can be attributed to the rapidly changing food regulations, quality standards, and lack of access to essential information (Fan and Rue, 2020). As VCs evolve into more closely coordinated vertical systems from spot-markets-based systems to more explicit forms of coordination, SHFs face an additional challenge trying to keep pace with changing business dynamics (Chu and Pham, 2022). These challenges include economic constraints, marketing constraints, lack of awareness, educational resources, and poor infrastructure. Figure 2.4 below gives a brief overview of the challenges faced by smallholder broiler farmers in the VC.

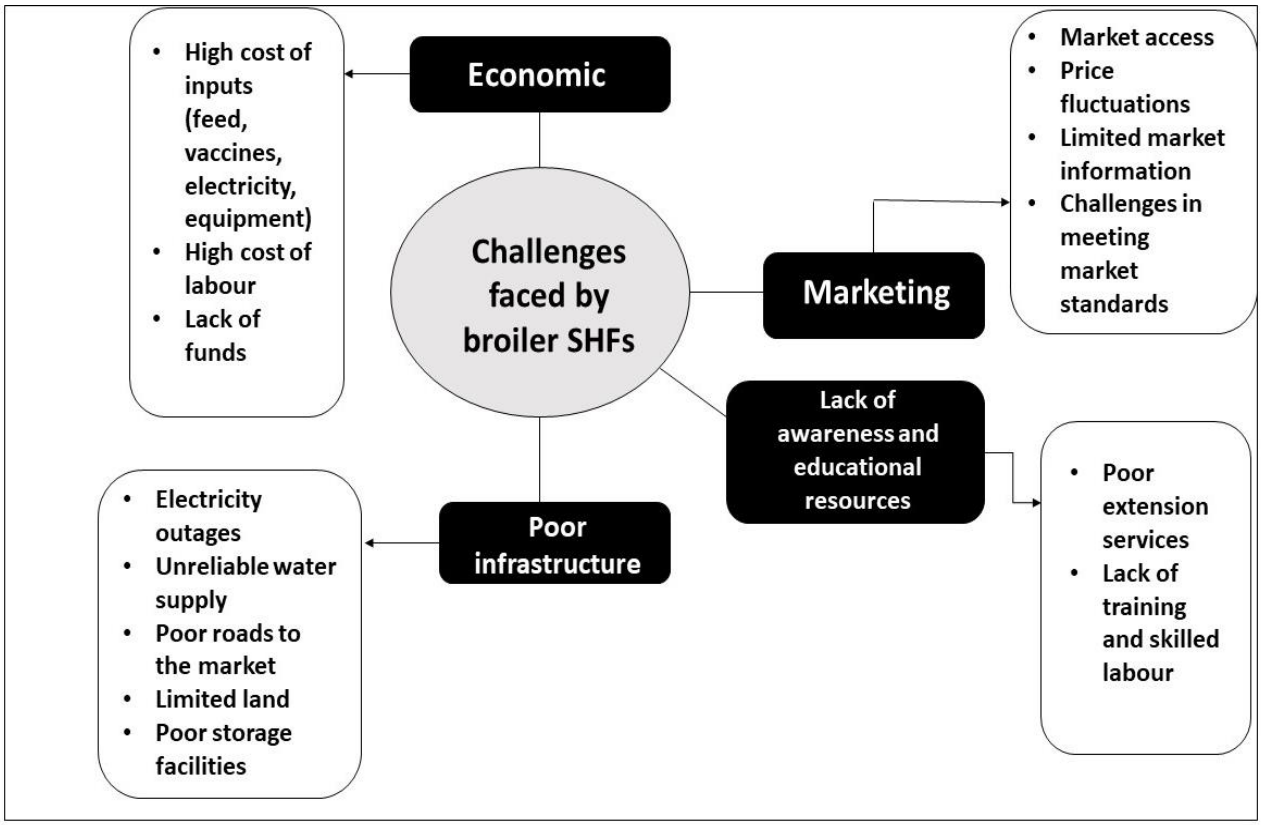

Figure 2.4: Challenges faced by smallholder broiler farmers in the VC.

Source: Author's compilation (2024)

2.7.1 Economic Constraints

An important factor in determining the success and productivity of a SHF is its economic viability. However, economic constraints are limiting the success of smallholder broiler farmers. Therefore, SHFs in South Africa struggle to participate and survive in BVCs. Not being able to participate in BVCs, and in many cases not being able to meet market demands, means exclusion from high VC systems resulting in a struggle for their economic survival. Moreover, SHFs in South Africa continue to be stigmatized as producers of low quality and inconsistency in production (Sikora et al., 2017). Dhillon and Moncur (2023) sum up the economic constraints as being labour costs, lower income, and high input costs. The study by Dhillon and Moncur concluded that economic challenges are a strong factor and that the shifting structure of agricultural production has important implications for the survival of small farms. The study also revealed that the economic constraints of smallholder broiler farmers may prevent SHFs from successfully forming part of the high-integrated BVCs as they will not be able to afford expenses to comply with high-VC systems.

Without meeting the requirements of high-VC systems means that the SHFs are excluded from participating in high-VC systems. Therefore, government intervention may be required through the provision of grants and inputs to assist SHFs in improving their economic efficiency.

2.7.2 Marketing Constraints

A marketing constraint is a factor that limits an organization's ability to achieve its marketing goals (Thibane, 2022). According to the NAMC (2018), it is widely understood that SHFs in South Africa lack access to lucrative markets due to limited market information, the inability to meet market demand, and market price fluctuations. The scale of their farms limits SHFs in meeting market demand. It is worth understanding that the marketing constraints faced by SHFs are also influenced by infrastructure and service delivery such as poor roads to the markets. In the absence of supporting functions (infrastructure and service provision), SHFs struggle to shift from subsistence and barter to more productive forms of exchange (Jeckoniah et al., 2020).

2.7.3 Lack of awareness and educational resources

To produce broilers, farmers must be properly trained. Information is one of the most vital resources to increase and sustain agricultural production (Masephula and Olorunfemi, 2023). Education is the most valuable commodity which gives awareness and knowledge. According to Ramukhithi et al., (2023), farmers who have received training in the production of broilers are more effective and profitable than those who have not. However, Kshash and Oda (2019) found that poor extension service is the most severe institutional constraint facing poultry producers in South Africa. Concerning the study by Von Loeper (2016), found that in the KwaZulu-Natal Province of South Africa, extension officers only visit SHFs once per year. It is recommended that the South African government should provide resources and infrastructure to improve the quality and outreach of extension services through information days and training (Myeni et al., 2019). This perspective may assist SHFs who prefer extension officers as their main source of information regarding small-scale farming.

2.7.4 Poor Infrastructure

Poor infrastructure continues to impede the agricultural production of SHFs. The key challenges are the lack of infrastructure such as electricity outages, limited water supply, limited land, poor storage facilities, as well as inadequate and poor condition of transport services such as roads (Ezechi, 2022). In rural areas, electricity is often not available which has reduced investment in

cold storage facilities (Sibanda and Workneh, 2020). In addition, the road transport system which is the most important infrastructure for market development in terms of the distribution of inputs and broiler chickens to and from the farm is the most serious bottleneck facing broiler farmers to participate in high VC systems (Wan et al., 2022). As a result of poor rural roads, SHFs in some areas depend on inefficient forms of transportation including the use of animals. Underdeveloped roads often lead to high transportation costs and reduce farmers' competitiveness. The infrastructure constraint does not only affect the competitiveness of smallholder broiler farmers but also affects the quality of broiler chicken produced by farmers. For example, the lack of storage facilities constrains the marketability of processed chicken products which may in turn decrease the profitability of the farm.

2.8 Chapter Summary

The focus of this chapter was to review the literature based on previous studies focusing on the VCA of smallholder broiler farming. This chapter also reviewed the socio-economic characteristics of smallholder broiler farmers in South Africa. It was found that the age of the farmer, gender, education level, and training received by the farmer are the main socio-economic characteristics of smallholder broiler farmers in South Africa. It was further discovered that the socio-economic characteristics mentioned above influence the sustainability and productivity of broiler farming. It is perceived that younger farmers are more likely to be productive as compared to older farmers because younger farmers adapt to new technologies easily. The literature also highlights that experienced and literate farmers are more productive than farmers who do not fit this description. The chapter also highlighted that the VC structure of South Africa is complex and makes it difficult for smallholder farmers to participate in the integrated VC. As a result, the value chain of South Africa is dominated by large-scale commercial farmers. It was further discovered that the VC of smallholder broiler farmers differs from that of large commercial farmers. The significant difference in operation size between smallholder and commercial farmers delivering for integrated companies highlights the growing challenges within the system. Furthermore, the competitiveness and the sustainability of smallholder broiler farmers are influenced by several factors, such as reliable access to inputs and credit, price formation, market access, knowledge and skills, and transaction costs. Moreover, smallholder farmers face barriers in the value chain. These include economic constraints, marketing constraints, lack of training, and poor infrastructure.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology employed to address the research questions of the study. The chapter starts with a description of the study area and is followed by the conceptual framework for smallholder broiler farmers' value chain. This section also highlights the sampling techniques, data collection methods, and analytical tools used for the study.

3.2 Description of the Study Area

The study was carried out in Buffalo City Metropolitan Municipality (see Figure 3.1). Buffalo City Metropolitan Municipality is a category A municipality situated centrally in the Eastern Cape province and is surrounded by the Great Kei, Amahlati, Raymond Mhlaba, and Ngqushwa local Municipalities. The municipality is named after the river that runs past King Williams Town and East London into the sea. Buffalo River is significant in that it is a geographical feature that links the two towns. In addition, the municipality is bounded to the southeast by the long coastline along the Indian Ocean. It includes the towns of East London, Bisho, and King William's Town. The municipality is characterized by a composite settlement and land use pattern, incorporating urban, peri-urban, and rural components. Buffalo City is the key urban center of the eastern part of the Eastern Cape Province. The region's land area is approximately 2750km², with 68km of coastline (Buffalo City Profile, 2020).

The municipality has a population of 931,000 people, and about 50.2% constitute females while 49.8% constitute males. In 2022, 536,000 people were living in poverty, out of that, the African population group had the highest percentage of people living in poverty with a total of 64.7%, followed by the Coloured, Asians, and Whites (Buffalo City Metropolitan Municipality Integrated Development Plan 2024/25, 2024). Regarding poverty levels, there is a cumulative number of social grant dependents in the municipality (Buffalo City Profile, 2020).

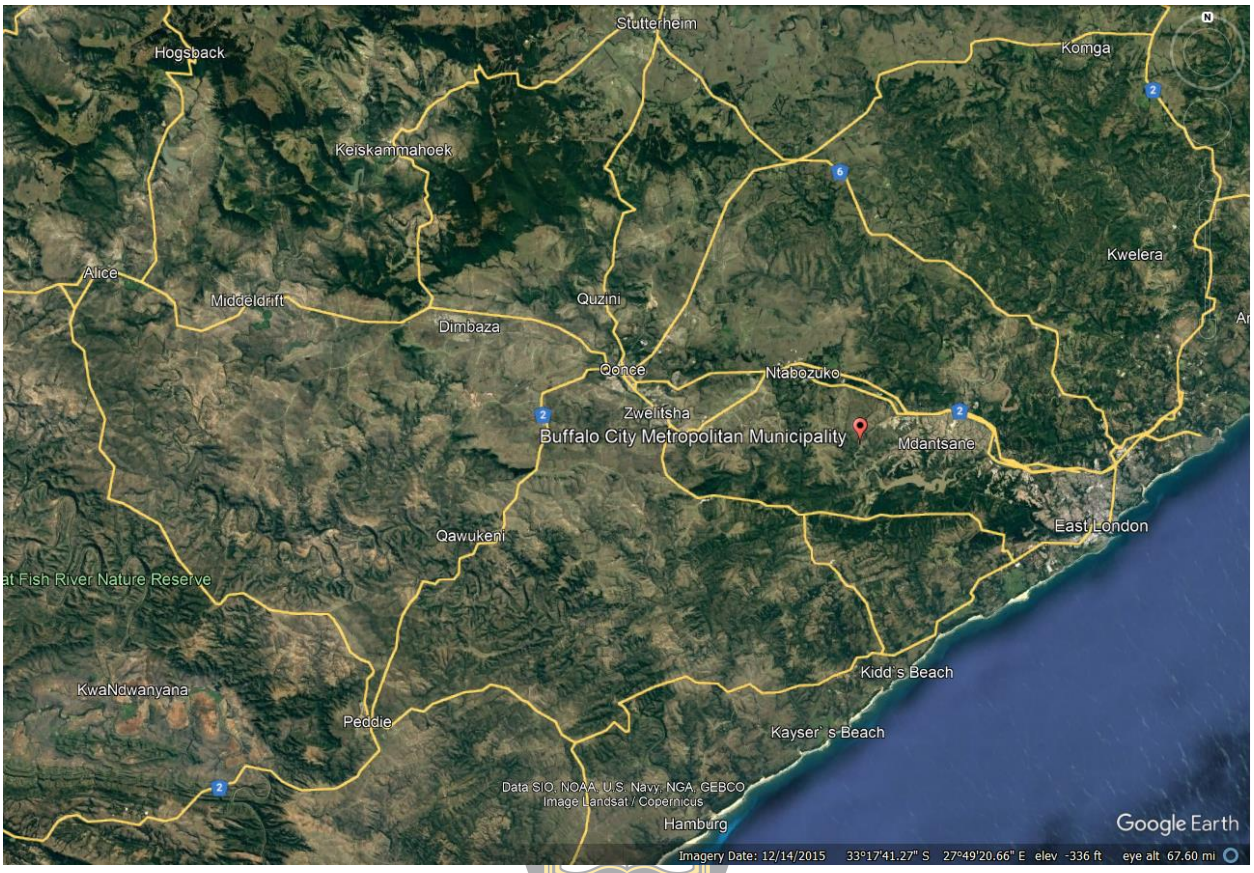

Figure 3.1: Map showing Buffalo City Municipality

Source: Google Earth (2024)

3.2.1 Agricultural potential of the study area

In Buffalo City Municipality, the potential for farming is high but limited due to the unavailability of arable land. According to the report released by the Cooperative Governance and Traditional Affairs in 2020, the municipality contributes approximately 1.2% to South Africa's' agricultural output and 18.1% to that of the Eastern Cape province (Buffalo City Profile, 2020). This implies that the agricultural sector of the municipality is economically feasible in South Africa. Citrus farming, small-scale chicken farming, beef, and dairy production are among the agricultural activities in the study area. In the year 2016, poultry farming was at 48.2% of livestock production (Buffalo City Metro Municipality Socio-Economic Review and Outlook, 2017). The production statistics presented imply that in 2016 poultry farming was the most popular farming activity in the study area. The popularity of poultry in the study area, among other factors, is the result of the

low cost of raising chicken. The poultry farming consists of sub-productions, namely, egg production, day-old chick supply, and broiler farming.

3.3 Conceptual Framework

This study employed a VCA framework to understand the VC for smallholder broiler farmers in Buffalo City Municipality, Eastern Cape province of South Africa. As defined by Haggblade et al., (2020), the VC describes the full range of activities that are required to bring a product or service from conception, through the different phases of production (i.e., involving combinations of physical transformation and the input of several producers' services), delivery to final consumers and final disposal after use. The VCA seeks to understand the various factors that drive the incentives, growth, and competitiveness within a particular industry and identify opportunities and constraints to increasing benefits for stakeholders operating throughout the industry. The VCA lends to its completeness as a strategic tool in exploring different alternative strategies for poverty reduction. The purpose of analyzing the VC for smallholder broiler farmers was to identify key points of intervention along the chain and to recommend specific policy directions to enhance the competitiveness of smallholder broiler farming. Input suppliers, farmers, processors, wholesalers/retailers, and consumers are the main actors of the broiler VC.

According to Louw and Scheltema (2017), the success of smallholder broiler farming is primarily due to the close interaction between smallholder farmers and suppliers. A study by Onumah et al., (2018) reports that after the production period, some chickens are marketed while some are lost due to mortality and farmers' consumption. A similar study conducted by Kratzer and Krister (2020) also found that most SHFs sell an appreciable amount of produce to local retailers and consumers to minimize transportation costs. It is to be noted that the BVC is also supported by institutions that are not directly involved in production, processing, and marketing, such as extension services and transport services. Figure 3.2 below shows the processes of the smallholder broiler VC.

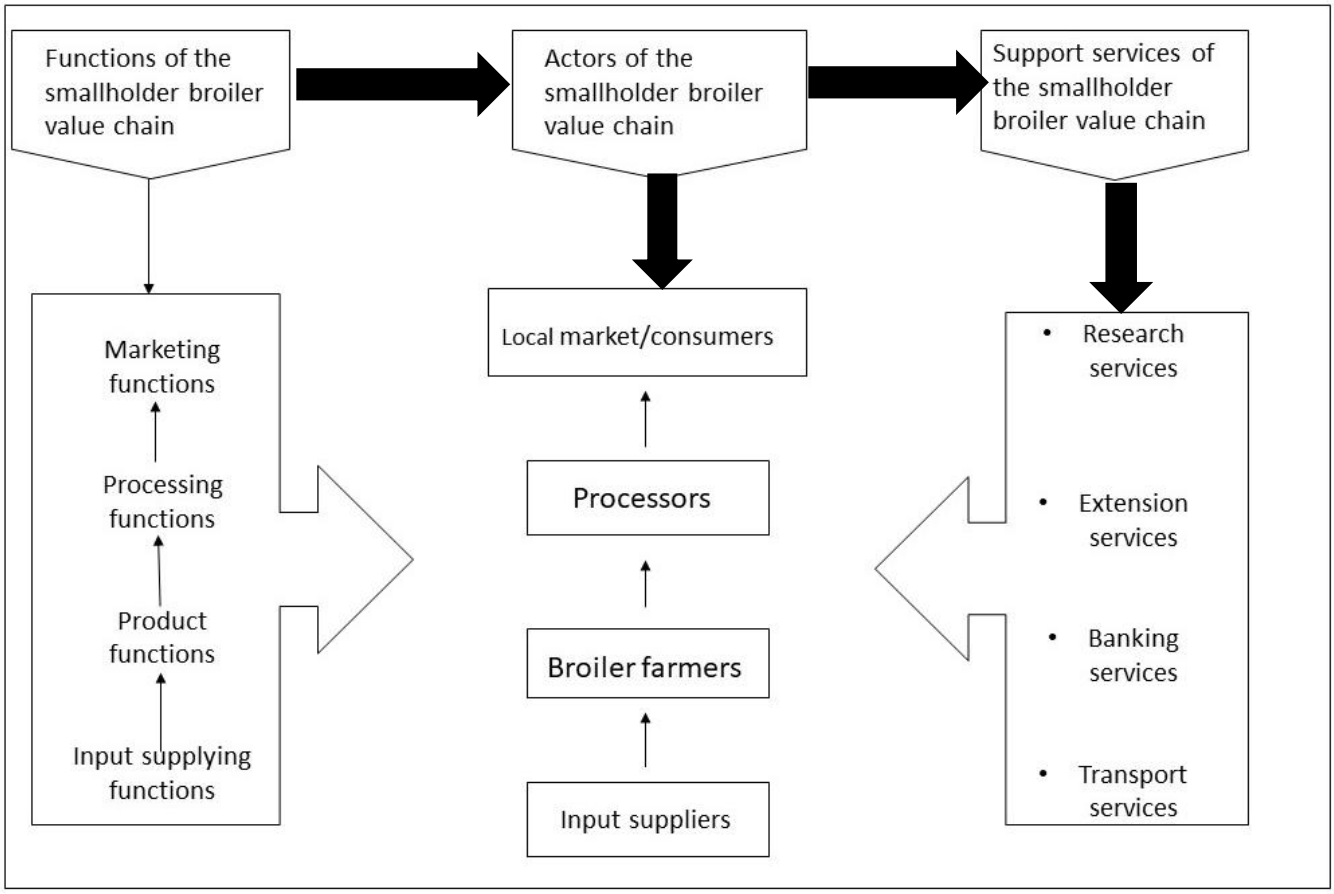

Figure 3.2: The process of smallholder broiler value chain

Source: Adapted from Daniel (2014)

3.4 Research approach and design

Research design is the strategy by which the research is conducted. It entails a description of what one intends to do with the participants, intending to reach conclusions about the research problem. Leavy and Poulton (2007) define a research design as a plan or blueprint of how one intends to conduct the research. A research design focuses on the product, formulates a research problem as a point of departure, and focuses on the logic of the research study. This study adopted a cross-sectional research design. There is a consensus among various authors that a cross-sectional research design is a type of observational study that analyses data from a population, or a representative subset, at a specific point in time. This research design provides important data that informs all kinds of actions; it is not costly to perform and does not require a lot of time. In this study, a cross-sectional research approach was used to capture detailed information regarding the VC of smallholder broiler farmers and the VC actors and their roles through a quantitative research approach.

3.5 Sampling technique

Sampling is a systematic approach employed by a researcher to ensure that a population is a true representation of the study. Researchers use sampling because it is difficult to test every individual in a population. As stipulated by Sharma (2017) there are several factors to consider when sampling for a study such as population variance, size of the population, objectives of the study, precision in results desired, financial implications of the study, techniques of the sampling employed, and accuracy needed in making inference about the population being studied. For this study, smallholder broiler farmers who reside in Buffalo City Municipality, Eastern Cape province of South Africa were selected using a purposive and snowball sampling procedure. Purposive sampling is also known as selective nonprobability sampling in that units being studied rely on the researchers' judgment. The snowball procedure was used to locate potential respondents with the help of an extension officer and farmers where respondents (broiler farmers) were hard to locate. This procedure was appropriate for the Buffalo City Municipality because the exact population size was unknown. The respondents were asked to give referrals to other broiler farmers in the study area.

3.6 Sample size

It is of paramount importance to study an adequate sample size to avoid bias and to obtain conclusive results. This study employed Cochran's proportion-to-size formula which is depicted below. Cochran's formula can extract a sample size when the population and its size are not understood or unknown.

$$n = \frac{p(1-p)\,z^2}{e^2}$$

Where:

n = sample size

p = the proportion ($p = 0.09$)

e = acceptable sampling error ($e = 0.05$)

z = z value at reliability level or significance level.

In this case, the reliability level was 95% (with a 95% confidence interval, the chances of being wrong are 5%) or significance level 0.01; z = 1.96

$$n = \frac{(0.09)(0.91)(1.96)^2}{(0.05)^2} = 125$$

Therefore, a sample of the study was 125 smallholder broiler farmers.

3.7 Data collection

The primary data was collected using a structured questionnaire through face-to-face interviews with the farmers. During the interviews, farmers were interviewed in their preferred languages which are IsiXhosa and English to ensure that the farmers understand all the questions. The structured questionnaire was designed to capture data on the demographics of farmers, primary activities of the broiler farmers' VC, VC actors, and their role, and challenges experienced by farmers at different levels of the broiler value chain using a Likert scale survey. The questionnaire served as a purpose to understand how the broiler farmers' value chain works in the study area.

3.8 Methods of data analysis

Data analysis is a process of summarizing and interpreting collected data to discover useful information. Data analysis methods employed give a detailed overview of the smallholder broiler farmers' characteristics and the activities involved in their value chain. Table 3.1 below presents a summary of the objectives and analysis tools used in the study.

Table 3.1: Summary of objectives and analysis tools

Objectives	Collected data	Analysis tool
To identify and describe the socio-economic characteristics of smallholder broiler farmers.	Age of the farmer, education, gender, marital status, household size, sources of income, etc.,	Descriptive statistics (Percentages, Frequencies)
To identify actors along the value chain and analyse the value chain of smallholder broiler farmers.	Input markets, broiler farmers, middlemen, customers, and retailers.	Descriptive statistics SWOT analysis matrix
To identify and analyse challenges experienced by smallholder broiler farmers at different levels of the value chain.	Inputs, marketing channels, market access, and infrastructure conditions.	Descriptive statistics

3.8.1 Descriptive statistics

Descriptive statistics were used to analyse all three objectives of the study including the SWOT matrix for objective two. This involved the use of tables, frequencies, percentages, sums, and means. Descriptive statistics were employed to present the specific characteristics of the broiler farmers in the study area to check which categories most or the least of the farmers fall under. George and Mallery (2018) define descriptive statistics as an analytical tool that uses data to provide population descriptions via numerical calculations, graphs, tables, and charts.

3.8.2 SWOT Analysis Matrix

The SWOT (strengths, weaknesses, opportunities, threats) analysis is frequently used among the scientific techniques that evaluate possible factors acting as bottlenecks or opportunities for prioritizing developmental strategies within a specific sector (Lousiane and Syaroni, 2020). The SWOT analysis matrix was used to analyse the value chain of smallholder broiler farmers in the study area. Table 3.2 below shows the indicators that were used in all the identified role players in the broiler value chain to achieve objective two of the study.

Table 3.2: Indicators for SWOT analysis matrix

Strength indicator	Weakness indicator	Opportunity Indicator	Threat indicator
Free services offered by the government	Poor housing facilities	Availability of labor	Long distance to the input suppliers
Training received	Inability to meet consumer preferences	Access to extension officers	High cost of production
Skilled labour	High mortality rates		Lack of storage facilities
			High cost of transport services to the market
			Distance to the market
			Poor road conditions

3.9 Ethical considerations

Ethical considerations concerning the rights of participants were central to this study. Therefore, the researcher adhered to the following:

Ethical clearance application – Before data collection, an ethical clearance application was applied for, and the clearance certificate was obtained from the University of Fort Research Ethics Committee with the ethical clearance number: MAY021SMPH01.

Informed consent - Participants were informed about what the research is about, how it would affect them, the benefits of participating, and the fact that they have the right to withdraw from participation if they so wish.

Confidentiality - Information provided by participants, susceptible, and personal information was protected.

Anonymity - The principle of anonymity was linked with confidentiality. A participant's data was not associated immediately and obviously with their name or any other identifier.

Discontinuance - Participants were assured that they were free to discontinue their participation at any time without being required to explain. This means a participant's decision was respected.

Physical and mental distress - the participants were exposed to danger or mental distress. The researcher allowed the respondents to sit in their preferred comfortable places during the interview to avoid exposing participants to physical or mental distress.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The study aimed to analyse the value chain of smallholder broiler farmers in Buffalo City Municipality, Eastern Cape Province of South Africa. The chapter starts by describing the socio-economic characteristics of smallholder broiler farmers in BCM, followed by actors along the Value Chain (primary activities). The chapter concludes by describing the challenges experienced

4.2 Description of socio-economic characteristics of smallholder farmers in Buffalo City Municipality

Table 4.1 below illustrates the socio-economic characteristics of the interviewed farmers in the study area (n = 125)

Table 4.1: Description of socioeconomic characteristics

Variables	**Measurement**	**Frequency (*f*)**	**Percentages (%)**
Gender	Male	77	64
	Female	43	36
Age	< 30	15	12.5
	30 – 39	48	40
	40 – 49	27	22.5
	50 – 59	25	21
	60 >	5	4
Marital status	Single	33	27.5
	Married	63	52.5
	Divorced	17	14
	Widowed	8	6
Education	No formal education	0	0
	Primary	7	6
	Secondary	85	71
	Tertiary	28	23

Source: Field survey Results (2024)

Out of the interviewed farmers, as indicated in Table 4.1 above, there were more males (64%) involved in broiler farming than females (36%). This implies that males dominate smallholder broiler farming in the study area. This may be because males are household providers, and their families depend on them for livelihood survival. Whereas females are expected to attend to household chores and are not encouraged to participate in farming activities. Another possible reason could be that men have always been perceived to be more suitable for farming activities in most households. This concurs with assertions by Mamaril and Lu (2019) that the contribution of

women is often overlooked in most agricultural activities. However, according to Ball (2020), on average, farms run by women are as profitable as those run by men. This indicates that farming is gender insensitive.

Table 4.1 also shows that most smallholder broiler farmers in the study area are between the ages of 30 to 49 years old (62.5%). Based on these results, smallholder broiler farming in Buffalo City Municipality is dominated by young and middle-aged farmers, who may promote the outlook of smallholder broiler farming in the study area. This is because this age group of farmers is still active enough to run the enterprise and is more open to adoption and innovation techniques. In literature, age is one of the most important factors in the success of farming. The age of the farmer influences exposure to more farming practices which may result in farmers participating in high-value chain markets.

Moreover, Table 4.1 indicates that most of the farmers in the study area are married (52.5%). The marital status of households in most African families is usually perceived to determine various aspects of life including, access to land and property, decision-making, and economic opportunities and resources. Therefore, if these justifications are valid, a farmer's marital status can influence the farmer's decision in various ways. For example, firstly, married farmers may be more risk-averse, considering the financial security of their families, and secondly, married farmers may share workload and responsibilities with their partners, whilst single farmers may need to manage everything alone or hire labour.

From the results in Table 4.1, there were no farmers with no formal education, while only 6% of the farmers had only primary education. These results indicate that most farmers (94%) in the study area are literate as they have acquired formal education. These results imply that broiler farmers in the study area should know where to get knowledge about broiler farming practices and be open to adopting and innovating new technologies. A study by Ahiale et al., (2019) also found that farmers who obtained some levels of education were technically efficient than farmers who did not.

4.3 Illustration of socio-economic characteristics of farmers according to their household size, sources of income, and household income received per month

Figure 4.1 below illustrates the household size of farmers in the study area

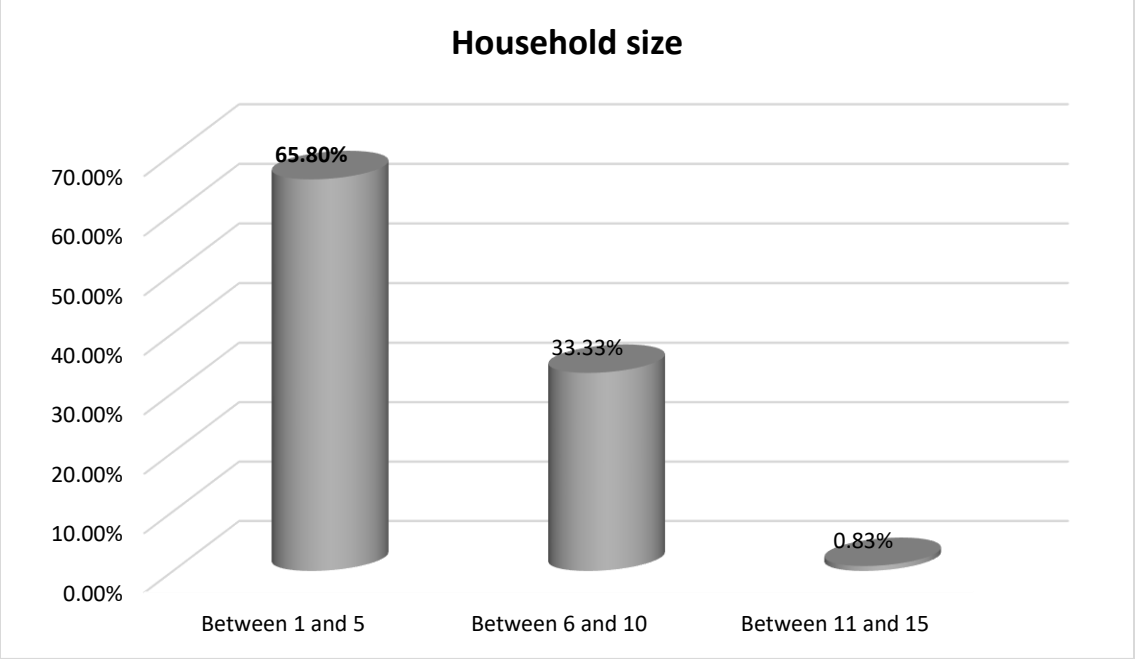

Figure 4.1: Household size distribution

Source: Field survey Results (2024)

Figure 4.1 above indicates that most household broiler farmers in Buffalo City Municipality have household sizes between one (1) and five (5) members, constituting 65.80%. The results suggest that an increase in household size could increase the likelihood of a close interaction between the farm and other value chain actors as the workload will be shared within the family. A household with many members can likely produce more marketable output, thereby increasing the sustainability of the farm.

Figure 4.2 below illustrates the sources of income of farmers in Buffalo City Municipality

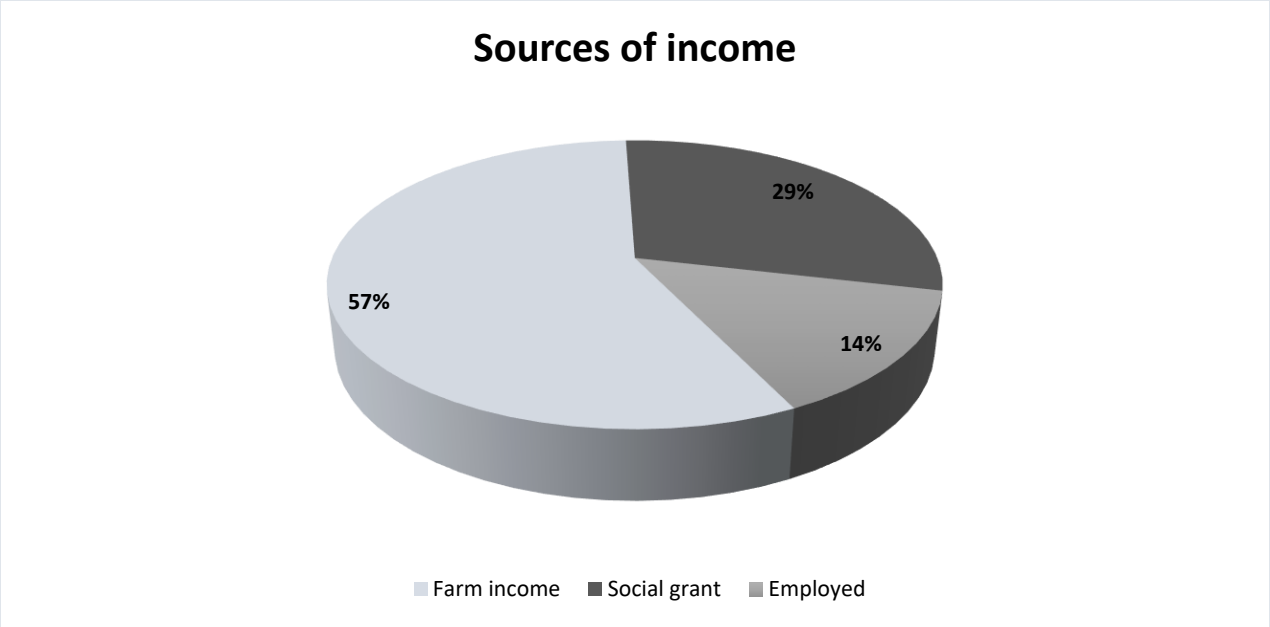

Figure 4.2: Sources of income

Source: Field survey Results (2024)

The results above indicate that smallholder broiler farmers largely depend on farm income and social grants, however, a minority of farmers are employed, and earn their income through salaries. These results agree with economic statistics released by the municipality in 2020 which depict that there is a cumulative number of social grant dependents in the municipality (Buffalo City Profile, 2020). High levels of unemployment highly challenge the municipality, therefore as a strategy to mitigate this challenge, people engage in different agricultural activities other than broiler farming such as Indigenous chicken farming, crop farming, and livestock farming.

Figure 4.3 illustrates household income received by farmers per month

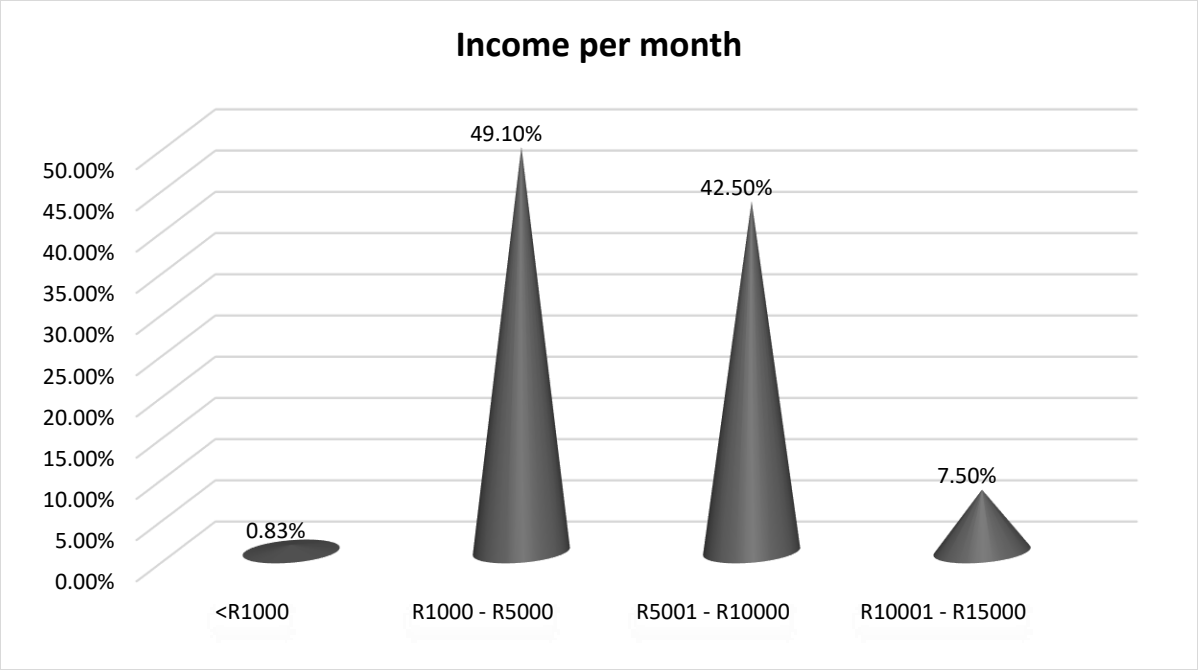

Figure 4.3: Levels of household income

Source: Field survey Results (2024)

Based on the results in Figure 4.3, it is evident that the smallholder farmers in BCM are characterized by high levels of unemployment and poverty. Approximately 49.10% of the interviewed farmers receive a household income that is between R1 000 and R5 000 per month. At least 7.5% of farmers receive an income that is between R10 000 and R15 000 per month. The results suggest that the income status of the farmers highlights the vulnerability and poor standard of living for farmers and their households. The study observed that farmers who received an income that is between R1 000 and R5 000 per month lacked farming inputs, as a result, such challenges hinder the expansion of their farm business.

4.4 The value chain of smallholder broiler farmers

This section provides an analysis of the second objective of the study which looked at identifying the actors along the value chain of smallholder broiler farmers as well as the primary activities involved in the value chain of smallholder broiler farming in BCM using descriptive statistics and SWOT analysis matrix.

4.4.1 The value chain actors in the study area and their roles

Table 4.2: Value chain actors and their roles

Actors	Roles	Percentage (%)	Ranking
Input markets	Provision of production inputs to farmers (day-old chicks, feed, equipment, medicine)	100%	1
Consumers	They buy from farmers	100%	1
Extension officers	Provide advisory services	10.8%	2
	Training	5%	4
	Training and advisory services	1.67%	6
	Inputs supply	1.67%	6
The Department of Social Development	Inputs supply	2.5%	5
Bank	Offered loan to start the farm business	2.5%	5
DALRRD	Inputs provision	6.67%	3

Source: Field survey Results (2024)

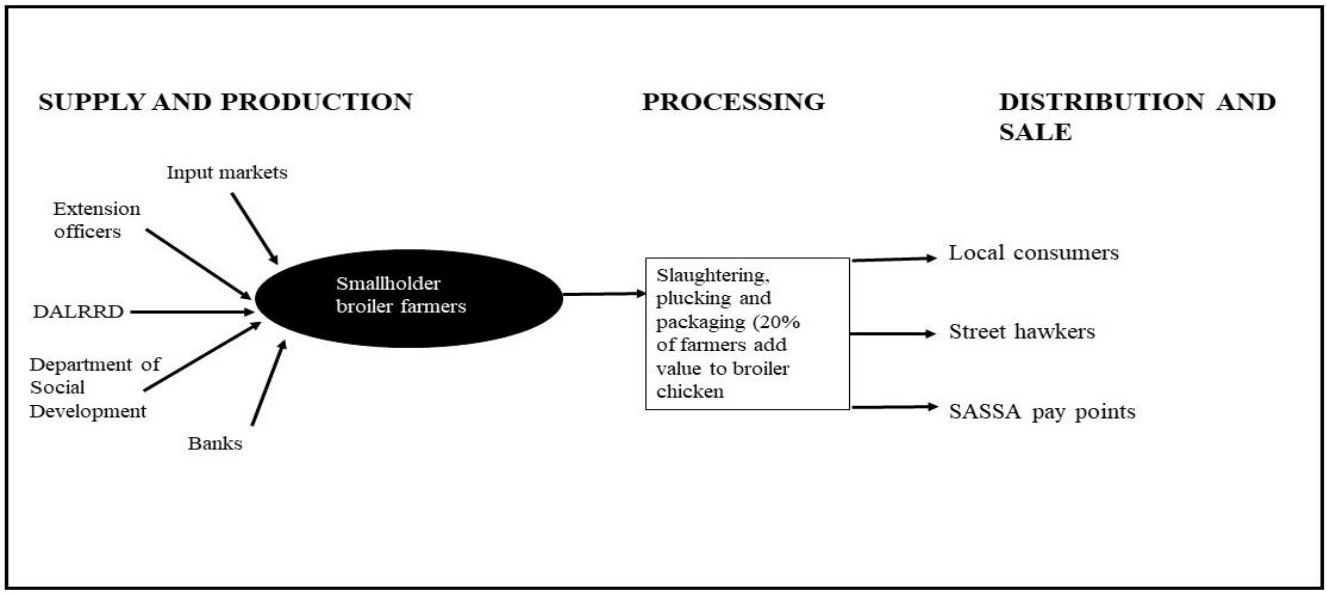

Figure 4.4: Visual presentation of the value chain of smallholder broiler farming in BCM

Source: Author's compilation from field survey Results (2024)

The value chain of smallholder broiler farming in BCM shows actors in different stages. Table 4. 2 above indicates that the broiler value chain in BCM consists of input markets, extension officers, The Department of Land Reform and Rural Development, The Department of Social Development, and the Bank sectors. The results in Table 4.2 further show that 100% of smallholder farmers in the study area interact with input markets and customers/consumers. The input markets play a significant role in the daily operation of the farm business. However, none of these input markets are located less than 15 km away from the farmsteads. Therefore, farmers are bound to

travel long distances to buy farm inputs. Notwithstanding that, the smallholder broiler value chain had additional actors in the supply chain such as the Department of Social Development and the DALRRD. About 2.5% of the interviewed smallholder broiler farmers indicated that their farms have benefited from the Department of Social Development, as well as 6.67% of farmers indicated that they received support from DALRRD through the provision of necessary farming equipment as well as feed for their broilers. A small proportion of smallholder broiler farmers (2.5%) also indicated that the Banks were involved in the value chain of their farms as they offered them loans when they started their farm businesses. The study also observed that smallholder farmers who received loans from the Bank were those who were permanently employed. In addition, smallholder farmers were unable to borrow from banks because they did not have the collateral and credit records that banks required. From the findings presented in Table 4.2, smallholder farmers indicated that extension officers are visible to them, and they provide advisory services, and training, and the farmers also indicated that extension officers provided them with inputs, but not regularly.

4.4.2 SWOT Analysis Matrix

The SWOT Analysis was divided into two categories: The Internal Factor Analysis and the External Factor Analysis. The Internal Factor Analysis constitutes the broiler farmers' strengths and weaknesses using the IFAS (Internal Factor Analysis Summary) matrix. The results of the IFAS matrix analysis obtained aimed to identify how much the strengths of a farmer can influence the farmer's knowledge about their broiler farming, and to identify how much weaknesses of a farm can influence the revenue of a farm business. To test the relationship between the strengths of the knowledge of a farmer, and weaknesses and the revenue of a farmer, correlation coefficients were used.

The External Factor Analysis constitutes the broiler farmers' opportunities and threats using the EFAS (External Factor Analysis Summary) matrix. The results of the EFAS matrix analysis obtained aimed to identify how many opportunities a farmer can influence the value addition of the broiler chicken, and to identify how much threats affect the number of broilers sold at the end of the production cycle. To test the relationship between the variables, a similar approach used for IFAS was used.

Table 4.3: Correlation coefficients for strengths and the farmer's knowledge variables, and weakness and revenue variables

Strength and Knowledge variables	**Correlation coefficients**	**Weakness and Revenue variables**	**Correlation coefficients**
Training and Knowledge	0.24	Poor housing Facilities and Revenue	0.15
Free services offered by the government and Knowledge	0.28	Meeting Consumer Preferences and Revenue	0.17
Skilled labour and Knowledge	0.02	High mortality rates and Revenue	0.18

Source: Field survey Results (2024)

Therefore, in this case, variables were ranked according to their significance. For example, variables that indicate a better correlation were prioritized. To establish a weight range of strengths and weaknesses a scale of 1–3 was used, hence the results in Table 4.4 below.

Table 4.4: Correlation coefficients for opportunities and value addition variables, and threats and number of broilers sold variables.

Opportunities and Value addition variables	**Correlation coefficients**	**Threats and Number of broilers sold variables**	**Correlation coefficients**
Availability of labour and Value Addition	0.18	Long distance to the input suppliers and Number of broilers sold	-0.07
Access to extension officers and Value-addition	0.28	High cost of production and Number of broilers sold	0.88
		Lack of storage facilities and Number of broilers sold	-0.52
		High cost of transport services to the market and Number of broilers sold	0.59
		Distance to the market and Number of broilers sold	0.54
		Poor road conditions and the Number of broilers sold.	0.25

Source: Field survey Results (2024)

Therefore, for EFAS, variables were also ranked according to their significance. For example, variables that indicate a better correlation were prioritized and variables that indicated a negative correlation were not because they imply that the variables influence each other but in opposite directions. To establish a weight range of opportunities and threats a scale of 1–3 was used, hence the results in Table 4.5 below.

Table 4.5: The IFAS and EFAS matrix

Internal Factor Analysis Summary (IFAS)			
Strengths	**Weight**	**Rating**	**Weighted score**
Training	0.33	2	0.66
Free services offered by the government	0.17	1	0.17
Skilled labour	0.50	3	1.5
Total strength value			**2.33**
Weaknesses			
Poor housing facilities	0.46	3	1.33
Meeting consumer preferences	0.38	2.5	0.95
High mortality rates	0.15	1	0.15
Total weakness value			**2.43**
The Difference in score			**-0.1**
External Factor Analysis Summary (EFAS)			
Opportunities			
Availability of labour	0.67	2	1.34
Access to extension officers	0.33	1	0.33
Total opportunities value			**1.67**
Threats			
Long distance to the input suppliers	0.21	3	0.63
High cost of production	0.07	1	0.07
Lack of storage facilities	0.21	3	0.63
High cost of transport services to the market	0.18	2.5	0.45
Distance to the market	0.18	2.5	0.45
Poor road conditions	0.14	2	0.28
Total threats value			**2.51**
The Difference in score			**-0.84**

Source: Field survey Results (2024)

The next procedure was to compile a SWOT diagram. The diagram is useful for knowing the position of smallholder broiler farmers in the study area. The SWOT diagram is divided into four quadrants: namely:

- Quadrant I – Stability
- Quadrant II – Growth
- Quadrant III – Defense
- Quadrant IV - Diversification

The difference in scores was then used to compile the X and Y axes on the SWOT diagram in Figure 4.5 below.

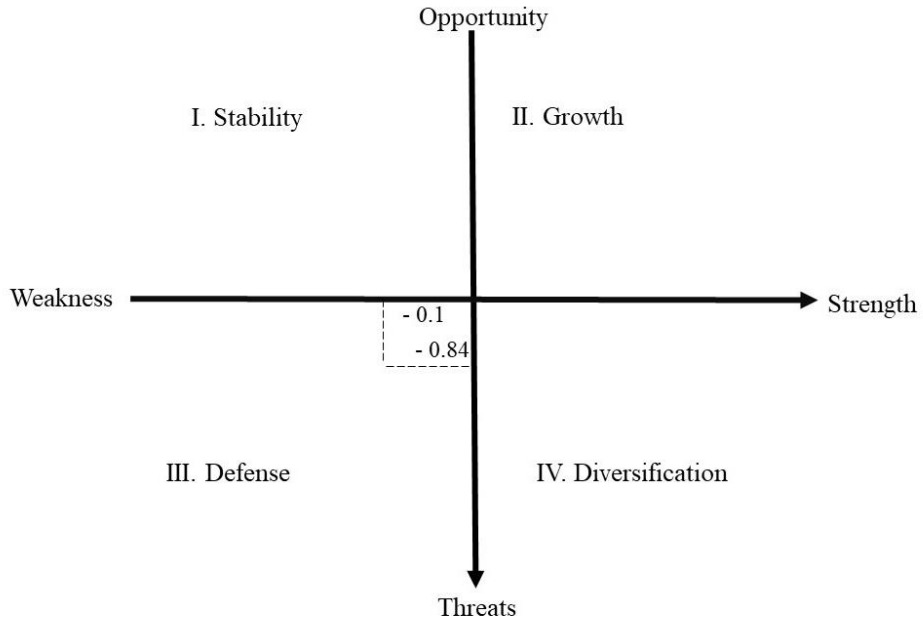

Figure 4.5: SWOT diagram

Source: Field survey Results and Own compilation (2024)

The diagram explains that the position of smallholder broiler farmers of BCM is Quadrant III. This means that farmers in the BCM are vulnerable as a result of the internal weaknesses and external threats making it challenging for them to be competitive and sustainable. Moreover, a SWOT Matrix was used by adding EFAS scores to IFAS. The total value of each factor is shown in Table 4.6 below.

Table 4.6: IFAS and EFAS scores

IFAS/EFAS	**Strength (S)**	**Weaknesses (W)**
Opportunity (O)	**SO** 2.33 + 1.67 = 4	**WO** 2.43 + 1.67 = 4.1
Threat (T)	**ST** 2.33 + 2.51 = 4.84	**WT** 2.43 + 2.51 = 4.94

Source: Field survey Results (2024)

Table 4.6 above shows that the WT factors have the highest value (4.94). The WT factors from Table 4.6 are in line with Figure 4.5 above. Therefore, development strategies could be implemented. Table 4.7 below highlights development strategies based on the SWOT Matrix results above.

Table 4.7: Development strategies based on the SWOT Matrix

<table>
<tr><td>EFAS and IFAS</td><td>Strengths (S)
- Training
- Free services offered by the government
- Skilled labour</td><td>Weaknesses (W)
- Poor housing facilities
- Inability to meet consumer preferences
- High mortality rates</td></tr>
<tr><td>Opportunities (O)
- Availability of labour
- Access to extension officers</td><td colspan="2" rowspan="2">WT Strategies
- Development of farmer education programmes for smallholder broiler farmers to overcome the challenges of high mortality rates.
- Development of poor infrastructure.
- Provision of market information to overcome the challenge of the inability to meet consumer preferences.
- Improving government support by forming farmer groups to socialize with other farmers and improve competitiveness.</td></tr>
<tr><td>Threats (T)
- Long distance to the input suppliers
- High cost of production
- Lack of storage facilities
- High cost of transport services to the market
- Distance to the market
- Poor road conditions</td></tr>
</table>

Source: Own Compilation (2024)

The SWOT Analysis Matrix results obtained above indicate that smallholder broiler farmers in BCM are vulnerable to threats. As a result, the sustainability of smallholder broiler farms is threatened. According to Figure 4.5 and Table 4.6 above, smallholder broiler farmers in BCM are in quadrant III strategies (defensive), meaning that strategies aimed at minimizing threats and weaknesses are of paramount importance. The identified strategies may play a key role in the improvement of the broiler farming systems and promote the competitiveness of the broiler farmers in BCM. One of the key strategies is the visibility of extension agents and government officials. As indicated in a study by Prasetyo and Hariani (2018), agricultural extension support is

very important to smallholder farmers through farmer education which in turn promotes the overall coordination of smallholder broiler farmers. Hendro and Lillies further stated that extension officers act as a solution to all the problems faced by smallholder farmers.

4.5 Challenges experienced by broiler farmers at different levels of the value chain

This section addresses the third objective of the study. To address the third objective, the study acquired data such as input acquisition, operations, outbound logistics, marketing, and service using a Likert scale instrument.

Table 4.8 below shows the summaries of the answers to the questions that each level of the value chain was based on. For input acquisition, operations, outbound logistics, marketing, and service, a series of questions were posed relating to different challenges experienced at different levels of the value chain of smallholder broiler farming. These were 5-point Likert scale questions that indicated the farmers' level of agreement, where 1 means that the respondent strongly disagrees with the statement, 2 means the respondent disagrees with the statement, 3 means they feel neutral about the statement, 4 means they agree with the statement, and 5 means that they strongly agree with the statement.

Table 4.8: Challenges experienced by smallholder farmers at different levels of the value chain

Statement	1	2	3	4	5	Total (%)	Mean score
Input acquisition							
A. It is difficult to acquire inputs due to limited access to capital and a lack of information on where and how to access inputs.	6.7	13.3	8.3	18.3	53.4	100	3.98
B. I find it difficult to find nearby suppliers.	7.5	12.5	7.5	30.8	41.7	100	3.87
Operations							
C. It is challenging for me to find skilled labour.	3.4	20.8	23.3	22.5	30	100	3.55
D. I find it hard to administer vaccines and other medicines suitable for broilers.	8.3	27.5	14.2	32.5	17.5	100	3.23
E. I do not know the reasons behind feeding different diets to broilers.	9.2	27.5%	24.2	20.8	18.3	100	3.12
F. I have a problem with the housing facilities and farm equipment, as a result, broilers die from the cold.	4.2	8.3	10.8	23.3	53.4	100	4.13
Outbound logistics							
G. I incur high costs when transporting broilers to the market.	51.7	6.7	7.5	15.8	18.3	100	2.43
H. Sometimes it becomes difficult to reach some consumers due to poor roads.	18.4	10.8	3.3	25.0	42.5	100	3.63
I. I do not have proper storage facilities for broilers when transporting them to the market, as a result, they lose their quality.	18.3	19.2	6.7	29.2	31.7	100	3.47
Marketing sales							
I. I find it difficult to find customers.	6.7	17.5	18.3	31.7	25.8	100	3.53
J. I do not have proper knowledge of the broiler prices charged by my competitors.	40.8	46.7	8.3	4.2	0.0	100	1.76
K. I do not have a proper understanding of my target market and my marketing options.	11.7	23.3	5.0	45.0	15.0	100	3.28
Service							
L. I fail at maintaining customer-seller relationships.	5.8	25.8	14.2	40.0	14.2	100	3.31

Source: Field survey Results (2024)

4.5.1 Inputs acquisition

Table 4.8 above illustrates that most smallholder broiler farmers in the study area (53.4%, $\bar{x}$ = 3.98) find it difficult to acquire inputs due to limited access to capital and a lack of information on where and how to access inputs. About 41.7% of the farmers also indicated that it is difficult to find nearby suppliers. These results suggest that farmers in BCM have limited input market information. Limited input market information to farmers results in the limited use of important inputs by farmers.

4.5.2 Operations

According to the results presented in Table 4.8, about 52.5% of the farmers agree and strongly agree that it is difficult to find skilled labour. On the other hand, smallholder broiler farmers in the study area, especially those who received some training, indicated that it is not difficult to administer medications and are knowledgeable of different diets suitable for broilers. Whereas the highest percentage of farmers are challenged in the areas mentioned above. Furthermore, the study observed that farmers in the study area face the major challenge of a high mortality rate for the broilers. As a result, many farmers (53.4%, $\bar{x}$ = 4.13) indicated that broiler chickens die from cold because of poor housing facilities. The results reveal that smallholder broiler farmers in BCM lack the necessary farming equipment and, as a result, incur high losses because of the high mortality rates they experience.

4.5.3 Outbound logistics

The results in Table 4.8 above indicate that many smallholder broiler farmers in the study area (51.7%) incur low costs when transporting their produce to the market. As a strategy to minimize transportation costs, smallholder farmers prefer to sell their produce on-farm and to local consumers. In addition, about 18% of broiler farmers incur high costs when transporting their broilers to the market as they mentioned that they sell to their nearest towns and at SASSA pay points. The issue of infrastructure remains a huge impediment for smallholder broiler farmers in the study area. Approximately 25% and 42.5% of smallholder broiler farmers agree and strongly agree respectively that sometimes it becomes difficult to reach some consumers due to poor roads. Moreover, many farmers in the study area indicated that they lack storage facilities for broilers when transporting them to the market and as a result, they lose their quality. Mtombeni et al., (2019) also found that the lack of infrastructure for emerging farmers causes farmers to

undercharge their produce and therefore receive lower profits. The challenges experienced by broiler farmers in the study area pose a question of whether smallholder broiler farmers are fit to participate in high-value chain markets as they sell birds of low quality due to a lack of sufficient production inputs.

4.5.4 Marketing Sales

Approximately, 25.8% of the interviewed smallholder broiler farmers agree whereas 31.7% of smallholder broiler farmers strongly agree that it is difficult to find customers for their produce. This means that farmers do not know where to sell their produce for profit. It is in this regard that many smallholder broiler farmers in the study area prefer to sell on-farm and to local consumers. However, none of the farmers reported not knowing the broiler prices charged by their competitors. Furthermore, 45% of the farmers agree and a small portion (15%) of smallholder broiler farmers in BCM strongly agree that they do not have a proper understanding of their target market and their marketing options. These results are in line with the study by Magesa et al., (2020), who found that smallholder farmers have limited agricultural market information.

4.5.5 Service

According to Table 4.8 above, smallholder broiler farmers reported having a challenge in maintaining customer-seller relationships. This may be because smallholder farmers in the study area are unable to meet consumer preferences. As a result, customers may prefer to buy at output markets that meet their requirements.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

In the study, descriptive statistics and a SWOT Analysis matrix were tools employed to analyze primary data. Out of the 125 smallholder farmers interviewed, 64% were males and 36% were females. This implies that broiler farming in the study area is gender sensitive. This may be due to several factors as mentioned in the previous chapter. Furthermore, the findings of this study indicated that many broiler farmers in BCM were literate as all of them indicated that they had obtained formal education. The education level of broiler farmers places all the farmers in an advantageous position because they know where and how to seek knowledge and guidance regarding their farm produce. The results further discovered that smallholder broiler farmers had a close interaction with other value chain actors. The value chain actors identified were input markets, consumers, extension officers, government institutions, and financial institutions. However, the value chain of smallholder broiler farmers of BCM differs greatly from the commercial agricultural value chain. The study observed that some farmers in the study area do not have any interaction with supermarkets and retail markets. This may be because farmers do not have proper knowledge of the market, or they cannot keep up with formal market standards.

The study further observed that many smallholder broiler farmers in the study area do not process their produce; by slaughtering, plucking, and packaging, and they prefer to sell live broilers. One limitation for not practicing processing is the inability to meet market requirements as some consumers would prefer slaughtered and plucked chicken meat. Moreover, broiler farmers in the study area faced significant challenges in all the stages of the value chain. The farmers were strained by high input costs, limited knowledge of the market, poor infrastructure, the inability to administer vaccines, and high transport costs to the market. The farmers also mentioned that they do not have proper storage facilities for their broilers, as a result, they lose their quality. Moreover, the SWOT Analysis employed for the study indicated that broiler farming in the study area is confronted with weaknesses and threats. Meaning that, for farmers to reach maximum potential necessary interventions are required.

5.2 Recommendations

5.2.1 Visibility of Extension Officers to broiler smallholder farmers

In the study, only 19.1% of the smallholder broiler farmers reported having had an interaction with the extension officers. The lack of extension services is a major setback for smallholder farmers. Extension services are very substantial for farmers as they provide advisory services and production strategies. Lacking extension services may result in farmers getting inaccurate information from unreliable sources. Therefore, this study recommends that extension officers be available according to the needs of smallholder broiler farmers in BCM.

5.2.2 Market linkages

The study recommends that linkages could be established between the formal markets and smallholder broiler farmers. Some smallholder broiler farmers in the study area do not participate in the formal market because they do not know where to take their products for sale. Therefore, there should be an establishment of an information system that allows smallholder broiler farmers to acquire such information as to where they can sell their products, and the quality standards required to ensure that smallholder broiler farmers always have access to formal market information.

5.2.3 Government intervention

The government should find ways of linking the smallholder broiler farmers in the study area with other stakeholders, governmental and private entities, to allow smallholder broiler farmers opportunities to network and get to know how the commercial successful farms operate and see where they can improve their production and marketing streams. This would help the smallholder broiler farmers address some of their constraints, such as poor-quality chicken houses, high mortality rates, how to find markets for their produce, and medicine administration.

5.2.4 Farmer training

Smallholder broiler farmers in the study area lack formal training for their broilers. Therefore, this study recommends that broiler farmers in the study area be trained through information days, adult education, and workshops.

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APPENDIX A: QUESTIONNAIRE

QUESTIONNAIRE NO:

University of Fort Hare
Together in Excellence

Faculty of Science and Agriculture

Department of Agricultural Economics and Extension

VALUE CHAIN ANALYSIS OF SMALLHOLDER BROILER FARMING IN BUFFALO CITY MUNICIPALITY, EASTERN CAPE PROVINCE OF SOUTH AFRICA.

General Information

Name of the researcher: Zimi Mphana

Name of the enumerator: ……

Location……

Questionnaire number……

Instructions: Please fill in the relevant information and where appropriate mark with an X

SECTION A: Household demographic information

1. Gender

0. Male	1. Female

2. Age

0. < 30	1. 30-39	2. 40-49	3. 50-59	4. 60>

3. Marital status

0. Single	1. Married	2. Divorced	3. Widowed

4. Highest education level achieved

0. No formal education	1. Primary	2. Secondary	3. Tertiary

5. What is your household size? .....
6. Main source of income

0. Farm income	1. Social grant	2. Employed	3. Other *(please specify)*

7. What is your household income per month (ZAR)? …….
8. What is the main poultry farming of the farm?

0. Broiler	1. Layers	2. Indigenous	3. All the three types

SECTION B: Value chain actors and primary activities of the broiler farmers' value chain

9. Who else is involved in your broiler activities?

0. Input markets	1. Middlemen	2. Customers	3. Retailers/Supermarkets	4. Other *(please specify)*

10. Explain the role of each actor identified above.

Chain Actor	**Role**
Input Markets	
Middlemen	
Customers	
Retailers or supermarkets	
Other specify	

11. Is your small-scale broiler enterprise promoted by the government or any other institution?

0. Promoted	1. Own initiative

12. Did you receive any formal training related to broiler farming?

0. Yes	1. No

13. Do you receive any form of government support/extension advice?

0. Yes	1. No

14. If yes, what form of support did you receive?

……
……
……
……
……

15. What made you interested in broiler farming?

……
……
……
……
……
……

16. What type of brooder house do you have?

0. House made of zinc	1. House made of bricks	2. House made of planks	3. Other *(please specify)*

17. How do you keep your broilers warm?

……
……
……
……

18. What is the distance to the input suppliers? Please select from the box below.

18.1. Chicks supplier

0. <15km	1. 16-30km	2. 31-45km	3. 46-75km	4. 76-90km	5. 91km >

18.2. Veterinary services

0. <15km	1. 16-30km	2. 31-45km	3. 46-75km	4. 76-90km	5. 91km>

18.3 Feed suppliers

0. <15km	1. 16-30km	2. 31-45km	3. 46-75km	4. 76-90km	5. 91km>

18.4 Equipment suppliers

0. <15km	1. 16-30km	2. 31-45km	3. 46-75km	4. 76-90km	5. 91km>

19. Was there a time when your regular supplier(s) ran out of stock?

0. Yes	1. No

20. If yes, what did you do in that situation?

……
……
……
……
……

21. Do you hire labour to work on your farm?

0. Yes	1. No

22. If yes, is the labour you hire:

0. Temporary	1. Casual	2. Permanent

23. How many workers are experienced in broiler farming?

……..

24. In your last batch, how many chicks did you start with?

……..

25. How many birds died?

…….

26. How many sold?

…….

27. How many birds did you or your household consume?

…….

28. Have you ever experienced a situation where you could not meet consumer preferences?

0. Yes	1. No

29. If you answered yes above, could you please explain the situation and what did you learn from that situation?

……
……
……
……
……
……

30. Please rate yourself according to the table below. Where 1 means you strongly disagree with the statement, 2 means you agree with the statement, 3 you feel neutral, 4 you agree, and 5 you strongly agree with the statement

Statement	1	2	3	4	5
I have an excellent understanding of broiler farming techniques in all aspects.					

31. Please think of your most recently completed batch of broilers. Please tell me about inputs and costs associated with *production*….

Description	**Total Expenditure**
Day old chicks	
Feed	
Saw dust / wood shavings / litter	
Electricity	
Medication	
Labour	

Transport costs	
Other (spec.)	

32. Please tell me about inputs and costs associated with *marketing*….

Description	**Total Expenditure**
Labour	
Transport costs	
Other (spec.)	

33. What is the average price at which you sold the broilers from your most recent batch?

……

34. What was your total revenue from your last batch?

……

35. Do you have storage facilities on your farm?

0. Yes	1. No

36. Do you practice value addition to your broiler chickens?

0. Yes	1. No

37. What type of value addition do you practice on your broilers?

0. None	1. Slaughtering	2. Plucking	3. Packaging	4. All the three types

38. Do you transport your broilers to the market?

0. Yes	1. No

39. If yes, what mode of transport do you use?

0. Hire	1. Own

40. What is the distance to the nearest output market? Please select from the box below.

0. <15km	1. 16-30km	2. 31-45km	3. 46-75km	4. 76-90km	5. 91km >

41. How is the state of the road to the nearest market?

0. Good	1. Bad

42. Which market(s) do you supply your broilers to?

0. Local consumers	1. Retailers	2. Street hawkers	3. Other *(please specify)*

SECTION C: Challenges experienced by farmers at different levels of the value chain

I am about to put to you a series of statements relating to the challenges you experienced at different levels of the value chain.

After I read a statement to you, please indicate your level of agreement, where 1 means that you strongly disagree with the statement, 2 means you disagree with the statement, 3 means you feel neutral about the statement, 4 means you agree with the statement, and 5 means that you strongly agree with the statement.

43. Please answer as truthfully as possible – there are no correct or incorrect answers.

Statement	1	2	3	4	5
Input acquisition					
A. It is difficult to acquire inputs due to limited access to capital and lack of information on where and how to access inputs.					
B. I find it difficult to find nearby suppliers.					
Operations					
C. It is challenging for me to find skilled labour.					
D. I find it hard to administer vaccines and other medicines suitable for broilers.					
E. I do not know the reasons behind feeding different diets to broilers.					
F. I have a problem with the housing facilities and farm equipment, as a result, broilers die from the cold.					
Outbound logistics					
G. I incur high costs when transporting broilers to the market.					
H. Sometimes it becomes difficult to reach some consumers due to poor roads.					

I. I do not have proper storage facilities for broilers when transporting them to the market, as a result, they lose their quality.					
Marketing sales					
J. I find it difficult to find customers.					
K. I do not have proper knowledge of the broiler prices charged by my competitors.					
L. I do not have a proper understanding of my target market and my marketing options.					
Service					
M. I fail at maintaining customer-seller relationship.					

44. Is there any challenge(s) that you would like to discuss that is not mentioned above?

0. Yes	1. No

45. If yes, please specify

……
……
……
……
……
……
……
……
……
……

46. Is there anything you would like to add or talk about?

……
……
……
……
……

…… THANK YOU FOR YOUR TIME ……

APPENDIX B: ETHICAL CLEARANCE CERTIFICATE

University of Fort Hare
Together in Excellence

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Together in Excellence

ETHICS CLEARANCE
REC-270710-028-RA Level 01

Project Number: MAY021SMPH01

Project title: **Value chain analysis of smallholder broiler farming in Buffalo City Municipality, Eastern Cape province of South Africa.**

Qualification: Master of Science in Agriculture: Agricultural Economics

Student name: Zimi Mphana

Registration number 201801819

Supervisor: Dr A Mayekiso

Department: Agricultural Economics

Co-supervisor: N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby grant ethics approval for MAY021SMPH01. This approval is valid for 12 months from the date of approval. Renewal of approval must be applied for BEFORE termination of this approval period. Renewal is subject to receipt of a satisfactory progress report. The approval covers the undertakings contained in the abovementioned project and research instrument(s). The research may commence as from the 26/09/23, using the reference number indicated above.

Note that should any other instruments be required or amendments become necessary, these require separate authorisation.
Please note that UREC must be informed immediately of

Note that should any other instruments be required or amendments become necessary, these require separate authorisation.
Please note that UREC must be informed immediately of

- Any material changes in the conditions or undertakings mentioned in the document;
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research.

The student must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

UREC retains the right to

- Withdraw or amend this approval if ○ Any unethical principal or practices are revealed or suspected; ○ Relevant information has been withheld or misrepresented; ○ Regulatory changes of whatsoever nature so require; ○ The conditions contained in the Certificate have not been adhered to.

- Request access to any information or data at any time during the course or after completion of the project.

Your compliance with Department of Health 2015 guidelines and any other applicable regulatory instruments and with UREC ethics requirements as contained in UREC policies and standard operating procedures, is implied.

UREC wishes you well in your research.

Yours sincerely,

Dr A Nyika
Chairperson: Inter-Faculty Research Ethics Committee
29 September 2023

APPENDIX C: INFORMED CONSENT FORM

University of Fort Hare
Together in Excellence

INDIVIDUAL INFORMATION SHEET AND INFORMED CONSENT FORM[1]

(AGES 18 YEARS AND ABOVE)

Please note: This form is to be completed by the researcher(s) as well as by the interviewee before the commencement of the research. Copies of the signed form (page 3) must be filed and kept on record

Title of Study: Value chain analysis of smallholder broiler farming in Buffalo City Municipality, Eastern Cape Province of South Africa.

Dear participant,

My name is **Zimi Mphana** and I am studying at the University of Fort Hare.
I am conducting a study on the value chain analysis of smallholder broiler farming in Buffalo City Municipality, Eastern Cape Province of South Africa.

Purpose of Study
We would like you to allow us to conduct a brief 25-minute interview with you about the value chain of smallholder broiler farming.

Study Procedure
Some questions may be of a personal and/or sensitive nature. I will be asking some questions that you may not have thought about before. We know that you cannot be absolutely certain about the answers to these questions, but we ask that you try to think about these questions. When it comes to answering questions there are no right and wrong answers.

Please understand that **your participation is voluntary** and you are not being forced to take part in this study. The choice of whether to participate or not, is yours. However, we would really

[1] Approved by UREC (13 November 2019)

appreciate it if you do share your thoughts with us. If you choose not to take part, you will not be affected in any way whatsoever. If you agree to participate, you may stop me at any time and tell me that you don't want to go on with the interview. If you do this there will also be no penalties and you will NOT be prejudiced in ANY way.

The information will remain confidential. This means that your name and address will not be linked in any way to the answers you give. We study and report on the answers given by all the people we interview and not on an individual basis. The research data will be anonymous – with all personal respondent information removed and will be archived at the University.

At the present time, we do not see any risks in your participation. The risks associated with participation in this study are no greater than those encountered in daily life.

There are no immediate benefits to you from participating in this study. However, this study will be helpful in finding out more about the value chain of smallholder broiler farming which in turn could lead to broader benefits later, for example, the government can develop public information campaigns where farmers will be provided with the necessary information about value chain and challenges encountered by smallholder farmers.

Risk-Benefit Ratio:

At the present time, we do not see any risks in your participation. The risks associated with participation in this study are no greater than those encountered in daily life.

There are no immediate benefits to you from participating in this study. However, this study will be helpful in finding out more about the value chain of smallholder broiler farming which in turn could lead to broader benefits later on, for example, the government can develop public information campaigns where farmers will be provided with the necessary information about value chain and challenges encountered by smallholder farmers.

Who to contact if you have been harmed or have any concerns?

This research has been approved by the Inter-Faculties Research Ethics Committee (IFREC) as per delegated authority of the University Research Ethics Committee (UREC). If you have any complaints about ethical aspects of the research or feel that you have been harmed in any way by participating in this study, please call the IFREC Administrator, Aphiwe Jadezweni, at 040 602 2561 or ajadezweni@ufh.ac.za.

Reporting and Complaints

If you have questions at any time about this study, or if you have concerns/questions you may contact the researcher/project leader whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you

do not feel you can discuss with the researcher/project leader, please contact the IFREC Chairperson, Dr A Nyika at 040 602 2516 or ANyika@ufh.ac.za, or the UREC Chairperson, Dr N Taole-Mjimba at 043 704 7507 or nTaole-Mjimba@ufh.ac.za.

If you have concerns or questions about this study, please feel free to contact the project coordinators: **Researcher/Project Leader:**

Name: Zimi Mphana

Department: Department of Agricultural Economics and Extension

Address: 7589 Khayelitsha, Dimbaza, 5671

Phone: 0665138518

Email: 201801819@ufh.ac.za / zimimphana@gmail.com

INFORMED CONSENT FORM

I *(name of participant)* ……have been informed about the study by *(provide name of researcher/ project leader/ fieldworker)* …….....

I understand the purpose, procedures, and risk-benefit ratio of the study.

I have been given opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any procedurals that I would usually be entitled to.

I understand that if I have any questions or complaints about my rights as a study participant, or if I may have concerns about any aspect of the study or the researcher/s then I may contact the Chairperson of the Inter-Faculty Research Ethics Committee, Dr A Nyika, or Chairperson of University Research Ethics Committee, Dr Taole-Mjimba (details available from the Researcher or by contacting the University of Fort Hare or Website www.ufh.ac.za)

Participant signature: ……

Consenting for Audio Recording – when necessary

YES / OR

Participant signature: ……

Data curation – I understand that the information that I provide will be stored electronically and will be used for research purposes now or at a later stage.

Participant signature: ……

Date: ……

Witness signature: ……...

Translator signature: ……...