

**The Small-Scale Broiler Value Chain Configuration and Market Access Constraints in
Vhembe District of Limpopo Province, South Africa**

by

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DECLARATION

I, Rabelani Richard NemaKonde, hereby declare that this research for Master Rural Degree in Rural Development (MRD) submitted to the Institute for Rural Development at the University of Venda has not been submitted previously for any degree at this or another university. It is original in design and in execution, and all reference material contained therein has been duly acknowledged.

Signature  **Date** ...18 March 2024

Rabelani Richard NemaKonde

DEDICATION

I dedicate this dissertation to my mother **Mrs Rosina NemaKonde**, my late father **Mr Samson Aifheli NemaKonde** (May his soul continue to rest in peace), Children **Ricardo, Rofhatutshedzwa** and **Otondwa NemaKonde**.

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ABSTRACT

The number of broiler farmers in developing countries is increasing, however they face several challenges that impede their growth. Access to sustainable market is a critical challenge for broiler farmers which is hampered by underdeveloped value chains. Hence, identifying value chain constraints and areas to strengthen in small-scale broiler production is crucial to enhance competitiveness. Sixty ($n = 60$) farmers were sampled to assess the value chain configuration and market for small-scale broiler farmers in Vhembe district of Limpopo province in South Africa. Both Quantitative and Qualitative data was gathered using a structured questionnaire with open and close-ended questions. Quantitative data was analysed using statistical package for social science version 27. Moreover, descriptive analysis (SPSS version 27), Thematic analysis (Atlas Ti version 8), Thematic content analysis (Atlas Ti version 8) was used to analyse the data. The results suggest that value chain configuration is directly correlated to marketing configurations. This study also reveals that lack of capital is the main challenge that give birth to many other challenges like lack of abattoirs and access to main production inputs for growth. It also reveals that the combination of these challenges made it difficult for the small-scale broiler producers to penetrate the vertical organized market and growth. Also, the results show that small-scale producers can deepen their value chain participation through amongst others, procuring production inputs, establishing abattoir and leverage government support collectively to increase their production capacity. The study recommends that small-scale producers form input and market cooperatives to collectively source production inputs and market their produce. In terms of support, small-scale broiler farmers require intensified support programmes to strengthen their production capabilities and entrench access the sustainable market for sustained growth.

Key words: Broiler chickens, market access, small-scale producer, rural areas, value chain

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LIST OF ABBREVIATIONS

| | |
|--------|--|
| AGOA | Africa Growth and Opportunity Act |
| BRF | Brazil Food Company |
| DAFF | Department of Agriculture, Forestry and Fisheries |
| EU | European Union |
| FAOUN | Food and Agricultural Organisation of the United Nations |
| JBSSA | Jose Batista Sobrinho South Africa |
| LDARD | Limpopo Department of Agriculture and Rural Development |
| LDRDLR | Limpopo Department of Rural Development and Land Reform |
| NAMC | National Agricultural Marketing Council |
| OECD | Organization for Economic Cooperation and Development |
| RCL | Rainbow Chicken Limited |
| SADC | Southern African Development Community |
| SAPA | South African Broiler Association |
| USA | United States of America |
| VDM | Vhembe District Municipality |

CHAPTER 1: INTRODUCTION

1.1 Background

Globally, the poultry production sector remains the largest producer of white meat (South African Poultry Association {SAPA}, 2017). Changing diets, increasing per capita income, mechanization and strengthened economic growth has resulted in the increased demand for white meat from chickens (SAPA, 2018). Countries like the United States of America (USA), China and Brazil are the leading chicken meat producers with volumes estimated at 22.35, 17.81 and 13.74 million metric tons, respectively in 2018 (Food and Agricultural Organization {FAO}, 2018). Moreso, South America produced 2 100 metric tons, 250 from Oceania, 4 500 from Central America, and Asia 510 in 2018 (FAO, 2018). In 2017, approximately 121 million metric tons of chicken were produced globally, and the figure rose to 122.5 million metric tons in 2018, representing an increase of 1.6 percent (SAPA, 2017). Broiler meat production systems in countries like USA and China allows producers to respond quicker to market demands compared to other meat producers and those in developing countries (FAO, 2018; Organization for Economic Cooperation and Development {OECD}, 2018). This gives advantage to producer in these countries due to their ability to increase or reduce production with ease using the broiler meat production cycle. This explains why countries in Sub-Saharan Africa are net importers of broiler meat.

Sub-Saharan African countries import a significant portion of their broiler meat from USA, Brazil, Europe and Asia (Fellmann *et al.*, 2018). This points to the need for improving the production at local level to ensure food security, economic growth and employment in the SSA region. The broiler industry accounted for 80% of the total broiler production in the Southern African Development Community (SADC) region in 2015 and chicken meat remained the cheapest source of protein (National Agricultural Marketing Council, 2018). Value chain and market access analysis are key tools in broiler industry across the globe used to improve production and gain more market share (Chang, 2018; Ncube, 2018). Likewise, the South African broiler industry recognizes the need to improve the quantity and quality of the broilers produced through value chain analysis and improving market access for locally produced chicken meat (FAO, 2017). South Africa sees broiler production as an important agricultural subsector which needs more intervention for its sustainability. Although this industry is largely dominated by large-scale producers, small-scale farmers are key players with a significant role in rural development strategy (Atuahene-Gima and Amuzu, 2018). Accordingly, the production process, management and the availability of markets specifically in rural areas is fundamental for broiler industry development.

The broiler industry presents an important part of agro-processing and offers opportunities for development and job creation in South Africa. Agro-processing has strong backward linkages between broiler production and feed industries (Ncube, 2018). Approximately 3% of the South African active working population were employed in the small-scale broiler, hatchery, and rearing industries in 2017 as reported by DAFF (2017). The same report shows that a slight decrease in broiler meat production in the previous year and an increase in imports of broiler meat from countries such as United States of America (USA) and Brazil. South African Broiler Association (SABA) (2016) reported that, almost 240 000 tons of bone-in broiler meat was imported from the European Union Countries (EU). Moreso, more trade agreements particularly the Economic Partnership Agreement and African Growth and Opportunity Act (AGOA) were signed to permit top broiler meat producing countries access to South African markets (Bavier, 2018). Owing to economies of scale and liberalised value chains enjoyed by companies from these countries, their broiler meat is relatively cheaper compared to South African produced meat. Resultantly, South African producers has been forced to accept over 65 000 tonnes of US bone-in imports per annum since January 2016 (South African Poultry Association {SAPA}, 2016). Since, then many jobs have been lost in the broiler industry due to increased imports. Also, the demand for home bred broilers decreased due to stiff competition.

The value of broiler production in South Africa was estimated at R273 344 million in 2016/17 (FAO, 2017). The broiler meat industry in South Africa is largely large commercial producers. For example, Rainbow and Astral Foods are two main producers accounting for 46% of the total broiler meat (SAPA, 2018). Small-scale broiler producers face many productions and market access challenges. Only 5% of small-scale produced chicken South Africa have access to local main markets (DAFF, 2017). Greenberg *et al.* (2017) estimated about 60% of the market share belongs to large producers such as Fourie's, Rocklands, Daybreak, and Tydstroom, Rainbow, Astral Foods and Country bird holdings in South Africa. The remaining 30 to 40% is covered by imported broiler meat from China, USA, Vietnam, Mexico, Saudi Arabia, and the Philippines (SAPA, 2018). The imports compete directly with small-scale producers to over the remain 40%. South Africa export chicken meat mainly to African countries such as Lesotho, Mozambique, Namibia with 44%, 27%, 14% respectively (DAFF, 2020).

In South Africa, Northwest, Western Cape and Northern Cape, Mpumalanga and KwaZulu–Natal Provinces are the largest producers of broiler meat accounting for 63% of total production (SAPA, 2017). Free State Province accounts for 6%, Gauteng 10%, Eastern Cape 7% and Limpopo province constituted the lowest market share of only 3% (SAPA, 2017). The South African government recognises that small-scale broiler farmers are key towards household food security,

increased income, and job creation (Wossen *et al.*, 2017). This is also stipulated in the South African National Development Plan 2030. As such, the government support rural small-scale broiler farmers as part of the rural development strategy (Abolnik, 2017). Part of this support is to invest, research and address value chain and market access faced by many small-scale broiler farmers. It is therefore crucial to understand the processes of integration up and down the value chain to create opportunities for and address bottlenecks in value chain and improve market access. The present study investigated broiler value chains of and market access dynamics in small-scale broiler producers in Vhembe district of Limpopo province in South Africa.

1.2 Statement of the Research Problem

Small-scale farmers are earmarked as important in towards rural poverty alleviation, employment creation and safeguarding food security. It is a tool that can address poverty and hunger challenges as reflected in the international, regional and national conventions such as the 2030 SDG 1 and 2, AU Agenda 2063 and the South African National Development Plan 2030 (FAO, 2017; DAFF, 2018). For the past five years in South Africa, major investments have been injected into broiler industry through SAPA and DAFF (DAFF, 2017). Over 1.14 billion rand (US\$ 78 million since 2019) has been invested in the expansion of production facilities to support new broiler meat farmers in the country according to SAPA's 2023 report. Although, broiler production increased from 56 to 65% in 2017/2018 farming season, farmers still struggle to produce enough and access both local and international markets (DAFF, 2017). It is, therefore, key to understand processes of integration up and down the value chain, and create opportunities for production maximisation for small-scale broiler producers in South Africa. This study assessed the value chain and market access challenges for small-scale broiler producers.

1.3 Justification/Rationale of the Study

The South African NDP 2030 aims to see an increase the participation of small-scale farmers along the main agricultural value chains as a strategy to create employment and reduce poverty. Hence, the results of this study will shed more light on the complexities of rural small-scale broiler producers. Understanding of these value chains offers opportunities for scaling the industry and building supporting systems to support job creation, increase income for farmers and also contribute to rural economic growth.

The study unpacks the value chains and market access issues for small-scale farmers broiler producers. The knowledge generated will shade more light into value chain complexities and give

insights in how to scale and support small-scale broilers. Thus, the results of the study will add to the body of knowledge on the small-scale farming particularly the broiler sector. This information will be useful for the development of the broiler sector and directing future research on the opportunities and challenges faced by the small-scale rural broiler producers in the district and South Africa.

The study will also contribute to identifying main critical issues that need to be addressed to support small-scale broiler meat producers, improve the value chain and adopt best practices to maximize economic benefits. Moreover, policy makers are likely to use the result to inform policies on how best to develop the rural small-scale broiler producers.

The study findings give insights and build better knowledge about market access challenges rural areas of Vhembe district. Farmers might use this knowledge, build on it and develop strategies to access local retail stores in Vhembe district and beyond. Moreover, small-scale farmers stand to benefit from the study results on how to best organize their broiler enterprises and gain competitive advantage in the value chains. This might sustainably create jobs, reduce poverty, and contribute to rural development initiatives as outlined in the chapter 6 of the NDP 2030. Also, the academia can use the study findings to further build knowledge and theories on how best to integrate small-scale broiler producers along the value chains.

1.4 Research Objectives

1.4.1 Aim of the study

The aim of the study was to assess the challenges faced by small-scale broiler farmers when participating along the broiler value chains in Vhembe district of Limpopo province. This was achieved through the following specific objectives.

- i. To map the value chain configuration of small-scale broiler producers the Vhembe District.
- ii. To analyse value chain-based constraints faced by small-scale broiler farmers in Vhembe District; and
- iii. To suggest strategies to deepen value chain participation and market access for small-scale broiler farmers in Vhembe district.

1.5 Research Questions

- i. What are the marketing channels of small-scale broiler farmers in Vhembe District?
- ii. What value chain-based constraints faced by small-scale broiler farmers in Vhembe District?
- iii. What are the possible interventions that can be applied to ensure integration of small-scale broiler meat producers into the broiler value chain?

1.6 Conceptual Framework of the Study

Small-scale broiler farmers in South Africa face numerous challenges that impede their growth and ability to effectively contribute towards income generation, employment, and food security (DAFF, 2018). Some of the constraints they face relate to lack of access to reliable markets and proper recognition in food value chain. Subsequently, as mentioned by FAO (2018), most small-scale farmers are in rural areas and mostly in the former homelands where lack of both physical and institutional recognition limits their expansion. Lack of access to proper markets limits the exposure to national and international markets. For instance, the ability of a farmer to transport inputs, produce and access information is limited. Thus, inclusion in value chain management may lead to inevitable market penetration. Therefore, the study follows the value chain analysis conceptual framework in Figure 1.1. South African broiler value chain analysis entails different stages in which broiler industry infuses value chain prospects into the production system wherein it also indicates that the South African broiler sector is characterised by dualistic nature similar to the country entire agricultural sector. This simply means that the broiler farmers could be characterised into commercial and smallholder farmers. The main fundamental difference between the two categories of farmers in this subsector is the combination of economies of scale benefits and the magnitude of investment that goes into the specific assets required for optimum and efficient production levels (BFAP, 2019).

1.7 Operational Definitions of Key Terms and Concepts

Broiler production is defined as the production of any chicken that is bred and raised specifically for meat production (Ozdemir, 2018).

Market access refers to the ability of an individual, cooperative, company, or country to sell goods and services within local formal markets, national or across borders (Roberts, 2018).

Small-scale broiler farming is defined as the production of broilers on a small piece of land without using advanced and expensive technologies mainly for the market in order to generate

income (Mayer, 2018). This type of farming is characterized by intensive labour, animal traction and limited use of agrochemicals (Mouel *et al.*, 2018).

Value chain is the process or activities by which a company or an industry adds value to its products or service by including production, marketing, and the provision of after-sales service (Roberts, 2018).

Value chain configuration refers to the way in which a company designs and structures its internal and external activities to create value for its customers. The value chain concept is a framework that helps businesses analyse and understand the primary and support activities involved in delivering a product or service to customer (Hernández & Pedersen, 2017).

1.8 Outline of the Research

The study consists of seven chapters. Chapter one gives an introduction, problem statement, objectives, and motivation of the study. Chapter two reviews literature from previous studies related to the current study. Chapter three presents the methodology and analytical procedures used in the study. Chapter four reports on the results on the value chain configuration of small-scale broiler producers in Vhembe district of South Africa. Chapter five presents the value chain-based constraints of small-scale broiler producers while chapter six presents strategies that small-scale broiler producers can use to deepen value chain participation and market access. Chapter seven is the last chapter that outlines the study synthesis, discussions, conclusions and recommendations of the study.

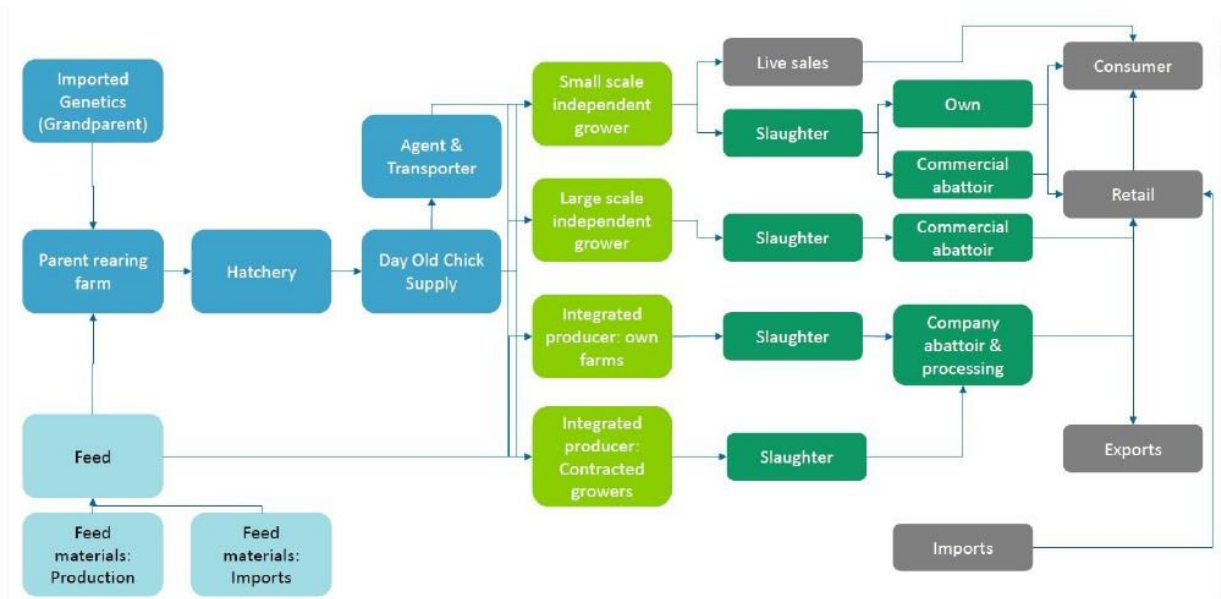


Figure 1.1: Diagrammatic representation of the South African Broiler value chain source (BFAP, 2019).

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter reviews theoretical and empirical literature on small-scale broiler farmers. It defines small-scale, gives an overview of the small-scale broiler farming, characterises and presents challenges faced by these farmers and broiler projects. It also gives the empirical evidence of broiler farmers' access to markets. A summary of the review is also given. The following sub-section describes the nature of small-scale farming.

2.2 Defining a small-scale farmer

Agriculture as a leading sector in rural areas plays an important role for many rural dwellers (Keller, 2017; Cheng *et al.*, 2019; Thurlow *et al.*, 2019). Across the globe, the most practiced form of agriculture in rural areas is small-scale farming where farmers produce mainly for both commercial purposes and household consumption (Mango *et al.*, 2018). Small-scale farmers as mentioned by Keller (2017), are considered drivers of many rural economies in Africa. However, their potential is not fully known. Rossi *et al.* (2019) states that small-scale farmers are defined in various ways depending on the economic setting and ecological zone. Also, the term small-scale farmer is often loosely used interchangeably with resource poor or occasionally peasant farmer. In general, the term small-scale farmer refers to limited resource endowment relative to other farmers in the sector (Keller, 2017). Thus, the current study adopts Keller (2017) definition of a small-scale farmers which is limited to resource poor and mainly produce for survival. Having identified a working definition of a small-scale farmer, the following section presents an overview of broiler industry in South Africa.

2.3 Overview of Chicken Broiler Industry in South Africa

Chicken production dates back decades ago when peasant farming form part of the congruent food production strategies practiced by survivalist (Abolnik, 2017). In a traditional African context, no investments in veterinary care or broiler housing were done, leaving chickens to scavenge for their own (Kirui, 2014). As such, the bird mortality rate in peasant farming was very high and chicken diseases highly affected production limiting gains from keeping broilers in rural areas. Chicken production gained momentum as most producers were regarded as feasible in terms of agrarian initiatives, however, the disease outbreak led to an instant drop in chicken production (Abolnik, 2017). Despite these impediments in chicken business, rural farmers in developing nations kept on producing chickens.

In South Africa, broiler farming was recognized as a congruent means for income generation which the government could use in order to inflict much need change mainly in rural areas (DAFF, 2018). After, democracy in 1994, South African government managed to revive and support the broiler industry by introducing different governing agrarian supporting structures such as SAPA, DAFF and Micro Agriculture Finance Institution of South Africa (MAFISA). In no time, chicken production became one of the largest segments of the South African agricultural sector, contributing more than 16% to the Gross Domestic Product (GDP) (AFMA, 2018). The broiler industry provided employment, directly and indirectly to approximately 108 000 people throughout its value chain and related industries (Lombard & Bahta, 2018).

Many people across South Africa regard broiler meat as the most affordable protein source, hence its demand is high (DAFF, 2018). SAPA (2017) reported that approximately 935 million broilers were slaughtered in South Africa during 2016. In terms of broiler production distribution in South Africa, Northwest, Mpumalanga, and Western & Northern Cape provinces are the leading broiler producers (DAFF, 2017). As shown in Figure 2.1, Northwest produced at most 22% of broilers, followed by Western & Northern Cape (21%) and Mpumalanga (20%) (DAFF, 2018). Limpopo province is the least producer of broilers in South Africa at 3% due to harsh climatic conditions and outbreaks of chicken diseases (SAPA, 2018).

The remaining 34% were produced from KwaZulu-Natal 11%, Gauteng 10%, Eastern cape 7% and Free State province at 6%. In terms of egg production, SAPA (2016) reported that, in the year 2001, at most 330 000 tons were produced and the number drastically increased to 478 000 tons in 2016. South Africa became a major exporter of eggs and chicken meat to other African countries before the AGOA Agenda (SAPA, 2016). Soon after the AGOA Agenda was passed, South Africa was forced to cut on its exports and increase its imports mainly from the European countries. As reported by DAFF (2017), South Africa was unable to produce the much-needed quantities of chicken due to increase in price of broiler inputs such as feeds, medicines, fuel as well as Day old chicks (DAFF, 2017). As such, South Africa was unable to produce enough broiler meat to satisfy the demand and the short fall was catered for by imports which was cheaper than local production (SAPA, 2018). This consequently affected the broiler industry in the country. As such, DTI (2017) reported that South Africa imported 457 374 in 2015 and 528 506 tons of chicken meat in 2016. As shown in Table 2.2, 52% of the chicken meat is imported from Brazil, 19, 5% from USA and 8, 2% from Belgium (FAO, 2018). The European Union (EU) as a group inclusive of Belgium was responsible for the same amount of broiler imports as USA (19, 5%). Eventually, up to date South Africa is a major importer of chicken meat and eggs from the regions in Figure 2.2.

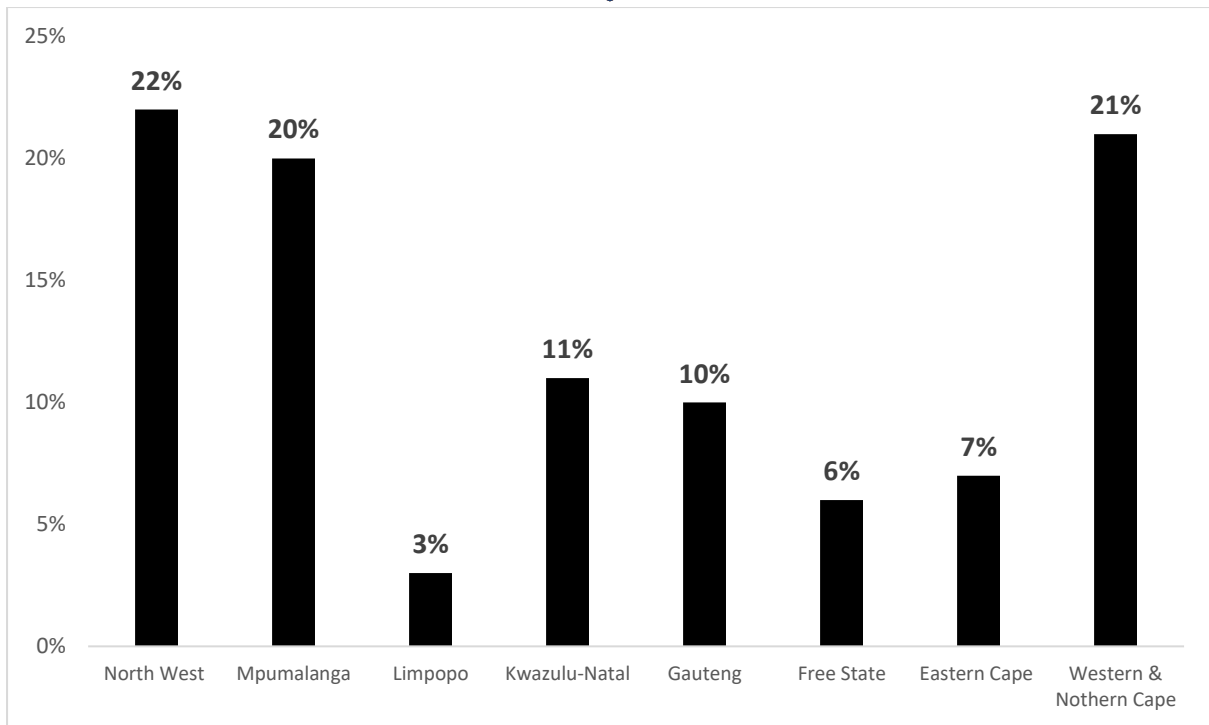


Figure 2.1: Distribution of broiler production in South Africa

Source: SAPA (2017)

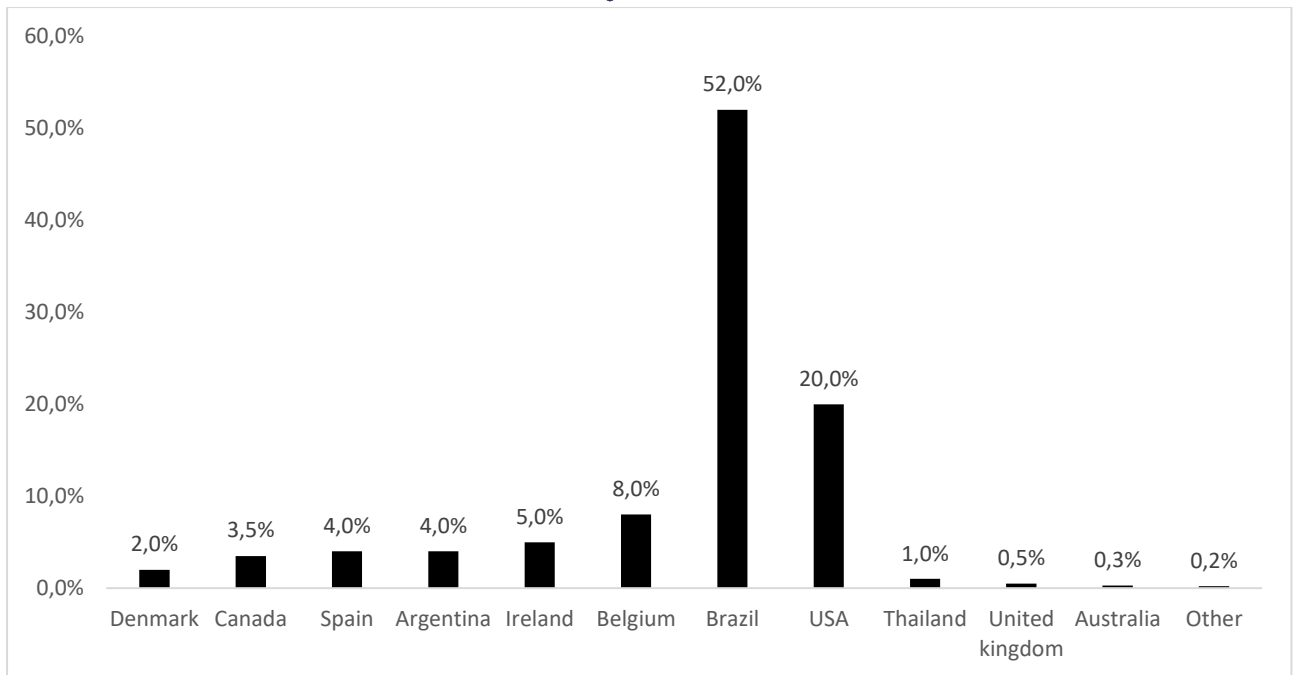


Figure 2.2: South African Chicken imports

Source: SAPA (2017)

2.4 Small-scale broiler farming in South Africa

Broiler farmers are described as farmers who are producing birds mainly chicken meat for the market (Food and Agriculture Organisation, 2017; DAFF, 2018). Thus, small-scale broiler farmers are characterized by farmers operating on small pieces of land, less than 10 hectares, using outdated technology, poor methods of production and face many farming challenges such as diseases and lack of access to credit (Pienaar and Traub, 2015). Furthermore, DAFF (2018) mentioned that small-scale farmers can differ in discrete characteristics. Areas such as farm size, resource distribution between food and cash crops, livestock and off-farm activities, the use of external inputs and hired labour, the proportion of food crops sold, and household expenditure patterns also differentiate these farmers (FAO, 2017). The following sub-section covers small-scale broiler farmers' characteristics which best explains these farmers.

2.5 Characteristics of small-scale broiler Farmers

2.5.1 Broiler Production

Small-scale broiler farmers are known by producing birds for survival and for the market (Omondi, 2018). The output is used as source of food and the other remainder is sold. In Kenya, small-scale broiler farmers are regarded as highly successful and sustainable bird producers (Kirui, 2014). For instance, Kiuti community members in Kenya have been producing chickens for decades and the projects are considered successful and sustainable. In Nigeria, these farmers are known to also be involved in layers business of egg production in areas such as Oyo state (Girei *et al.*, 2018). In South Southern Africa and South Africa in particular, small-scale farmers are considered successful in both rural and urban areas (McAllister, 2018). Many households are engaged in broiler production with a soul purpose of generating income (Kirui, 2014).

2.5.2 Huge Labour reservoir

Small-scale farmers are a representative of a huge reservoir of labour which is probably capable of dampening the effects of sudden changes in labour demand (FAO, 2018). These farmers have also been identified as the vehicle through which the goals of employment and poverty reduction can be achieved. Due to non-qualified labour force employment by small-scale farmers, labourers do not struggle to get employment (DAFF, 2018). The primeval cheap labour demands by small-scale farmers are substantial to increase production. Thus, small-scales and landless workers act according to economic considerations when leaving non-farming jobs seeking for agricultural rural job. Therefore, small-scale farmers are a major player in job creation and a labour reservoir for

rural labour force. In this respect, an important and somewhat ironical macro-economic effect must be clearly outlined to improve the situation of small-scale broiler farmers. Likewise, small-scale farmers should be supported from different spheres of the economy mainly the government so that they significantly contribute to solving rural problems of unemployment.

2.5.3 Constraints to broiler production

Even though, the number of small-scale broiler producers is increasing, there are several constricting challenges which are hampering potential growth. Several authors such as Kirui (2014), Wossen *et al.* (2017) and Ncube (2018) assessed the constraints faced by small-scale farmers and these limitations are described in the following subsection. Inadequate broiler health care and poor feed scheme; Poor access to proper markets; Inadequate focus on broiler production research and extension; Skills

2.6 Constraints faced by small-scale broiler farmers.

There are several challenges faced by small-scale farmers which are documented in literature and these challenges were reviewed as follows:

2.6.1 Inadequate broiler health care and poor feed schemes

The major problem impeding the existing production system in many developing countries is the high prevalence of Newcastle disease which affects broiler production (Cheng *et al.*, 2019). In the past decade, Newcastle disease affected many African countries such as South Africa, Nigeria and Ghana (Abolnik, 2017). Another report in Southern parts of the country by Sabul *et al.* (2019) indicated that fowl cholera is a major problem followed by Newcastle disease. Apart from these diseases, the other major limiting factor of broiler production increase is lack of feed. Abolnik (2017) stated that the nutritional status of local laying hens in developing countries (South Africa, Zimbabwe, Nigeria and Zambia), from chemical analysis of crop contents indicated that protein was below the requirement for optimum egg production. The deficiency is more serious during the short rainy season and dry seasons (Majaya, 2019). Thus, a series of diseases has hampered poor broiler production coupled with dry seasons which led to poor feeding programmes in broiler farming.

2.6.2 Poor access to proper markets

Markets are very important for farmers producing cash products and livestock (FAO, 2018). Even though chicken meat is relatively cheap and affordable, lack of organized marketing system and the seasonal fluctuation of prices are the main constraints of the broiler market in many developing countries (Baloyi, 2010). In South Africa, small-scale farmers are facing high competition from large-scale producers, and this is hampering production (DAFF, 2018). More so, price variation within local markets affects small-scale farmers due to economies of scale. As mentioned by Abolnik (2017) the major constraints in rural chicken marketing are low-price, low-quality output which is less marketable and long distance to reliable markets. As such, many small-scale farmers are limited to get the desirable and probable sales of chickens and eggs due to lack of information and poor communication channels. Similarly, Kirui (2014) stated that poor marketing information system, poor technology, high price fluctuation and location affects small-scale farmers and hence poor production. Thus, the study configured small-scale broiler producers marketing options as a strategic passage to local small-scale broiler development.

2.6.3 Inadequate focus on broiler production research and extension

Research as a means to discover new knowledge in different industries is fundamental for sustainable development (Nicolescu, 2018). However, little focus has been given to livestock and small-scale broiler production in rural areas. Unlike in western countries such as United States of America, Britain, Spain and Portugal, the linkage between the research output and the ministry of agriculture and the farmers in Africa are found to be extremely weak and in general there is no consistent feedback to the research (Nicolescu, 2018). As such, prominent development within the broiler industry is derailed due to lack of proper productive information. Thus, the need for more broiler farming research is profound. It is important for farmers to be provided with productive information which can assist them to develop their farming.

2.6.4 Access to land

Access to productive land is important for farmers mainly small-scale who are still facing stringent markets (DAFF, 2018). Small-scale farmers have limited access to productive land and as mentioned by Chang (2018), land access is completely outside the control of the small-scale farmers. These farmers need to have secure land tenure, which is very unlikely for some of the world's poorest and most marginal (FAO, 2018). Productive land is increasingly bought by large scale farmers across the developing world and displacing small-scale farmers in the process (Jayne & Munyanga, 2019). Thus, many small-scale farmers are left without any option but to

occupy unfertile land. Table 2.1 give a summary of the common constraints faced by small-scale farmers in developing economies.

Table 2.1 gives a summary of the major constraints but not limited to supply of inputs, accessibility to the market and, accessibility to finance and skills. Therefore, small-scale farmers in rural areas are subjected to many constraints and the need for immediate intervention is profound. Having identified the characteristics and constraints faced by small-scale farmers the following sub-section covers the empirical evidence on market constraints.

Table 2.1: Constraints faced by small-scale farmer in South Africa

| Key constraints | Specific challenges |
|------------------------------------|--|
| Supply of inputs | High input costs High transaction costs Transport costs Poor storage facilities |
| Accessibility to the market | Low quantities and poor-quality products Lack of market information Lack of transport and storage facilities |
| Accessibility to finance | Credit unworthiness No collaterals Inability to develop bankable business plans |
| Skills | Lack of technical skills Lack of appropriate infrastructure Low volumes and poor quality |

Source: (DAFF, 2018)

2.7 Comprehending the value chain

The linkage between the supplier and the market is best illustrated in the value chain. In this case, the supplier's source raw materials and convert them into finished products which are delivered to the consumer with the aid of other entities within the chain (FAO, 2011). The chain is characterized by a series of processes aimed at firstly acquiring raw materials and lastly delivering the final product to the consumer. The value chain is by and large of it, a complex integration of different entities (primary and secondary subsectors) such as broiler producers, feed companies, importers, exporters and abattoirs. This entails specific roles to each entity found within the value chain. Figure 2.3 illustrates a typical broiler value chain in South Africa. The general system illustrated in Figure 2.3 is precisely on what each entity should do with respect to the entity's position in the value chain. Small holder broiler farmers are likely to supply broilers as live birds into the market as the abattoir processing is not within their reach and capacity in most cases (Nallusamy *et al.*, 2015).

2.7.1 The broiler value chain in Broiler Farms

Agricultural outputs in South Africa have managed to supply a household with one of the cheapest sources of protein found in broiler products. This calls for effective value chain management which is sustainable as the resources to support the nature of business become expensive. Greenberg *et al.* (2017) conducted research on American broiler farming which inferred the researchers to accentuate that the complexity of the value chain depends on the location and skills of the entities maintaining the safety process and quality control. This goes without question as Nallusamy *et al.* (2015) proposed an Agile based value chain model for broiler products based in India to improve sustainability. The authors' argument was based on the losses incurred in the traditional value chain which is illustrated in Figure 2.4.

Bavier (2018) correspondingly stresses that the logistics involved in a broiler value chain involve a series of stages such as loading and unloading, packing, distribution and retail activities which increase the costs incurred and passed on to the consumer. Typically, the international market has been vocal on broiler value chain efficiency which has resulted in improved configuration of the systems in some areas of the world (Nallusamy *et al.*, 2015).

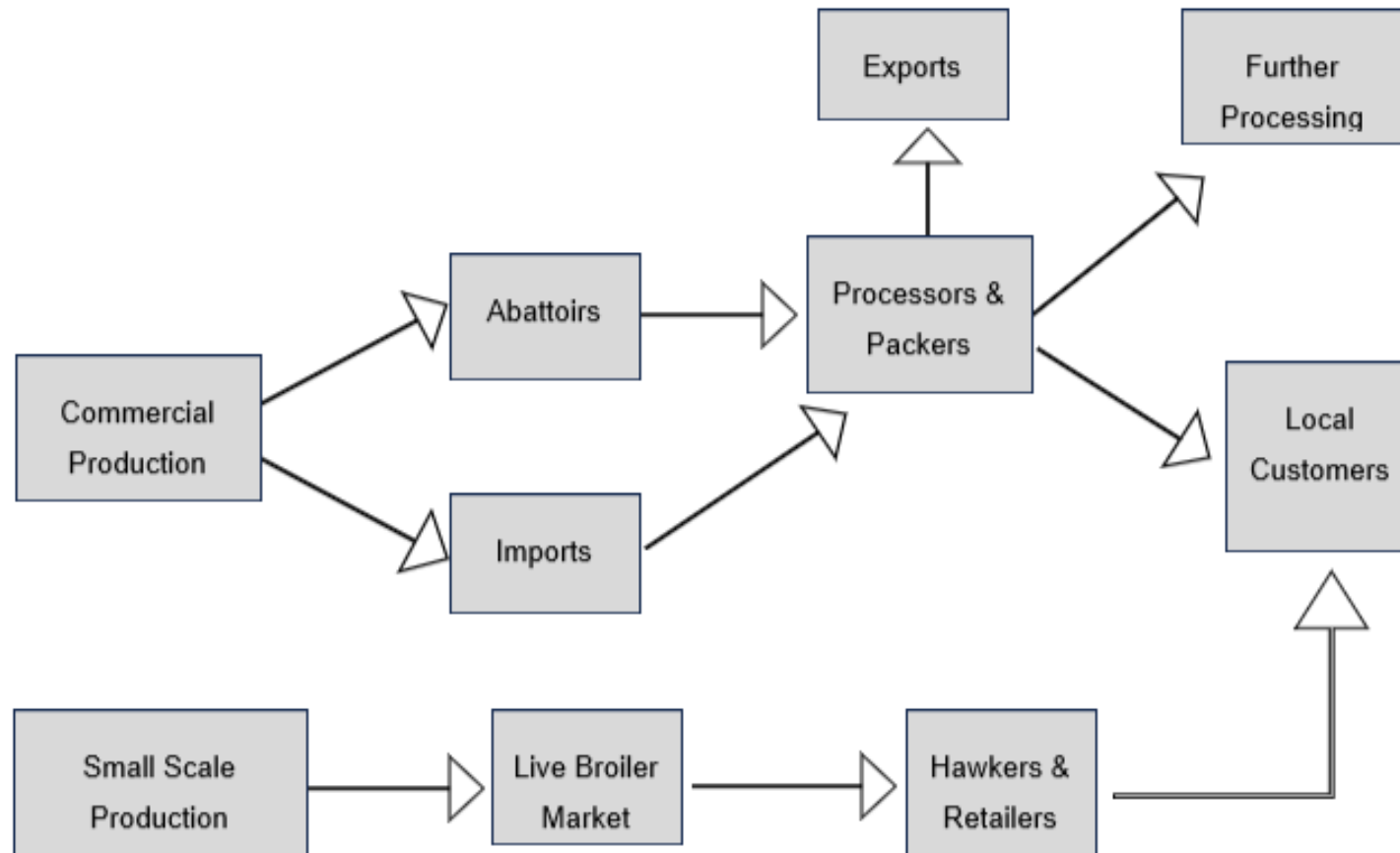


Figure 2.3: Broiler Value Chains

Source: (DAFF, 2017)

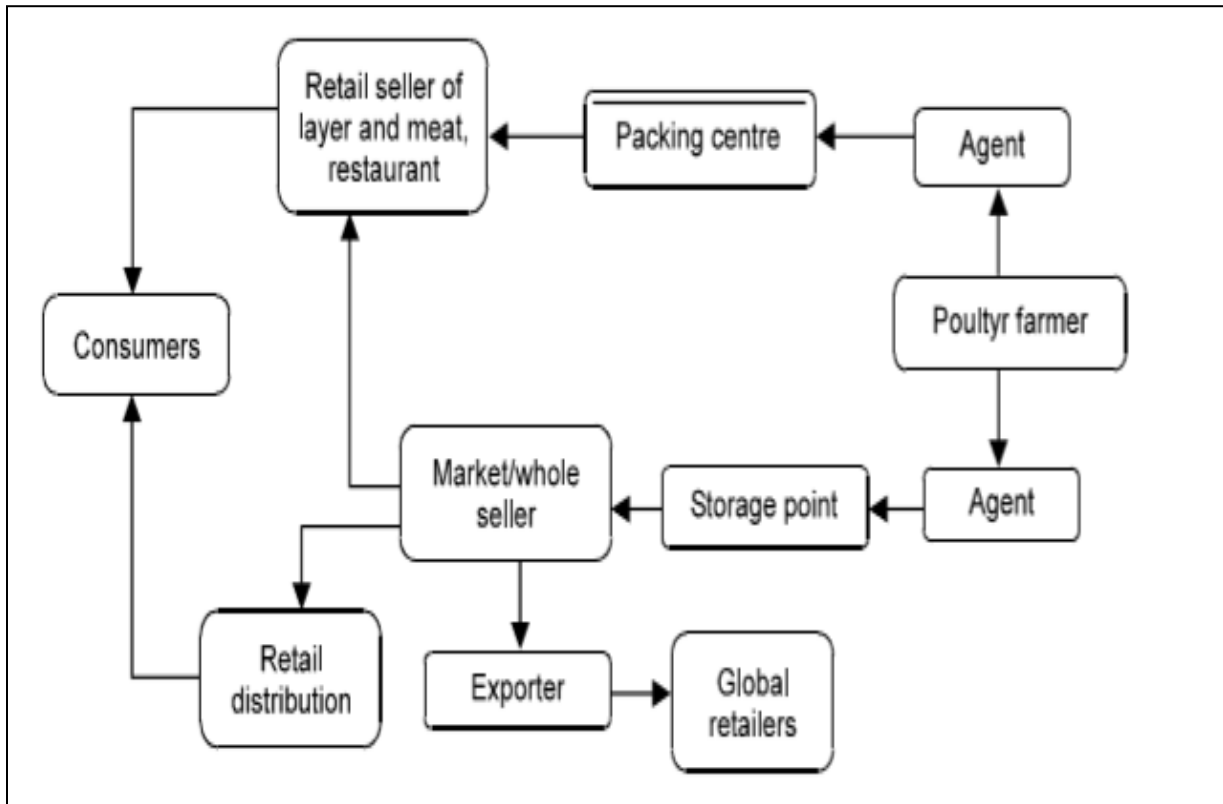


Figure 2.4: Traditional Broiler Supply Chain

Source : (Nallusamy *et al.*, 2015)

Within South Africa, Rainbow and Astral have topped the deck in the broiler market as the companies have enjoyed economies of scale and market dominance related benefits despite value chain challenges. Small-scale farmers are thus side-lined and left to learn from the practices of the major players in the industry. South African Broiler Association (SAPA) was established to mitigate such broiler value chain issues and promote the broiler industry. SAPA equally represents the commercial and small-scale farmers (SAPA, 2014). With SAPA's mitigations, the feed industry was identified to be a key area of concern as feed costs amounted to 70% of the total cost of production in the broiler industry (SAPA, 2014). The emanating challenge from the value chain was that farmers have less freedom concerning selection of a feed supplier that is beneficial to them (SAPA, 2014).

Such a disadvantage coupled with price increases of raw materials is a major blow to broiler producers as such costs will inherently be passed on to the consumer resulting in higher prices. Having identified the characteristics and constraints faced by small-scale farmers as well as a brief description of the value chain, the following sub-section covers the empirical evidence on market constraints.

2.8 Empirical evidence on broiler farmers

A study by Adetayo *et al.* (2013) assessed constraints to increased broiler production among small-scale broiler farmers in Ibadan Area of Oyo State Nigeria. Correlation analysis revealed that there was significant relationship between income from sale of egg, number of birds raised and constraints to increased layer production among the small-scale broiler farmers. This study recommended that the government should tackle the problem of loan/credit procurement, market price instability, disease and pest as well as proper funding of small-scale broiler business so as to enhance the commercialization of broiler industry in Nigeria.

Ncube (2018) investigated the role of transaction costs in determining market participation of small-scale farmers in South Africa. The study revealed that transaction costs differ between households due to asymmetries in access to market information, assets, extension services and remunerative markets. Ncube (2018) also investigated the factors contributing to different levels of transaction costs amongst households. The focal hypothesis of the study was that small-scale farmers facing lower transaction costs will participate more in agricultural markets. The study

revealed that access to assets and market information in combination with household characteristics are important determinants of market participation. Among the assets of a household, a reasonably sized area of arable land tends to boost participation in all markets.

Another study by Ozdemir (2018) analysed the production and marketing constraints that often prevent small-scale farmers from accessing high-value markets in the agribusiness value chain. This study revealed that access to markets is an essential requirement for the poor in rural areas to enjoy the profits of agricultural growth. Subsequently, restricted access to agricultural markets by small-scale farmers in rural areas represents one of the most important challenges confronting policymakers in developing countries. Also, a study by Baloyi (2019) 's suggested that small-scale farmers currently not participating in high-value markets require comprehensive agricultural support services to improve their participation. Similarly, Ncube (2018) suggests that more support should be given to small-scale farmers to ensure their participation in commercial production and in high-value markets on a sustainable basis. The major challenge confronting policymakers is to create an enabling environment for small-scale farmers and empower them to produce high volumes of good-quality products on a consistent and sustainable basis.

2.9 Summary of literature review

The chapter provided a standard definition of a small-scale farmer and an overview of South African Broiler industry. It was noted that provinces such as Northwest and Western Cape are producing the highest number of Broilers in South Africa. Furthermore, it was revealed that Brazil is the highest exporter of broilers to South Africa. As such, the value chain analysis identified the presence of major players working in the benefit of the small-scale famers. However, it was noted that feed costs erode possible profits due to the high costs pegged on broiler feed. As such, there is little evidence from revealed literature which speaks to the challenges faced by small-scale broiler farmers in respect of access to markets from a rural perspective. Furthermore, there are mixed definitions for a small-scale broiler producer which sufficed in literature. Thus, these gaps in literature necessitates the objectives which aim at value chain configuration of small-scale broiler producers.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines an overview of the study area, research design, population and sampling procedures, data collection, data analysis, ethical considerations and expected outcomes are presented. The chapter further provides a description of the methods and techniques used in successfully carrying out this study.

3.2 Description of the study area

The study was conducted in Vhembe District Municipality (VDM) of Limpopo province, South Africa. The district is situated in the northern part of the province and shares borders with Zimbabwe in the north-western area of the province and with Mozambique in the south-east area through to Kruger National Park. On the southern side, it borders with Mopani District and Capricorn District on the south-western side. The district covers an area of 25 596km² on which four local municipalities are located. The local municipalities are Collins Chabane/Lim 345, Makhado, Musina and Thulamela municipalities which carry an amalgamated population of 1 393 949 (Municipalities, 2019).

The district has annual temperatures ranging from a minimum of 10°C in winter to a maximum of 34°C in summer or even more in some instances (Vhembe Integrated Development Plan {IDP}, 2013). The area experiences frequent droughts in the most parts of the Musina Local Municipality, which are predominantly semi-arid (Vhembe IDP, 2013). Nonetheless, agriculture is the main economic activity within the district practiced by commercial, small-scale and subsistence farmers. Broiler production has been on the rise recently with emerging entrepreneurs in the small holder and scale broiler producers getting into the market. Regarding broiler production, the district contributes relatively to the provincial output of 2.3% within South Africa (SAPA, 2017a). Figure 3.1 shows the map of VDM.

VDM covers 2 140 708ha of which this constitutes 15% of the provincial total land, with 249 757ha (10% of provincial total land) declared arable, 1 227 079 (17% of provincial land) declared marginal land, 663 872 859ha (14% of provincial total land) declared non-arable land (Vhembe IDP, 2016). Broiler production thus falls under arable land.

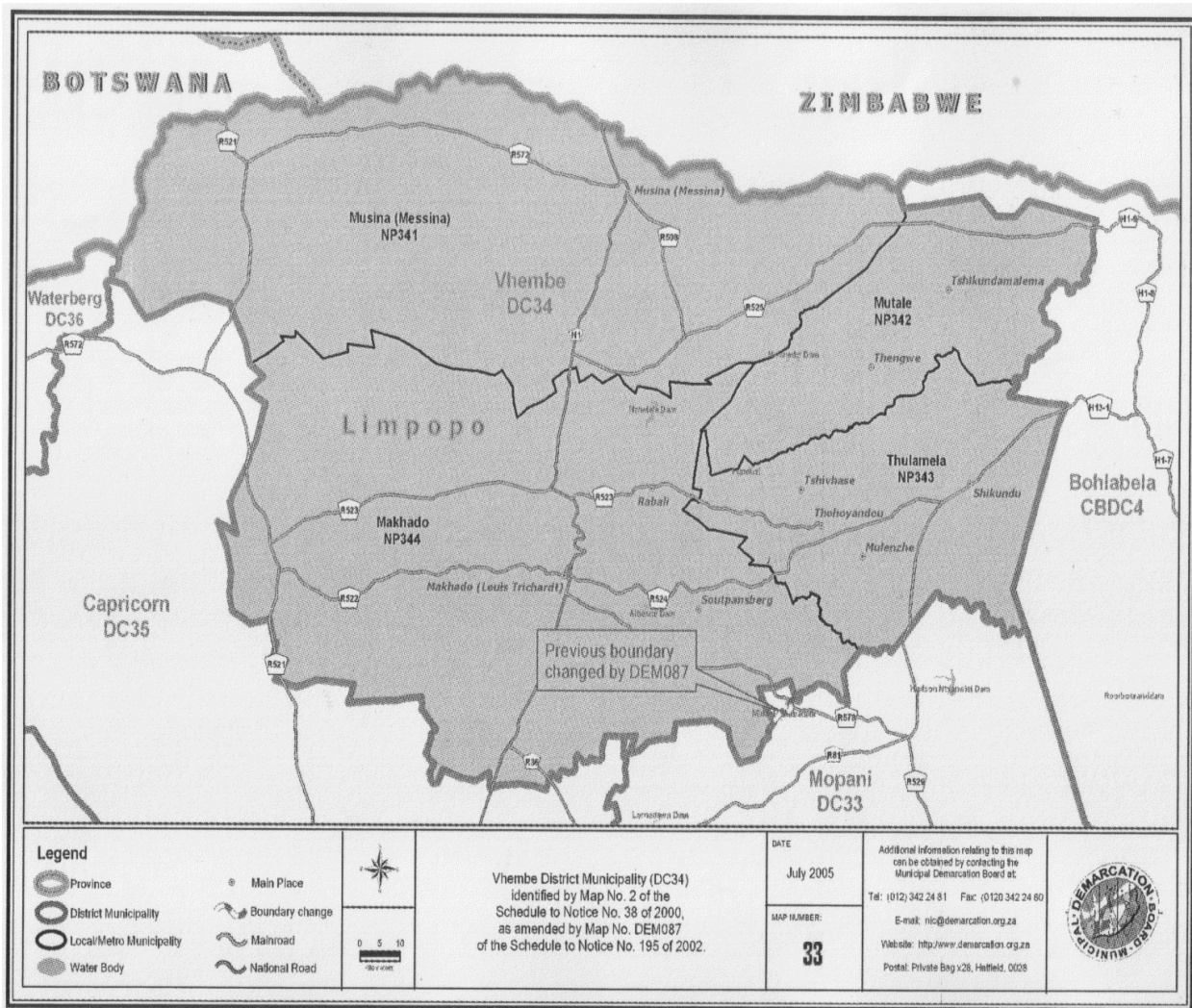


Figure 3.1: Map showing Vhembe district municipalities.

Source: Vhembe IDP, 2016

3.3 Research Design

This study utilized exploratory mixed research design where both quantitative and qualitative approaches were applied. A quantitative approach aims to quantify data and summarize the data in numerical format (Dokter *et al.*, 2018). Qualitative data was used to explain issues related to value chain and market access challenges as well as strategies for deepening small-scale broiler participation into the formal broiler value chains. A research design is defined by Stieglitz *et al.* (2018) as a foundation plan that provides clear steps used in acquiring the needed data and thereafter analyse it. Given the nature of the study and the corresponding objectives, it was imperative to collect both qualitative and quantitative data. This allowed mapping of the value chain configuration of small-scale broiler producers, analyse value chain based constrains they are facing and suggest strategies that can be used by smallholder broiler farmers to deepen value chain participation and market access for small-scale broiler producers in Vhembe district. Thus, a survey was utilised through gathering data using close and open-ended questions.

3.4 Population and Sampling Procedures

Initially, the targeted population were smallholder broiler farmers producing between 500 and 2000 birds per cycle of 42 days. However, the results showed that most small-scale broiler farmers in Vhembe district produce a little over 500 or less. There are 760 small-holder broiler farmers in Vhembe district municipality (SAPA, 2017). In order to target active and accessible producers, a list of active broiler farmers was supplied by the Department of agriculture in Vhembe district. These also have been in the past supported with production inputs in the financial year 2020/2021. The required sample size was calculated based on 95% confidence level and with assumption that the real value is within $\pm 5\%$ of the measured/surveyed value. The recommended sample was found to be ($n = 256$). However, due to time constraint; limited resources and ability to reach farmers, using a stratified random sampling technique, a sample of ($n = 60$) was identified and used for this analysis. Thus, a sample of ($n = 15$) was drawn from each of the four strata namely Musina, Thulamela, Collins Chabane and Makhado. Also, a total sample of ($n = 16$) of local retail outlets equally aggregated to each municipality in the district that operate within the district municipality were identified and sampled for triangulation of results and to understand small-scale value chains and market access. Onwuegbuzie & Collins (2007) recommends that a minimum sample size for a quantitative research design of ($n = 30$) and above is suitable. Thus, a sample of ($n = 60$) surveyed in this study is sufficient. Participants were randomly sampled

giving farmers in the district giving an opportunity to participate in the study (Wiid & Diggines, 2013).

3.5 Data Collection

Data was collected through a combination of techniques for quantitative and qualitative research methods. Structured questionnaires were used to collect quantitative data from small-scale broiler producers while the semi structured questionnaires were used to collect qualitative data from both farmers, retailers, and input suppliers involved the value chain. A reliability test and a face validity test were conducted to ascertain the applicability of the questionnaire while a pilot study of 10 participants was conducted for face validity. The results of the pilot study have not been included in the data analysis of this study. Korathi (2006) stated that exclusion of a pilot study results increases the likelihood of success and meaningful results for the main study. Moreover, the pilot study results provided a range of insights for the researcher to strengthen the instruments by adjusting poorly structured and ambiguous questions. Cronbach's Alpha test was conducted on the questionnaire items and gave score of $\alpha = 0.7$. This indicates that the data collected, and results are reliable (Taber, 2018). During field work, ethical consideration enforced and monitored by the University of Venda Research Ethics Committee for all academic research as outlined in section 3.6 were applied. Questionnaires were administered in person and retrieved in the presence of the distributor as this was deemed to improve the response rate.

3.6 Data analysis

The process of analysing, identifying any trends and making inferences from the data is referred to as data analysis (Stieglitz *et al.*, 2018). This process started with data coding and capturing in excel sheet for both data sets. Thematic content analysis using Atlas ti version 8 was used for qualitative data. The software was instrumental in generating themes and how they are associate to each other. Thereafter, data was analysed systematically using Atlas analytical tool in sequence to the objectives through open coding in thematic analysis. These tests assisted the researcher to determine any relationships between sets of challenges and profitability in broiler farming. To do this, interview quotations and data were categorized into tenets using open, quick, and In-Vivo coding. Open In-Vivo coding is the instant coding of text that could be used as a major theme to explain related statements while open coding is the grouping of discreet variables that broadly explain a market access challenge (Smit, 2002). This process was repeated several times

until emerging codes and sub-themes including their descriptive statements or items on each tenet where were developed and linked. The resultant output comprised sub-themes representing each tenet coded and network diagrams drawn.

Quantitative data was analysed descriptively through totals and mean scores to calculate the value added in the value chain process for broiler producers. SPSS version 27 was utilised to compute and analyse quantitative data. Table 3.1 shows the study design in relation to the objectives.

Table 3.1: Research design summary

| Research Objectives | Type of data | Data Collection methods and techniques | Data analysis methods and Analytical tools |
|--|--------------------------|---|---|
| Value chain configuration of small-scale broiler producers in Vhembe district of South Africa. | Quantitative data | Structured questionnaire | Descriptive analysis (SPSS version 27) |
| Analyse Value chain based constrains of small-scale broiler producers in Vhembe district | Qualitative data | Semi structured questions | Thematic analysis (Atlas Ti Version 8). |
| To suggest strategies to deepen value chain participation and market access for small-scale broiler producers. | Qualitative primary data | Semi structured questions | Thematic content analysis (Atlas Ti version 8) |

3.7 Ethical Considerations

Permission to conduct the study was sought from the University of Venda Research Ethics Committee. All respondents were informed about the confidentiality of the information gathered from them as the questionnaire required the participants to identify themselves. The participants were assured that information provided will only be used for this study in accordance with University of Venda research policies. The following scientific research ethics as outlined by Babbie (2010) were adhered to throughout the course of the research. Voluntary participation was considered with the free will of the participant to withdraw at any given time during the survey. Furthermore, the researcher ensured that within the scope of this study all respondents were not physically harmed. Procedures of the survey was explained to the participants. Confidentiality was practised throughout the research project. The researcher requested permission, when necessary, from those in charge of certain broiler farms before approaching the farmers. All ethics were observed meaning the researcher duly requested for stakeholder participation without the use of undue influence and/or deception.

The following were key principles that the researcher had to abide to during data collection, thereafter when concluding the research and when the research is completed. The researcher ensured reliability of the study through consistence questions in a questionnaire. Uniformity and transparency were ensured across the duration of the study. As such, internal consistency was also ensured during and after the study.

CHAPTER 4

VALUE CHAIN CONFIGURATION OF SMALL-SCALE BROILER PRODUCERS IN VHEMBE DISTRICT OF SOUTH AFRICA

4.1 Introduction

Agriculture is an important sector in South Africa. It accounts for about 3% of the country's gross domestic product (GDP) and contributes about 7% towards formal employment. Agricultural activities include intensive crop and animal production (Mabhaudhi *et al.*, 2018). The country's agricultural sector is dualistic. It is comprised of highly capitalized commercial sector and the traditional low-technology small-scale sector (Ntshangase, Muroyiwa, & Sibanda, 2018). Although, South African agriculture sector is viable and the country is food secure at a national level, it is a net importer of broiler meat production from countries like Brazil, USA, Argentina, Canada, and Thailand (Nkgadima, & Muchopa, 2022). These imports are a challenge to small-scale producers' sustainability who cannot compete evenly with comparatively lower produced imported broiler meat (Queenan *et al.*, 2021). Hence, the small-scale farmers find it difficult to penetrate the market and this limits their growth potential. The growth of the small-scale local broiler producers has the potential to reduce import dependence, ensure future food security, create jobs and achieve local economic growth. This study investigated how the value chain configurations of small-scale broiler meat producers affect their productive capacity and market access.

4.2 Research methods and materials

The study used a descriptive quantitative research design to map and assess the value chain and marketing configuration of the broiler meat producers. Data was collected from farmers (n = 60) using a structured questionnaire and analysed descriptively to unpack the inputs costs, transport costs, productive capacity, mortality and market structure for broiler chicken meat producers. The collected data was analyzed by means of descriptive statistics using SPSS version 27. A full detailed methodology is explained in Chapter 3 of this dissertation.

4.3 Results

The study analyzed the value chains of small-scale broiler producers by unpacking the inputs, production, processing and marketing of the broiler chickens. This was done to understand activities involved in the entire chain that add or subtract the value in broiler production. Firstly, the characteristics of broiler producers that participated in the study are outlined.

4.3.1 Demographic Variables

A total of (n = 60) broiler producers participated in the study. Majority were female (60%) and 90% of small-scale producers were sole traders or private companies (Table 4.1). Cooperatives were the least represented at one in ten producers (10%). Three quarters of broiler chicken farmers were middle aged: 36 to 55 years (76.7%). This is a sheer sign of being in a hurry. The results shows that females make up the most active participants in the broiler farming in rural communities. This could suggest gender barriers to accessing markets and participation in the formal value chains. Moreso, there is limited participation of youth in the sector, perhaps due to the fact youth are in schools and in urban areas working in formal jobs. Cooperative production seems to be the least preferred method of production in the rural small-scale broiler sector with most farmers preferring to go solo.

4.4 Value Chain

This section presents the value configuration of small-scale broilers farmers as illustrated in Figure 4.1. The figure shows the inputs supply, production processes, marketing and distribution as well as the market structure of the value chain configuration for small-scale broiler producers in Vhembe district, South Africa. The results are reported systematically firstly by discussion the input supply such as costs, players and transportation of inputs. The other sections also outline and discuss the value chain processes as outlined in Figure 4.1. Also, tables are used to present numbers like the production capacity of farmers.

Table 4.1: Characteristics of broiler producers in Vhembe district, Limpopo South Africa (n = 60)

| Demographic Variable | Category | Frequency | Percentage |
|-----------------------------|-------------------------------|------------------|-------------------|
| Gender | Male | 24 | 40.0 |
| | Female | 36 | 60.0 |
| Ownership | Sole trader/private companies | 54 | 90.0 |
| | Cooperative | 6 | 10.0 |
| Age | 25 to 35 years | 6 | 10.0 |
| | 36 to 45 years | 24 | 40.0 |
| | 46 to 55 years | 22 | 36.7 |
| | 56 to 65 years | 8 | 13.3 |

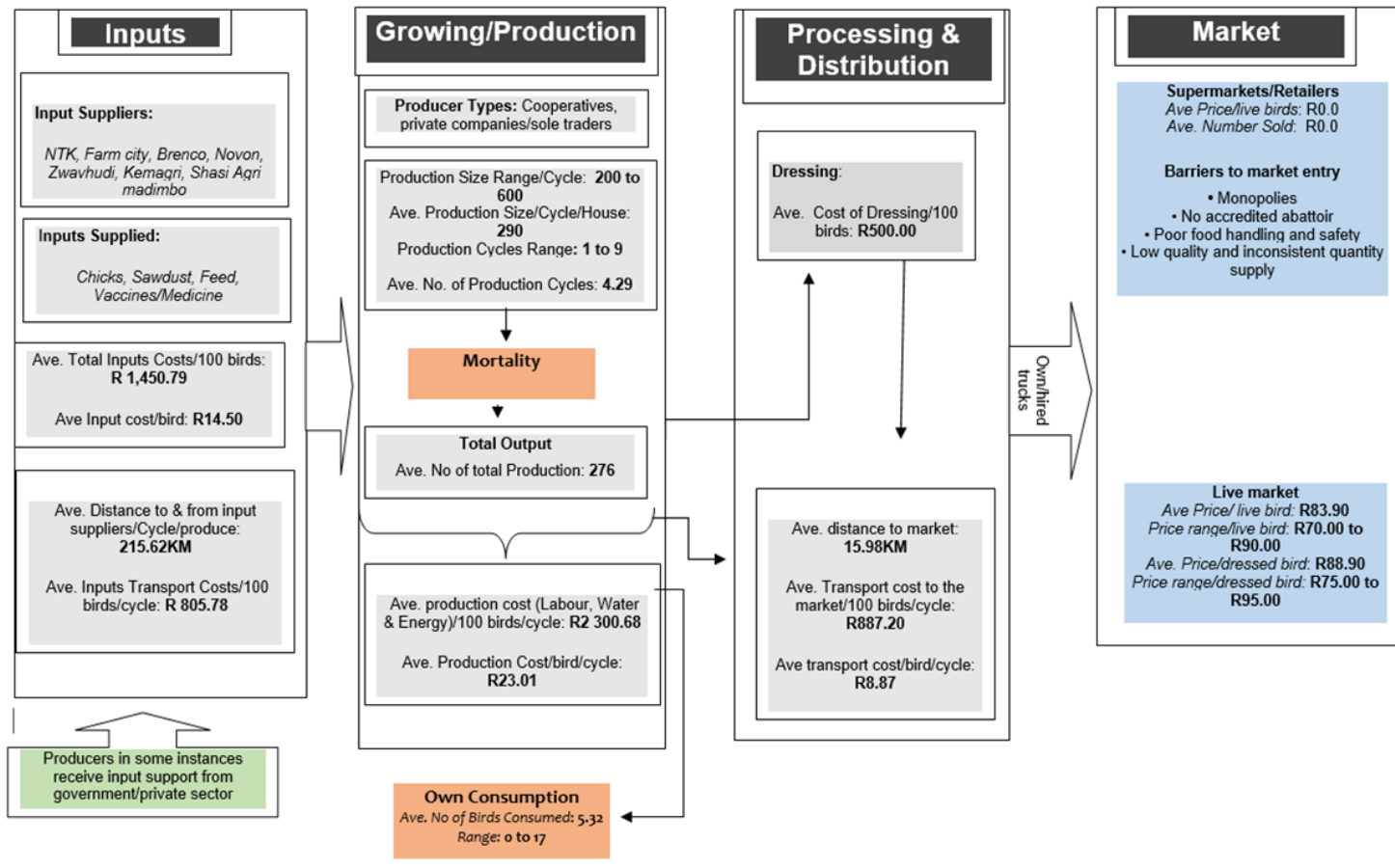


Figure 4.1: Value chain configuration of small-scale broiler producers in Vhembe district of south Africa

4.4.1 Inputs supply

Table 4.2 illustrates the input suppliers for broiler chicken producers. The results show that NTK is the most popular feed, vaccines and sawdust supplier in Vhembe district mentioned 39 times for each of these categories and it has 134 total cumulative number of mentions for all the input supplies to farmers. While all other input suppliers such as NTK, Novon, and Brenco offered broiler producers a one stop shop for feed, vaccines, day old chicks and saw dust, Zwavhudi only supplied broiler producers' farmers with one day old chicks. Due to its specialisation on one day old chicks, Zwavudi was the most popular supplier mentioned 25 times in this area compared to other suppliers. The least popular suppliers of one day old chicks amongst broiler producers is Novon (3 mentions) and Brenco (4 mentions). Shasi Agri Madimbo is most popular for saw dust (40 mentions) although it is the second most used input service provider after NTK in terms of cumulative frequency for all the input supplies (94 mentions). The popularity of each input supplier depends on the number, availability and price of the service provider outlets. Kemagri and Novon are the least popular input suppliers for all the categories of inputs supplied to broiler producers in the district.

Moreover, broiler producers travelled an average of 215.62 kilometres to and from input suppliers per producer with a transport cost amounting to R 805.78 per cycle per 100 birds (Figure 4.1). The cost to transport input for a single bird amounted to R8.06. The cost of inputs for 100 birds was pegged at R 1 450.79 and total input costs per bird averaged R14.50. As part of the value chain, producers from time to time received input support in the form of donations from government and non-profit/private organisations.

Table 4.2: Total number of common input suppliers to broiler small-scale farmers in Vhembe district, South Africa

| STORE | FREQUENCIES | | | | TOTAL CUMMULATIVE NUMBER OF MENTIONS |
|-----------------------|-------------|----------|-------------------|---------|--|
| | FEEDS | VACCINES | DAY OLD CHICKS | SAWDUST | |
| NTK | 39 | 39 | 17 | 39 | 134 |
| Shasi Agri | 18 | 18 | 18 | 40 | 94 |
| Farm city | 26 | 19 | 19 | 21 | 85 |
| Zwavhudi | - | - | 25 | - | 25 |
| Brenco | 4 | 4 | 4 | 4 | 16 |
| Kemagri | 5 | 5 | 2 | 2 | 14 |
| Novon | 3 | 3 | 3 | 3 | 12 |

4.4.2 Growing and Production of Broilers

This section deals with the value chain stages in the broiler production. As shown in Figure 4.1, there are different types of producers in small-scale broiler farming in Vhembe district namely cooperatives, private companies and sole traders. The overall production capacity for broiler producers in the district ranges between 200 to 600 birds per cycle. The producers had a land capacity of 0.25 to 3 hectares (Table 4.3). This suggests that farmers have a potential to scale production with the current land sizes they have. In comparison, across all the municipalities, the minimum number of production capacity per producer is 200 birds per cycle while Musina municipality producers had the highest (600 birds) maximum production range and Makhado had the lowest maximum (300 birds) as shown in Table 4.3.

The district average production capacity per house per cycle was found to be 290 birds per producer. In comparison among the municipalities in Vhembe district, Makhado had the lowest chicken house capacity of 237 birds per cycle while Thulamela had the district average of 290 birds (Table 4.3). Moreover, farmers had an average of 4 cycles per annum with a range of 1 to 9 years. Each growing cycle had a minimum of 5 weeks and maximum of 6 weeks before birds are taken to the market. The results further show that, farmers applied a two to three weeks bird's introduction gap system to different houses or divided spaces. The average production cost (Labour, Water & Energy) per 100 birds/cycle was found to be R2 300.68 with each bird costing on average of R23.01.

Production capabilities of producers in the district were impacted by the number of chicken houses, chicken house capacity, mortality and number of production cycles. On average farmer lost about 14 birds per cycle per 100 birds. While Musina producers recorded the highest level of mortality at 25 birds per cycle per 100 birds, in general the maximum mortality was uniform throughout the district (Table 4.4). Makhado and Thulamela had the lowest minimum rate (2 birds) of mortality of birds per cycle per 100 birds. These factors have a negative impact on the cost of production in terms of labour, energy and water cost distribution per unit of birds that reach the market. Thus, the value per bird is lost due to these days.

Table 4.3: Production capabilities of broiler producers in Vhembe district, South Africa

| Descriptive statistic | Collins Chabane | | | | Mussina | | | | Thulamela | | | | Makhado | | | |
|---------------------------|-----------------|--------------|-----------------|-------------|--------------|--------------|-----------------|-----------------|--------------|--------------|-----------------|-------------|--------------|--------------|-----------------|---------------|
| | No of Hectar | No of houses | Capacity /House | No of cycle | No of Hectar | No of houses | Capacity /House | No of cycles/An | No of Hectar | No of houses | Capacity/ House | No of cycle | No of Hectar | No of houses | Capacity /House | No of cycles/ |
| Average | 1.08 | 1.67 | 283.33 | 5.17 | 0.88 | 1.71 | 318.75 | 4.21 | 1.07 | 1.68 | 290.91 | 4.45 | 0.94 | 1.25 | 237.5 | 3.88 |
| Mode | 1 | 2 | 300 | 6 | 0.5 | 2 | 300 | 6 | 0.5 | 2 | 300 | 6 | 0.5 | 1 | 200 | 6 |
| Median | 1 | 2 | 300 | 6 | 0.75 | 2 | 300 | 4 | 1 | 2 | 300 | 5 | 0.75 | 1 | 200 | 4 |
| Standard Deviation | 0.45 | 0.47 | 68.72 | 1.21 | 0.52 | 0.61 | 123.16 | 1.41 | 0.76 | 0.65 | 68.38 | 1.68 | 0.56 | 0.46 | 51.75 | 2.10 |
| Maximum | 2 | 2 | 400 | 6 | 2 | 3 | 600 | 6 | 3 | 3 | 400 | 6 | 2 | 2 | 300 | 6 |
| Minimum | 0.5 | 1 | 200 | 3 | 0.25 | 1 | 200 | 2 | 0.5 | 1 | 200 | 1 | 0.5 | 1 | 200 | 1 |

Market Configuration of broilers in Vhembe District, South Africa is shown in Figure 4.1 and Table 4.5. Apart from mortality, the total output that reaches the market from farmers is affected by own consumption. Out of the average of 276 birds produced, farmer took 5 birds on average for own consumption. As shown Table 4.4, not all farmers took their produce for own consumption. Those in Messina area had the highest rate of own consumption rate (7 birds recorded) in comparison while Makhado had least average own consumption rate at 3 birds per cycle per 100 birds. This further reduced the total value and profitability of the small-scale broiler producers.

4.4.3 Processing, Distribution and Broiler Market Configuration

Birds are distributed to the market either dressed or as live birds. Dressed birds have an additional cost of R5.00 per bird across the district. To reach the market, farmers travelled mean score of 15.98 kilometres to reach the market at a cost of R8.87 per bird. In total, the cost of producing one birds (labour, energy, water, inputs, transport) on average costed R54.44 plus R5.00 for dressed birds. All farmers only sold their produce at a live market dressed or undressed. No farmers had contract with or sold produce to retail stores or supermarkets. On average 271 chickens reached the market. Fewer chickens reached the market in Makhado municipality (224) compared to Musina (298), Collins Chabane (264) and Thulamela (274) municipalities in the district. Overall, R83.90 was the district average price per live bird. Prices of live undressed birds ranged from R70.00 to R90.00. Dressed birds costed R88.90 on average ranging from R75.00 to R95.00. Thus, a dressed or live bird both make a profit of $(88.90 - 54.44 + R5)$ R29.46 on average. A live bird is cheaper in Thulamela and expensive in Makhado (Table 4.5). The price of all types of birds sold (dressed and undressed) dependent on the location, individual farmer's discretion, the size/weight of the chicken, bulk buying, the farmer's financial situation at the time of the transaction.

Table 4.4: Mortality and farmer household own consumption of broiler chicken output

| Descriptive statistic | Collins Chabane | | Mussina | | Thulamela | | Makhado | |
|---------------------------|-----------------|-------------------|-----------|-------------------|-----------|-------------------|-----------|-------------------|
| | Mortality | Quantity consumed | Mortality | Quantity consumed | Mortality | Quantity consumed | Mortality | Quantity consumed |
| Average | 14.67 | 4.17 | 12.88 | 7 | 12.32 | 4.27 | 10.38 | 2.63 |
| Mode | #N/A | 6 | 15 | 4 | 12 | 2 | 8.07 | 1.77 |
| Median | 13.5 | 4 | 15 | 5 | 12 | 3 | 10 | 3 |
| Standard Deviation | 6.21 | 3.48 | 6.097 | 5.36 | 5.96 | 2.93 | 6.59 | 2.13 |
| Maximum | 24 | 10 | 25 | 23 | 24 | 10 | 24 | 6 |
| Minimum | 6 | 0 | 4 | 1 | 2 | 1 | 2 | 0 |

Table 4.5: Quantity sold, price and broiler bird type sales in Vhembe District, South Africa

| Descriptive statistic | Collins Chabane | | | Mussina | | | Thulamela | | | Makhado | | |
|---------------------------|-----------------|------------------|--------------------|---------------|------------------|--------------------|---------------|------------------|--------------------|---------------|------------------|--------------------|
| | Quantity sold | Price/Live bird@ | Price/Whole Bird @ | Quantity sold | Price/Live bird@ | Price/Whole Bird @ | Quantity sold | Price/live bird@ | Price/Whole Bird @ | Quantity sold | Price/live bird@ | Price/Whole Bird @ |
| Average | 264.5 | 84.17 | 89.17 | 298.88 | 84.17 | 89.17 | 274.32 | 73.2 | 84.35 | 224.5 | 85.64 | 90.64 |
| Mode | #N/A | 85 | 90 | 191 | 85 | 90 | 280 | 85 | 90 | 101.73 | 32.62 | 34.50 |
| Median | 274 | 85 | 90 | 275.5 | 85 | 90 | 280.5 | 85 | 90 | 194 | 85 | 90 |
| Standard Deviation | 62.10 | 1.86 | 1.86 | 115.34 | 4.49 | 4.49 | 63.47 | 27.98 | 19.03 | 50.42 | 3.20 | 3.20 |
| Maximum | 374 | 85 | 90 | 570 | 90 | 95 | 383 | 90 | 95 | 295 | 90 | 95 |
| Minimum | 190 | 80 | 85 | 189 | 70 | 75 | 182 | 0 | 0 | 182 | 80 | 85 |

4.4 Discussion

The study investigated the value chain marketing configuration in four municipalities in Vhembe district of Limpopo, South Africa. The results revealed that most farmers operated as sole traders, and many were females. To the contrary, majority of broiler small-scale farmers in Swaziland are males at three fifths (Masuku, 2011). Farmers obtained their inputs from seven main suppliers. The six of them were one stop shop for all inputs which includes feeds, medicine, saw dust and one day old chicks. It was also observed that the popularity of each input supplier dependent on the number, availability and price of the service provider outlet(s). A study by Ocholi & Ayila (2018) on technical efficiency in small-scale broiler production enterprises in Benue state, Nigeria revealed that feed type and quality significantly and positively influenced broiler chicken output among the small-scale farmers at 1 percent level of probability. It was shown that farmers sourced their inputs further away from their location and travelled over 215 kilometres at a cost to R 805.78 per producer per cycle. The average inputs costs for farmers per cycle are pegged R 1 450.79. Per bird, producers incurred a total of R22.56 for both inputs and input transport costs. Similarly, Ocholi & Ayila (2018) found that inputs costs are among the highest expenses for small-scale broiler farmers in rural area and feed accounted the largest portion.

To understand the productive capacity of broiler meat, producers in Vhembe district, farm size, number of chicken houses, chicken house capacity and number of production cycles were assessed. Producers had approximately a hectare of land each and the least land size. A single farmhouse was capable of keeping at least 290 birds per cycle with farmers producing at least four times year. A little over 276 chickens average were successfully produced. Shinde and Srivastava (2007) stated that any broiler farmer with flocks' size ranging from 50 -1000 birds are called small-scale farmers. Broiler farmers are characterized by underproduction. In most cases, like in the present study low-input, low-output conditions are managed mainly by women and children of the household (Shinde & Srivastava, 2007). As a result, production output is low among the small-scale broiler producers. This is also supported by Ocholi and Ayila (2018) who showed that inputs and economic status of farmers played a significant role in the total output among small-scale broiler farmers. It predisposes farm produce to high mortality and farmers are prone to high consumption of own production.

The final number of birds that reach the market per cycle per house heavily depended on how many birds are lost during the production stage (mortality rate) and how many chickens each farmer consumed at their household. As a result, municipalities had a different level of both mortality rate and own consumption. A study analyzed technical efficiency of small-scale broiler production in Nigeria (Ocholi & Ayila, 2018). It emerged that broiler farmers were not technically efficient. However, results showed that a scope for improvement in the level of technical efficiency existed. The results also showed that the respondents were not scale efficient in their broiler production activities. Badubi *et al.* (2004) found a higher mortality rate of small-scale broiler production systems in Botswana of over 9%. The results of the study and literature demonstrate that small-scale broilers both in South Africa and Africa in general experience higher mortality rate.

The marketing configuration of all broiler farmers cross the district was similar. On average, boiler chicken meat farmers travelled approximately 16 kilometres to get their produce to the market. In addition, Mishra, Kumar, Joshi, & D'souza (2018) similar to the findings of the current study found that broiler small-scale producers travelled over 25 kilometres to source inputs and about 27 kilometres to the market. To the contrary, Delabougliise, Nguyen-Van-Yen, Thanh, Xuyen, Tuyet, Lam & Boni (2019) found a distance to the market of 1.5 kilometres. These results suggest that distance travelled by broiler farmers to the market differed according to location.

The common market for farmers was the live market. The live market involved selling via pre orders, direct farm sales and taking the birds to the local common market. Chatterjee & Rajkumarindia (2015) in India found similar findings that broilers are sold mainly live and when required slaughtered at the place of sale. Moreover, small-scale farmers tended to dress birds and display them for sale in the open air without any concern for hygiene. This explains parts of the reason why farmers failed to access the retail market. Moreover, the price of live birds differed based on whether it is dressed or not. Dressed chickens were the most expensive factoring in the labour costs. Dressed chickens were 5% more expensive compared to the undressed broiler chickens. The results also revealed that factors such as location, individual farmer's discretion, the size/weight of the chicken, bulk buying, the farmer's financial situation at the time of the transaction determined the final price of both dressed and undressed birds. Additionally, no single studied farmer sold their produce to retail stores or supermarkets due to a number of market entry barriers and other technicalities.

Main barriers included existence of industry monopolies, farmers lacked accredited abattoirs as required by retail food and health safety standards, low quality and inconsistent quantity supply of broiler chickens to retailers. These results are similar to those reported by Shinde & Srivastava (2007). Young and Hobbs (2014) explained that most small producers find it difficult to enter the main market due to requirements for sophisticated production skills, need for specialized equipment, infrastructure and capital. These requirements are the main reasons why small producers, when they fail to gain entry to main economy value chains, are pushed out and prompted to either exit the market, reduce production or remain small, and in some cases fail completely.

Literature reveals that the changing nature of traditional marketing to vertical coordination has altered the transaction costs facing broiler producers. Vertical coordination requires that farmers find an appropriate buyer and evaluate different value chain alternatives. To the contrary, traditional marketing of agricultural commodities was straightforward where farmers shipped the produce to the main buyer who grades them and marketed them in bulk. Mao, Zhou, & Ying (2019) as well as Young and Hobbs (2014) states that farmers will pack their produce and ship it to a local packer, or perhaps depending on the market prices, farmers choose between a number of local packers. For instance, the producers are required to decide on which vertically linked value chain to join for a 5- or 10-year contractual commitment. These contracts require producers to stick to agreed quantity, quality, and timing of deliveries (Young & Hobbs, 2014). Moreover, prices are determined by a combination of product quality characteristics and targets achieved by the producer in comparison to other producers. Moreover, studies show that for farmers to access the modern vertical coordinated market requires investment in specific assets and infrastructure, follow prescribed feeding methods, keep detailed records, and also permit on-farm audits to strengthen the resolve and trust in the market. In order to access the market, producers are also required to have specific set of skills that include negotiation and management skills for closely coordinated value chain where the farmers' autonomy to make decisions is limited. The advantage is that producers are given seamless access to more information with respect to consumer and downstream buyer requirements.

4.5 Conclusion

The study investigated value chain marketing configuration of small-scale broiler chicken farmers in Vhembe district, South Africa. The results revealed that most producers were female and were

adults with less participation of youth. Farmers travelled long distances, sometimes received inputs support mainly from government while there is limited to no support in other parts of the value chain. It also, emerged that low farmer produce was determined by housing size, manpower, resources such as abattoirs as well as marketing and management skills, hence they could not meet the requirements to penetrate the main market. Also, quality and hygiene standards affected the main market access for farmers. Thus, it can be observed that value chain configuration drives marketing configuration of small-scale broiler producers. For instance, production and productivity capacity, support given to farmers, availability of infrastructure (like abattoirs), and hygiene standards determine the type of the market accessed by small-scale broiler farmers in Vhembe district. The fact that farmers lacked adequate resources and inputs, the output level and trading substantially and negatively affected market access. Thus, investment and support for farmers in the entire value chain is important to boost poultry production and marketing. Introducing farmers to vertical coordination which goes with rationalization and increasing concentration in the input supply, processing, and retailing/distribution sectors. In this way, farmers can improve their productive capacity, raise enough capital to buy key infrastructure and seamlessly join the retail market. The next chapter focuses on challenges that affect the production capacity, growth and sustainability of small-scale broiler producers.

CHAPTER 5

VALUE CHAIN BASED CONSTRAINTS OF SMALL-SCALE BROILER PRODUCERS IN VHEMBE DISTRICT, SOUTH AFRICA

5.1 Introduction

Poultry production is among the most growing agricultural sub sectors globally. There are over 23 billion poultry birds in the world (Mottet & Tempio, 2017). This means each person has three birds to himself/herself at any given point (FAOSTAT, 2016). Fifty years back, this number was five times smaller than today. Poultry meat and eggs are the main source of food and nutrition globally to many cultures, traditions and religions. Small-scale broiler meat production systems are the most common of all poultry products (Gilbert *et al.*, 2015). Broilers are kept and raised under a wide range of production systems for meat, and crops manure. While broilers are classified as the most efficient sub-sector with shorter cycles, many small-scale farmers are failing to cope with demand driven and production challenges (Janni & Cortus, 2020). In South Africa, small-scale poultry production is an important sector that provides a constant source of income to families and help with meeting market demand gaps. Also, it is a key strategy by government to poverty alleviation and quality protein to the country (Mulaudzi, 2015). As a result, many countries including South Africa have initiated programs aimed at improving small-scale poultry production to bring socio- economic benefits and justice to communities. However, the small-scale farmers still find it difficult to grow and sustain their activities. This study investigated value chain constraints faced by small-scale broiler producers in Vhembe district of Limpopo, South Africa, with particular emphasis on market access.

5.2 Research methods and materials

The study used a descriptive exploratory research design to explore and assess the constraints confronting small-scale broiler meat producers. Data was collected using interviews with structured and semi-structured questions from farmers, and key informants to understand the challenges broiler chicken meat producers face in the district. The collected data was analyzed by means of thematic content analysis with Atlas ti version 8. The software was deployed to help with generating themes and associations between them. A full detailed methodology is explained in Chapter 3.

5.3 Results

5.3.1 Constraints faced broiler meat producers

The study assessed the challenges faced by small-scale broiler farmers in Vhembe district. The analysis revealed nine key themes that define challenges faced by farmers namely, effects of Covid 19 pandemic, lack of capital, not meeting main market standard, limited stock of one day old chicks, transportation to market, no abattoir, sub-standard chicken houses, unreliable market, inconsistent supply and low output production (Figure 5.1). The results showed that these constraints were interconnected and related with causal effect on each other.

It emerged that lack of capital was the major setback for farmers. Farmers highlighted that capital was the main problem that also contributed to most challenges. As shown in Figure 5.1, farmers showed that capital challenges explained why farmers did not have “*proper housing*”, “*adequate inputs for growth*”, “*accredited abattoir*”, and “*consistent supply*”. The effect of low capital had an effect also on access to market. For instance, producers revealed that they “*did not have appropriate and dedicated transport*” to ferry their produce to the market. As such, relied on costly hiring.

The participating farmers revealed that there is a shortage of supply of one day old chicks in Vhembe district. Farmers revealed that they travelled longer distances to obtain inputs this includes one day old chicks. For instance, farmers travelled over 200 kilometers. The fluctuating and unreliable one day old chicks supply limited the growth potential for farmers. This also partly explained why farmers had “*inconsistent supply*” and “*produced small quantities*” of broilers to the market. These results show that a combination of factors such as input value chain and capital challenges are major contributors to why small-scale farmers “*do not meet market norms and standards*”.

The effects of Covid-19 pandemic were also listed as a major constraint to the growth of broiler producers. Farmers revealed that since the “*Covid-19 total lock down in 2020 and 2021*”, they had to shut down their operations as well. Since then, they have found it challenging to produce the same quantities as before the pandemic. Covid1-19 effects also partly explained why farmers are prone to supplying “*smaller quantities*” post the pandemic.

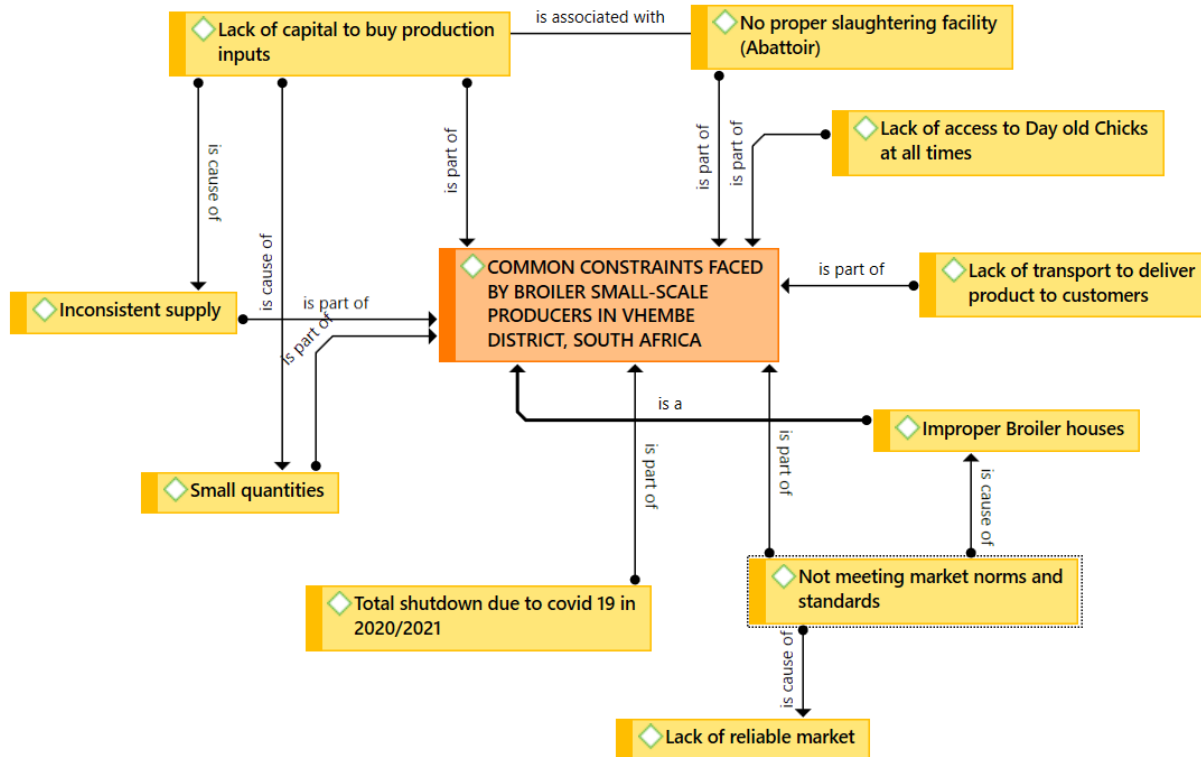


Figure 5.1: Challenges faced by for small sale broiler farmers.

5.3.2 Market access challenges

One of the major challenges facing broiler farmers was the inability to “access reliable market”. This was explained by the fact that farmers only supplied their produce to live markets that also rely on free trading clients. Hence, this session shows the analysis on the main barriers or challenges inhibiting the main formal market penetration by small-scale broiler producers. Atlas-ti network diagram in Figure 5.2 shows that there are two main challenges to accessing the main formal market namely “not meeting value chain accreditation” and “industry monopolies”. The figure also shows the number of times in which each of the challenges was mentioned by producers represented by G (groundedness of the theme).

Failure to meet value chain accreditation standards was the main challenge to farmers accessing formal main markets such as supplying to restaurants, and retailers. This theme had the most mentions combined with its four sub-themes of 32. Producers failed to meet the quality requirements of hygiene and food handling (16 mentions). In interview 1, a key informant from a leading supermarket (Shop A) said “*local farmers do not have proper infrastructure for food handling ... therefore they cannot meet Shop A requirements to supply*”. In addition, an interviewee from Shop C said farmers also could not get “*good weight*” for their chickens at the end of the cycle hence, they fail to make profits due to kilograms-based pricing in the market. As a result, producers opt to sell in live markets where weight is not a key feature for profitability.

Retailers also require that farmers produce a clear business plan about their operations and activities. However, small-scale broiler producers in Vhembe barely kept records nor had a business plan of their operations. Another major challenge was the unviability of accredited abattoir. Interviewee 8 from Shop B stated that local producers do not have “*slaughtering infrastructure which is accredited with food and safety standards*”. as required by retailers for food handling and slaughtering procedures. Low output among the small-scale broiler producers was a common problem for all farmers. This was attributed to lack of capital, inadequate supply of one day old chicks, limited support and effects of the Covid-19 pandemic. In order to supply retailers, “the farmer should be able to supply the right quantity at all times” (Interview 8: Shop B). However, Vhembe district broiler producers do not have the capacity to supply constantly agreed upon quantities. These are the reasons why small-scale producers in Vhembe district could not supply the main retailers in the market and have a reliable stable market for their produce.

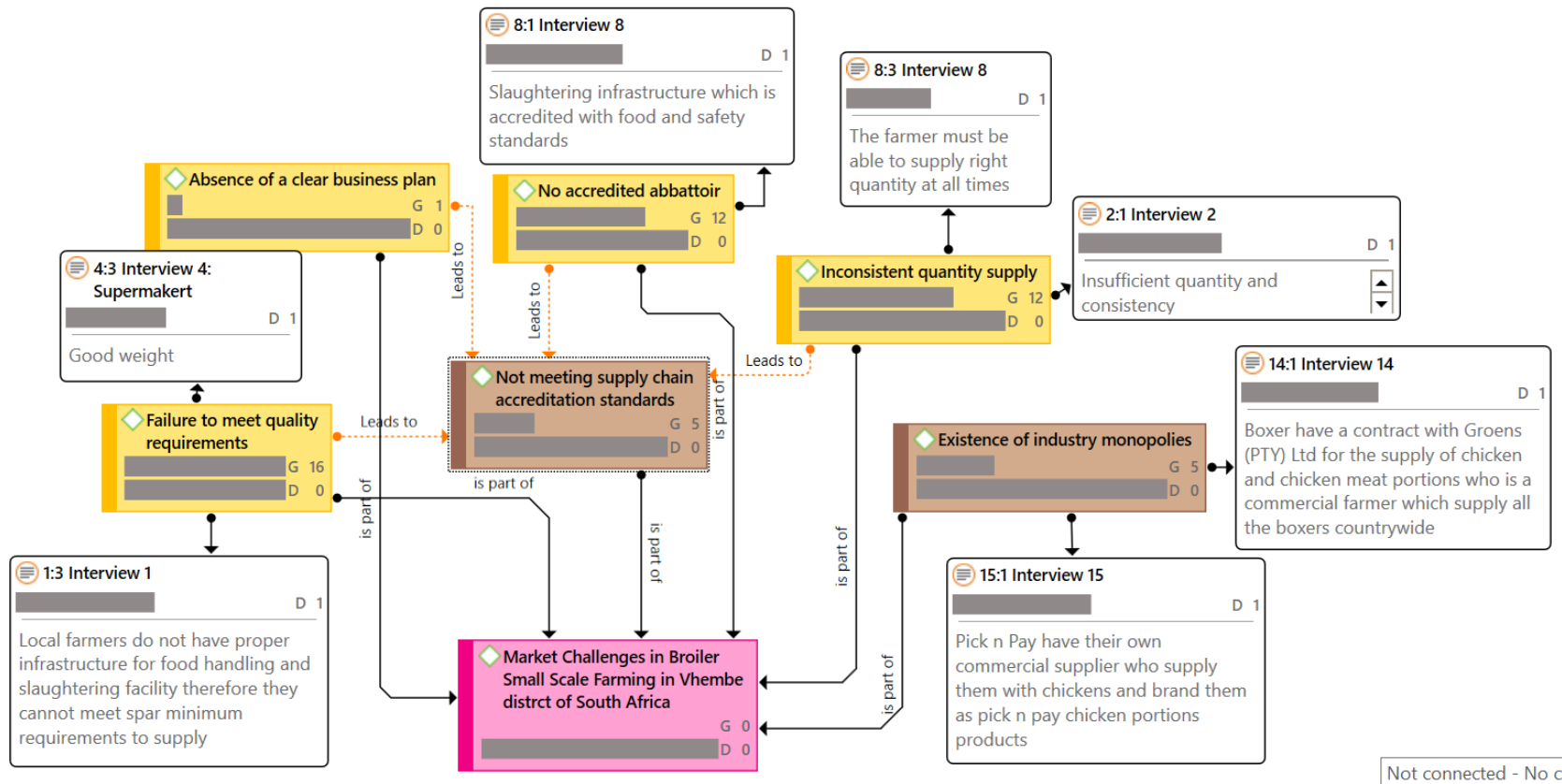


Figure 5.2: Market access constraints in small-scale broiler producers in Vhembe district, South Africa
Key: G = theme groundedness D = theme density

Industry monopolies and vertical organized market characteristic of the formal market was barrier to entry for small-scale broiler farmers in Vhembe district. Major retailers had their own suppliers of broiler meat that were located outside the district and province. Moreover, results revealed that the retail market was dominated by contract partnerships (**Interview 15: Shop A; Interview 14: Shop D**). Due to their low output and lack of organization in cooperatives, it is not easy for new entrants such as small-scale farmers to negotiate contracts and penetrate the retail market easily.

Table 5.1 shows chi-square results for the relationship between market share and distance to the market. The results suggest that there is no significant relationship between the two factors ($\chi^2=201.562$; $p=0.304$). The *p-value* is greater than 0.05 hence, the insignificance. Thus, the distance to the market for small-scale broiler producers does not influence one's market share. Furthermore, Table 5.2 shows that there is no significant relationship between quantity sold and distance to the market ($\chi^2=1093.794$; $p=0.089$). This result perhaps could be explained by the fact that live markets are characterized by free traders and suppliers. Those in the market at any given time are likely to sale similar quantities depending on number of suppliers in a given market at any given time, quantity supplied, and consistency of supply determines the market share not distance to the market. Similarly, the distance to the market also did not determine the selling price as shown by Chi-square value of 109.566 and *p-value* greater than 0.05 at 0.742. Thus, the nature of the market that is dominated by small producers and has freedom of entry, farmers relied on the market price as opposed to input and production-based pricing.

5.4 Discussion

The study investigated the challenges faced by small-scale broiler producers in Vhembe district of South Africa in relation to market access. The results showed several challenges affecting farmers. Lack of capital explained most of the challenges faced by farmers. These findings support those by Olorunwa (2018) who revealed that inadequate finance and high costs of feed input were the most serious of the problems faced by small-scale farmers in broiler production. Similarly, Ocholi & Ayila (2018) found that cost of feed and inadequate funding were major constraints confronting farmers.

In a study by Olorunwa (2018) on economic analysis of small-scale broiler producers, the average mean flock size of birds was 400 with most farmers stocking less than 500 birds. The study showed that most farmers remained in small operations due to the high cost associated with operating large-scale enterprise and insufficient capital. Mulaudzi (2015) concluded that

inadequate capital, illiteracy and limited technical experience were the most important socio-economic factors limiting the growth of small-scale broiler producers.

It was also revealed that lack of capital affected the ability of farmers to procure and access adequate input. This affected their growth potential. Earlier, Oladeebo and Ambe - Lamidi (2007) discovered that total number of birds stocked, and birds feed intake are positively and significantly related to broiler production. This indicates that the problem is ongoing. The results of the current study also revealed that high costs of inputs, limited supply of one day old chicks, and transport to the market where reasons why farmers could not stock more birds, produce adequate quantities, supply consistent produce, and had no standardized slaughtering and food handling facilities. Osmani and Hossain (2015) reported that high transaction cost, limited skills, location of farmers, poor road networks and maintenance, transport shortages, proper food handling facilities, and price limits affected the extent to which farmers participated in a competitive market dominated by few vertical organized contract suppliers. These results are similar to the challenges faced by farmers in Vhembe district studied.

Table 5 1: Chi-Square Tests for Market share, Quantity sold & Selling price vs distance to market

| | Pearson Chi-Square Value | df | Significance (2-sided) |
|---|---------------------------------|-----------|-------------------------------|
| <i>Market share & distance to market</i> | 201.562 | 192 | .304 |
| <i>Quantity sold vs distance to market</i> | 1093.794 | 1032 | .089 |
| <i>Selling price & distance to market</i> | 109.566 | 120 | .742 |

Another major multifaceted challenge mentioned by farmers as the predicament to their success and growth was market related challenges. It emerged that farmers sold all their produce in the live market and were therefore passive participants in the market. Similar to the findings by IFAD (2001) as well as Osmani and Hossain (2015), it was revealed that in most cases, small-scale farmers are passive market participants and price takers who do not consider high inputs cost. Moreover, farmers had little said on where they conduct transactions, with whom and at what price. Osmani and Hossain (2015) revealed that a major challenge related to the market for small-scale producers were difficulties in getting reliable market information on products and value chain requirements. In order to increase the productivity of small-scale producers in the district, capital, input support, and market access are major areas to focus on. Egbetokun *et al.* (2017) states that improving productivity cannot be achieved without market access that effectively binds the specialized activities of producers that is widely dispersed into an integrated national value chain of the economy. Literature and the current results point to the fact that market access is a prerequisite for enhancing broiler production in the district and increasing success of small-scale farmers. Adeoti *et al.* (2014) alludes that farmer income cannot be achieved if the broiler producers are not market oriented. This is also supported by Egbetokun *et al.* (2017).

The results further showed that market access for small-scale producers was affected by inconsistent supply, small quantities, and existence of industry monopolies as contract suppliers. Egbetokun *et al.* (2017) identified that being a member of a cooperative determined market participation by smallholders' farmers. Hence, the lack of a well-organized and resourced marketing and supply cooperatives scheme limited the extent to which farmers access the market in particular the retail market. In addition, the results showed that lack of proper production and food handling infrastructure compromised the quality and hygiene of the final broiler birds. Similarly, John Cassius Moreki (2011) earlier reported the same results. Also, de Mesquita Souza Saraiva *et al.* (2022) observed that hygiene is critical in poultry production and must be taken seriously as it is directly linked to human health and an increased broiler output. Poor hygiene explained most of most reasons why main retailers could not buy from local small-scale producers. Safety and food handling standards are a major concern not only for retailers but are enforced by the law. This is an international practice. For instance, all poultry sold in interstate commerce in the United States of America is a must that it is slaughtered and processed under continuous inspection by the drug agency. Moreover, all abattoir or slaughter facilities are required to have a Hazard Analysis Critical Control Points (HACCP) plan. Due to limited capital, farmers in the district did not have adequate infrastructure and necessary facilities to meet the legal requirements to supply retailers.

The small-scale producers relied solely on selling to the live market for their produce. This is influenced by the fact that poultry products are well-sized and suitable for immediate use and consumption. Broiler chickens have the advantage to small-scale farmers in that, households can slaughter and consume in a single meal. This eliminates the need for slaughtering infrastructure and food handling/storage facilities, which is pre-requisite for larger livestock species supplier.

The negative side to this is that such broiler chickens could be infected with diseases due to minimum inspection. This market is prone to zoonoses like the highly pathogenic avian influenza (HPAI) and bacterial contamination with *Salmonella* and *Campylobacter* species that pose potential public health risks (Conan *et al.*, 2012; Alders *et al.*, 2014). Reportedly, slaughtering and consumption of sick birds or recently dead birds is a common practice in some communities which further exposes the public to health hazards. Hence, for farmers to penetrate the market they are required to practice effective husbandry and disease control which results in increased flock sizes, gives assurance of stability and safety of supply of poultry products from small-scale farmers. Thus, broiler producers stand to benefit by increasing the availability of healthy chickens and reducing exposure of food-insecure households to infected birds as also stated by Alders *et al.* (2013).

5.5 Conclusion

The study investigated the constraints affecting small-scale broiler producers in Vhembe district in relation to market access. It was evident from the results that capital challenges were the main constraints hindering the growth and sustainability of small-scale broiler producers in the district. Capital challenges also explained why farmers could not penetrate the market due to low input purchases, lack of proper chicken houses, no inability to have accredited food handling and slaughter facilities. Considering the increasing global population, increasing demand for animal protein, challenges facing farmers, climate change and decreasing land, the growth and sustainability of the small-scale broiler producers must be supported throughout the value chain. Small-scale broiler production is an ideal strategy in improving human life, eliminating poverty, promoting peace, prosperity, and protecting the planet. Small-scale farming plays a critical role in sustainable development and improving socio-economic opportunities for the most vulnerable sectors of society. The roles of small-scale broiler production in developing countries needs to be supported in multitude of avenues through which it can contribute to improved household food and nutrition security, and significant source of income poorest of households like women, children, the elderly, and the chronically ill. Barriers to market access limit the opportunity to maximize the full potential impact of small-scale broiler production systems in the district. These



challenges could be addressed through adapting local management strategies and developing gender-sensitive trainings and extension materials to include women and vulnerable groups and boost production of broiler meat in the district.

**STRATEGIES TO DEEPEN VALUE CHAIN PARTICIPATION AND MARKET ACCESS FOR
SMALL-SCALE BROILER PRODUCERS****6.1 Introduction**

There are nearly 700 million people living in poverty worldwide, and between 3 billion to 4 billion of those who suffer from hidden hunger of micro and critical nutrients (World Bank, 2022). Agriculture is one of the viable economic sectors and methods in which the vulnerable can produce and trade their produce out of poverty (Seville, Buxton, & Vorley, 2011). In South Africa, the poultry business is a large sector with the potential to significantly increase the economic well-being of rural households (Idowu *et al.*, 2021; Villano *et al.*, 2023). In particular, rural small-scale broiler producers benefit significantly from the sector. For example, as a source of employment and food (Villano *et al.*, 2023). The bulk of the population in South Africa consumes poultry products like chicken meat and eggs, produced mainly by small-scale farmers, who are frequently family-run companies. Despite the significant role small-scale broiler producers play, they encounter several obstacles when trying to enter markets and capture value (Rahman, Chowdhury, & Parvin, 2021). This has a negative impact on their profitability and prevents small-scale broiler producers from fully participating in industry's value chain potential. Main constants recorded in literature include, lack of technical skills and expertise, poor infrastructure, and restricted access to financing (Rahman *et al.*, 2021; Mazenda, Obi & Masiya, 2022). Additionally, large-scale commercial producers compete fiercely with small-scale producers, since they frequently have better access to markets, more advanced equipment, and economies of scale (Chibanda, Wieck, & Sall, 2023). This study investigates and recommends the strategies that can be used by small-scale broiler producers to deepen value chain participation and market access in Vhembe district of Limpopo, South Africa.

6.2 Research methods and materials

The study used an exploratory research design to explore and devise strategies to deepen the value chain participation and market access for small-scale broiler producers. Data was collected from literature, and interviews with semi-structured questions from farmers, and key informants to understand the challenges faced by broiler producers and mitigating techniques therefore, in the district. The collected data was analyzed by means of thematic content analysis using Atlas ti version 8. The software was deployed to help with generating themes and associations between them. A full detailed methodology is explained in Chapter 3.

6.3 Results

The analysis identified a number of strategies that producers could use to deepen their participation in the value chain and improve market access such as construction of joint accredited slaughter facility; introduction of and participation in skills training courses and programmes; collective marketing as well as inputs purchasing to enjoy economies of scale. These are illustrated in Figure 6.1 and discussed in the next section.

Increase production capacity

The results revealed that one of the major challenges faced by small-scale producers is the inability to produce enough quantities required by retailers and supermarkets in the formal market. Retailers pointed out that they have once attempted to work with different producers, however, their quantities are not adequate and consistent. Retailers and supermarkets require a consistent supply of the produce of the right quantities and quality to meet the needs to their customers, and small-scale broiler producers fail to satisfy this requirement. For instance, a retailer representative said,

“Small farmers do not meet our demands, even if you make arrangements for them to supply us with 300 birds on continuous basis, they will comply for the first few occasions and after that, they do not have adequate numbers giving all sort of reasons such as lack of capital and stock loss” (Interview 52: Retailer Representative).

These revelations suggest that an increase in the productivity of farmers presents an opportunity to access formal markets in the retail sector with supermarkets like Shoprite and Spar. This is possible given that most farmers have enough land ranging from 0.25 to 3 hectares in which they can build more houses and increase their production capacity. Construction of more chicken houses and production at maximum capacity with the current house capacities is a critical factor for deepening value chain participation and accessing formal commercial markets. Hence, farmers must be encouraged and assisted in this endeavour.

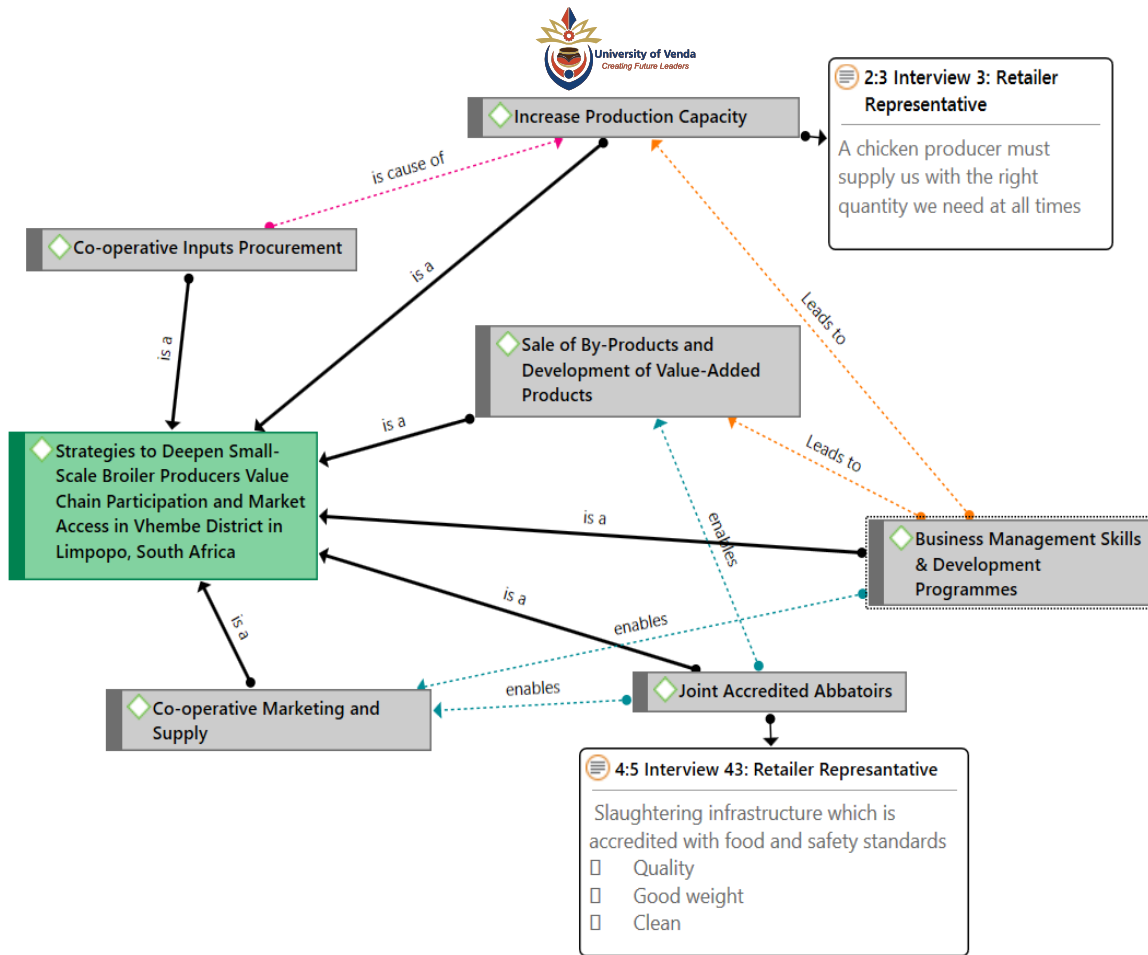


Figure 6.1: Strategies to Deepen Small-Scale Broiler Producers Value Chain Participation and Market Access in Vhembe District in Limpopo, South Africa

Joint accredited abattoirs

It also emerged from the results that small-scale producers failed to meet the quality needs and food handling standards. These producers did not have standardized slaughtering and food handling facilities as required by formal commercial markets such as retailers. The Abattoir Hygiene Act (Act 121 of 1992) as administered by The Directorate Veterinary Services of the National Department of Agriculture requires that producers adhere to stipulated health standards and food handling procedures. Thus, retailers and supermarkets are obligated to also purchase or procure their meat from accredited abattoirs that are compliant with the law. To illustrate this shortfall for small-scale farmers, a retail representative said,

“These small-scale farmers do not have slaughtering facilities and do not adhere to food handling processes. We are not allowed to buy from producers without proper accredited abattoirs by the department. This is a requirement.” (Interview 54: Retail Representative).

In addition, another producer in **Interview 13** said:

“Even if we approach retailers, they don’t want to buy from us, they tell us about many procedures we need to follow. I can tell you now, we no longer even bother to contact them. We take our produce to the live market directly and also, we get direct purchases and pre-orders from the local consumers. So, we produce only what is needed by the local communities and we do not want to produce more and wait no longer for buyers while chickens are consuming more after 6 weeks”

It is evident from literature, legislation and evidence from both the farmers and retailers that broiler producers require accredited abattoirs to meet the needs of the formal markets. One of the ways in which this can be achieved is through producers coming together to construct and register an abattoir for their produce. An accredited abattoir ensures that producers meet the quality and food handling standards as required by the formalized commercial markets.

Cooperative inputs purchasing

The value chain assessment in the district shows that farmers travelled longer distances to secure inputs such as medicines, day old chicks and feed. Part of the reasons why on average farmers travelled longer distance was limited capital and lack of economies of scale enjoyed by big players in the industry. As a result, small-scale producers could not stock high volumes of chicks, travelled multiple times to secure inputs for different growth stages of chickens and location of input suppliers also increased costs of inputs supply.

“If I had enough cash, I would to buy vaccines, starter, grower and finisher mash at a go. However, currently, I work prioritization. Firstly, I buy medicines and starter mash to introduce the chickens to the house. When they reach the grower stage, I would have raised funds to hire transport go to Luis Trichardt and buy grower feed and vaccines sometimes if there is a need”

(Interview 5: Producer)

Another producer added that:

“Us going multiple times to secure inputs costs a lot. This is caused by our limited funds. Sometimes, I want to stock 600 chickens however, this is not possible as I earn little and use money from Mudende (Social grant) to stock which also I use for my upkeep and family. To cut costs, sometimes me and my other colleague who also producers broiler in the area, we share transports costs and purchase collectively” **(Interview 51: Producer).**

These results highlight that inputs form part of the biggest costs in the production of broilers in the district. This reduces the profitability of small-scale farmers, keeping them in the vicious cycle of capital constraints and remaining small. It is evident that if producers join hands to buy inputs in bulk, inputs costs could be reduced drastically.

Business Management Skills Development Programmes

Business management skills play a crucial role in the success of any business. This value chain analysis also revealed that producers lack basic management skills such as record keeping and financial skills. For instance, out of 60 producers interviewed, only 14 had some sort of record to track their production processes and only 23 kept records of their spending and income usage. When asked, records are not kept; a producer said:

“I have tried to do this many times especially when I started. I sometimes forget and I get distracted by the fact that the money I use is my personal money and also the proceeds from sales I sometimes use them on emergency basis for family issues. This has made it difficult for me to track my spending. So, I no longer record when I sell, I try to save for restocking the first batch of inputs. If I consume everything, I wait for the grant money **(Interview 23: Producer).**

The results show that poor management and lack of record keeping present a huge setback for producers to track, manage and scale their businesses. Producer mentorship, coaching, capacitation and trainings of how-to systematical record their activities and learning how to use record for precision decision making will play an important role in improving the prospects of deepening small-scale producer value chain participation and market access.

Cooperative marketing

Retailers and supermarkets revealed that one of the major reasons why they do not source broilers from small-scale producers was because of unreliable supply. Also, farmers confirmed this by indicating lack of adequate capital to purchase adequate inputs and stocking one day old chicks. Hence, a shared marketing strategy where producers combine their produce and market it collectively to the retailers, give them a leverage to meet the supply needs for the commercial markets. Cooperative marketing goes hand in hand with the cooperative abattoir for food handling. Commercial markets require substantial number of broiler output that is also compliant with quality and food handling standards.

Sale of bi-products and development of value-added products

Apart from the broiler meat, other by-products of the bird like feathers, blood, bones, extra skin and feet could be used as a strategy to deepen market penetration in the sector. All participating producers said they threw away feathers, bones, and blood chicken by-products. The extra skin from dressed birds is either thrown away and or eaten. While all farmers indicated that they kept heads, feet, offal, necks, and extra skin for themselves, 2 of 5 said they sold parts such as feet, necks, and heads together with a full body for both live birds and dressed chicken. Some customers requested offal while others left it with farmers. As a gratitude or out of total dislike of offal products. These results show that many more farmers may also benefit selling by products. Also, retail markets such as ShopRite, Spar and Boxer have a huge footprint in the supply of heads, feet, offal, and necks. As stated above, to access this market with refrigerated storerooms, producers are required to have and utilize an accredited abattoir for its byproducts.

Currently discarded by-products such as blood, bones and feathers offer an opportunity for producers to further increase profits and increase their market share. These products could be converted into value-added products such as blood meal, meat and bone meal, feather meal, and partnering with businesses that use broiler by-products as inputs such as pillow and blanket industry. It is clear from these results that, to improve market access and profitability, small-scale broiler producers could also benefit from broiler by-products.

6.4 Discussions

The study investigated strategies that can be used by farmers to deepen their value chain participation and market access. This was achieved through unpacking and critical analysing the value chain challenges faced by small-scale broiler producers in Vhembe district. The analysis suggests that boosting productive capacity of farmers is important to meet the consumer demand,

especial the commercial markets. This could be achieved through full utilization of existing chickens' houses, construction of new bird houses/blocks (as farmers had adequate land for expansion) and leveraging credit access to be able to procure adequate inputs like chicks and feed. A study by Kawsar et al. (2018) emphasizes the same recommendation that small-scale producers should increase flock sizes to enjoy profits and accelerated growth. The same study observed that as the flock size increased fixed costs (mainly inputs) such as transport decreased. Over a decade ago a study by Singh et al. (2011) reported that broiler flocks of 100 birds or less have become very difficult for broiler producers to ensure good profit margins. The results of this study and literature show that this is an ongoing problem needs urgent attention to decisively deal issues affecting small-scale broiler produce.

Small-scale broiler producers are required to innovate and be responsive to agriculture innovation systems by adopting or forming an inputs procurement cooperative. In their study Kawsar et al. (2018) focused on the link between innovation systems and their environment. It emerged that innovation networks enhance effective reformism and mobilize support for it. Producers, therefore, have a duty to use their networks to innovate and build systems in their environment to address challenges and deepen their value chain participation.

Another strategy that could be used by farmers is the farmers coming together to establish a standardized slaughter facility. This is critical for farmers to be considered by larger supermarkets and retailers for orders. Retailers highlighted that, according to the law, they are not permitted to purchase meat that is not slaughtered in accredited facilities where there are specified procedures, quality checks, health inspection and other hygiene related protocols. These requirements and processes are spelt out in in the Meat Safety Act 40 of 2000 as well as Code of Practice in South African Poultry Association (2022).

The analysis also shows that cooperative marketing and sale of the outputs is another strategy producers could utilize to penetrate the market and as an entry point to the retail market. Producers may combine their produce and sale it collectively to meet the quantity minimum threshold to access commercial retail markets. In a similar vein, selling of by-products and development of value-added products. Literature shows that farmers that expand their primary farming activities to agro-processing increase their market share, profitability, sustainability and enjoy economies scale quicker. Studies also show that cooperative and integrated systems predominantly target high-income earners and used formal infrastructure such as retailers (Kawsar *et al.*, 2018; Al-Nasser, *et al.*, 2020). A study in Kuwait assessed production and technologies integration in broiler production. The study recommended that producers must be financial supported by streamlining value chain-based subsidies tied up with quality and horizontal

expansion that includes increasing land space and encouraging large-scale integrated poultry farming (Al-Nasser, *et al.*, 2020). Similarly, a study in Zimbabwe on smallholder broiler producers shows that cooperative partnership builds the community's broad-based capabilities for self-improvement (Kamoyo & Guta, 2021).

For producers to increase their production, manage their value chains better and penetrate markets, it is clear that financial, marketing, basic business management and record skills should be enhanced. Coaching, mentorship, and other forms of capacitation programmes could be used to build and empower small-scale broiler producers with rights skills required for the success in the broiler industry. Kawsar *et al.* (2018) compared Six groups, observed that non-trained and trained farm owners. Trained producers excellently and significantly improved their care for the birds, provided improved housing, disease prevention, medication, vaccination management. Also, feeds and feeding procedures adherence as per instructions significantly improved. Aslam *et al.* (2020) adds that small-scale broiler producers fail due to structural deficiencies caused by limited to no business management skills, monitoring and adherence to regulations and good industry best practices. Targeted training and skills capacitation programmes are required to improve small-scale producers' productivity, growth, overall business management. Producers should be trained with technical support for their income (Kawsar *et al.*, 2018).

6.5 Conclusion

There are many ways in which producers could deepen their participation in the value chain and improve market access. These include construction of joint accredited slaughter facility, introduction of and participation in skills training courses and programmes, collective marketing as well as inputs purchasing to enjoy economies of scale. The analysis shows that the majority of these strategies are inter dependent. For increasing productions depends on the market access, while market access is also motivating factor for productivity. It is also evident that access to formal markets such retailing depends on the existence of an accredited abattoirs for small-scale producers to meet health and quality standards as set in law. Thus, establishment of an abattoir takes priority to unleashing the full potential for value chain participation by open markets, boosting the appetite to increase productivity for small-scale broiler producers in the district. Moreso, producer profitability and market penetration could be enhanced by selling by-products and engaging in agro-processing. For instance, producing blood meal, meat and bone meal. Literature further revealed that producers who follow improved management techniques earn more profit compared to those who did not improve their management practices. Therefore, the increased values chain participation, satisfactory productivity, market access and profitability are achievable if small-scale broiler producers innovate and employ various strategies in different



stages of the value chain. The next chapter provides study systems, main's discussions, conclusion and recommends

Chapter 7: Synthesis, Conclusions and Recommendations

7.1 Purpose of the study and methodology how it was conducted and where.

The aim of the study was to assess the broiler value chain and market access challenges faced by small-scale broiler farmers in Vhembe district of Limpopo province. The South African NDP 2030 aims to see an increase the participation of small-scale farmers along the main agricultural value chains as a strategy to create employment and reduce poverty. Hence, the results of this study will shed more light on the complexities of rural small-scale broiler producers value chain and market dynamics. This is to offer opportunities for scaling the industry and building supporting systems to support job creation, increase income for farmers and also contribute to rural economic growth. This assessment was achieved through the following specific objectives; a) to map the value chain configuration of small-scale broiler producers the Vhembe District, b) to analyses value chain-based constraints faced by small-scale broiler farmers in Vhembe District; and c) to suggest strategies to deepen value chain participation and market access for small-scale broiler farmers in Vhembe district. The next sections present the main findings and conclusion per objective.

7.2 Study objectives

7.2.1 Objective 1: To map the value chain configuration of small-scale broiler producers

This objective assessed and mapped how the value chain of small-scale broiler producers is configured and its relation to market access. The study followed a descriptive research design and data was collected using a structured questionnaire from broiler farmers (n = 60) and analyzed using SPSS version 27. The results revealed that the broiler value chain configuration is directly correlated to marketing access. Thus, the value chain stages such as the chicken house size, the availability of abattoirs (hyenine and health inspections) influenced the markets to which the matured birds are distributed and demanded. Small-scale broiler farmers had limited capacity and had no access to formal abattoirs as such, they could not access formal retailers as this was a requirement. Also, it emerged that broiler producers on average travelled the longer distance of over 215 kilometers to get their inputs. On average farmers had a productive capacity of 290 birds per cycle with a success rate of 95% live birds. Moreover, farmers had an average of 4 cycles per annum and travelled over 15 kilometers to the market. This partly explains why South Africa has huge shortage of broiler meat and as a result, it is a net importer of poultry meat from countries like United States of America, Brazil, Argentina, and Canada. The sophisticated and liberalized

value chain systems in these countries make it difficult for the local producers, especially small-scale farmers to compete due to production economies scale enjoyed by broiler producers in these countries. In a bid to reduce imports dependence and guard against food insecurity, unpacking the value chain configuration and market access dynamics of local producers is critical. Although the number of producers has increased in recent years in South Africa, their productivity remains small. The study recommends that farmers and producers form market cooperatives to collectively source inputs and market their produce.

7.2.2 Objective 2: Analyze constraints faced by small-scale broiler farmers

This objective analyzed the challenges and constraints confronting small-scale broiler farmers in Vhembe district, of South Africa. Specifically, the study unpacked the general challenges and also identified market and value chain specific challenges to growth and sustainability of small-scale broiler farmers. The study used a parallel mixed method design to collect data from key informants and farmers through interviews and structured questions. Atlas Ti version 8 was used to analyse the data thematical and using network diagrams. The results revealed that farmers' lack of capital was the main challenge that gave birth to many other challenges like lack of abattoirs, and access to main inputs for growth. The combination of these challenges made it difficult for farmers to penetrate the vertical organized markets and growth. For instance, market penetration is difficult due to lack of abattoirs and low production output which results in non-compliance with hygiene standards, and inconsistent supply. Distance to the market did not appear to influence market share, pricing and quantity sold. Broiler meat significantly contributes to global food security and nutrition, energy provision, protein, and essential micro-nutrients to humans. Due to their short production cycles, the poultry industry is the fastest growing sub-sector in agriculture especially in developing nations. The global poultry sector is set to grow rapidly driven by increasing population, demand for meat, rising incomes, and urbanization. However, the sector especially for small-scale rural farmers is faced with unprecedented value chain challenges to meet these new market dynamics. The study recommends that input and abattoir support for broiler farmers be intensified to strengthen their resolve in the production stages and help them access the market for sustained growth.

7.2.3 Objective 3: Strategies to deepen value chain participation and market access for small-scale broiler farmers

The objective was to explore strategies that could be used by small-scale broiler producers to improve their value chain participation and deepen market access. A review of existing relevant literature, case studies and empirical evidence from broiler producers in Vhembe district, Limpopo

South Africa was utilized to identify key factors and successful interventions that could enable small-scale producers to deepen their participation in the value chains and access markets. Data was analyzed thematically using Atlas TI version 8. The assessment revealed that farmers can better deepen their value chain participation by cooperative inputs purchasing, joint abattoir and increasing their productive capacity. Thus, strengthening linkages between producers and buyers, improving production efficiency, developing value-added products, and promoting collective marketing are important approaches to the success of small-scale producers. Given that small-scale broiler producers have limited capital needed to set up infrastructure such as abattoirs, joint ventures and support from both the private sector and public sector is critical to realize their full potential. The study proposes a set of strategic recommendations that policymakers, development practitioners, and other stakeholders can use to support small-scale broiler producers in improving their market access and competitiveness in the value chain.

7.3 Discussions

The analysis revealed that small-scale broiler farmers' access to the market was directly influenced by their value chain organisation. Due to distant markets and source of inputs as well as limited capital to purchase inputs, increase the stock of chicks and set or access abattoirs, farmers could not be accredited for hygiene and health standards and produce enough to supply the market. This is standard requirement to sell in the formal markets. Studies show that these challenges are major hurdle to farmers (Ocholi & Ayila, 2018; Mishra *et al.*, 2018). For instance, A study by Ocholi & Ayila (2018) on technical efficiency in small-scale broiler production enterprises in Benue state, Nigeria revealed that feed type and quality significantly and positively influenced broiler chicken output among the small-scale farmers at 1 percent level of probability. Earlier, Shinde and Srivastava (2007) concluded that small-scale farmers similar to the current findings, characterized by the underproduction, as well as low-input, low-output conditions. These are also mainly run by women and children who have structural challenges in accessing formal markets that are predominantly male run. As result, farmers in the Vhembe district sold their produce in live markets via pre orders, direct farm sales and taking the birds to the local common market. This is a common occurrence among small-scale farmers global. For example, Chatterjee & Rajkumar India (2015) in India found similar findings.

The major challenges facing farmers we the market access caused by low production resulting in inconsistent supply, and existence of industry monopolies such as contract suppliers. Without adequate output and failure to secure contracts, bottle necked formal market access. A study by Egbetokun *et al.* (2017) reported the same challenges for farmers and observed that being a

member of a cooperative improved the chances of accessing and participation in the formal market. Cooperatives enable a well-organized and resourced marketing which is a key feature to win contracts with retailers. Inadequate food handling infrastructure was another observed value chain challenge for farmers and these results are also widely reported in literature (John *et al.*, 2011; de Mesquita Souza Saraiva *et al.* (2022). Safety and food handling standards are a major concern not only for retailers but are enforced by the law.

Based on the analysis, there are number of ways in which farmers can improve their value chains configurations and access formal markets. Producers require basic financial, marketing, business management and record-keeping skills to be enhanced. Moreso, coaching, mentorship, and other forms of capacitation programmes could play a significant role in building and empowering small-scale broiler producers with rights skills required for the success in the broiler industry. Evidently, Kawsar *et al* (2018) observed that n trained farm owner excellently and significantly improved their care for the birds, provided improved housing, disease prevention, medication, vaccination management. Also, ongoing capacity building programmes result in feeds and feeding procedures adherence as per instructions. Aslam et el. (2020) also reported that small-scale broiler producers fail due to structural deficiencies caused by limited to no business management skills, monitoring and adherence to regulations and good industry best practices. These results posit the need for continuous targeted training and skills capacitation programmes are required to improve productivity, growth, overall business management.

7.4 Study Conclusions

The results show that small-scale broiler production in rural South Africa, needs to be supported in multitude of avenues through which it can contribute to improved household food and nutrition security, and significant source of income to poorest of households. The households include those with mainly women, children, the elderly, and the chronically ill. Barriers to market access limit the opportunity to maximize the full potential impact of small-scale broiler production systems in the district. These challenges could be addressed through adapting local management strategies and developing gender-sensitive trainings and extension materials to include women and vulnerable groups and boost production of broiler meat in the district. Lack of adequate skills, resources and inputs as revealed in the study negatively affected the output level and trading capabilities of famers. This suggests that direct investment and support for small-scale broiler farmers in the entire value chain are important to boost poultry production and marketing in rural areas as a strategy for rural development. Also, structural challenges identified in the value require the introduction of vertical coordination which goes with rationalization and increasing

concentration in the input supply, processing, and retailing/distribution sectors. In this way, farmers can improve their productive capacity, raise enough capital to buy key infrastructure and seamlessly join the retail market. Chicken house capacity, input support, skills needs, and lack of appropriate food handling infrastructure should take priority as a tool to increase productivity and unleash full potential for deepening value chain participation and opening markets, for small-scale broiler producers in the district. Moreso, producer profitability and market penetration could be enhanced by selling by-products (blood meal, meat and bone meal) and engaging in agro-processing. Therefore, the increased value chain participation, satisfactory productivity, market access and profitability are achievable if small-scale broiler producers innovate and employ various strategies in different stages of the value chain.

7.5 Study recommendations: Way forward and Knowledge Gaps

The following study recommendations aim to provide a comprehensive understanding of the challenges and opportunities in the small-scale broiler value chain in the Vhembe District and offer practical solutions to improve market access for local producers.

Market Access Assessment:

Conduct a comprehensive assessment of the existing market access opportunities and constraints for small-scale broiler producers in the Vhembe District. This should involve analyzing market structures, distribution channels, and access to buyers.

Value Chain Mapping: Map the entire broiler value chain in the region, from input suppliers to consumers, to identify key actors, processes, and relationships. This can help in understanding the configuration of the value chain.

Stakeholder Engagement: Engage with various stakeholders in the broiler value chain, including farmers, processors, retailers, and consumers, to gather insights into their perspectives, challenges, and needs.

Constraints Analysis: Identify and analyze the specific constraints that small-scale broiler producers face in accessing markets. This should include factors like transportation, infrastructure, regulatory barriers, and access to credit.

Best Practices Review: Review best practices and successful strategies employed in other regions or countries with similar small-scale broiler production systems to inform potential solutions.

Capacity Building: Recommend capacity-building initiatives for small-scale broiler producers. This could involve training programs on best farming practices, financial literacy, and business management.

Market Diversification Strategies: Suggest strategies for diversifying market access, including exploring opportunities for niche markets, value addition, and export potential.

Policy and Regulatory Recommendations: Provide recommendations for policy and regulatory changes at the local, provincial, or national levels that could improve market access for small-scale broiler producers.

Infrastructure and Logistics Improvements: Recommend infrastructure and logistical improvements that can enhance the efficiency of the broiler value chain, such as better road networks or cold storage facilities.

Community-Based Initiatives: Explore the potential for community-based initiatives and cooperatives that can help small-scale producers collectively address market access challenges.

Monitoring and Evaluation Framework: Develop a framework for ongoing monitoring and evaluation of the recommended interventions to assess their impact on improving market access for small-scale broiler producers.

Sustainability Considerations: Ensure that recommendations take into account sustainability principles, such as environmental impact and social equity, to promote a more resilient and responsible broiler value chain.

REFERENCES

- Abolnik, C., (2017). History of Newcastle disease in South Africa. *Onderstepoort Journal of Veterinary Research* , 84(1), 1-9.
- AFMA, (2018). *Overview of the South African Broiler Industry*. [Online] Available at: <http://fariplaymovement.org/overview-of-the-south-african-broiler-industry>
- Atuahene-Gima, K. & Amuzu, J., (2018). Farm crowdy: digital business model innovation for farming in Nigeria. [Online] Available at: <https://www.emerald.com/insight/content/doi/10.1108/EEMCS-03-2019-0065/full/html>[Accessed 13 November 2019].
- Alders, R., Awuni, J. A., Bagnol, B., Farrell, P., & de Haan, N. (2014). Impact of avian influenza on village poultry production globally. *Economic health*, 11(1), 63-72.
- Aslam, H. B., Alarcon, P., Yaqub, T., Iqbal, M., & Häsler, B. (2020). A value chain approach to characterize the chicken sub-sector in Pakistan. *Frontiers in veterinary science*, 7, 361.
- Al-Nasser, A., Al-Khalaifah, H., Al-Mansour, H., Ahmad, A., & Ragheb, G. (2020). Evaluating farm size and technology use in poultry production in Kuwait. *World's Poultry Science Journal*, 76(2), 365-380.
- Bavier, J., (2018). *South African farmers play chicken with Trump tariffs*. [Online] Available at: <https://www.timeslive.co.za/sunday-times/business/2018-08-29-south-african-farmers-play-chicken-with-trump-tariffs/> [Accessed 24 May 2019].
- Bill and Melinda Gates Foundation, (2018). Socio-economic, marketing and gender aspects of village chicken production in the tropics: A review of literature. [Online] Available at: <https://pdfs.semanticscholar.org/9bcb/97f117ac72f5964088b2a49ee3a567cc6ba1f.pdf> [Accessed 14 November 2019].
- Badubi, S. S., Ravindran, V., & Reid, J. (2004). A survey of small-scale broiler production systems in Botswana. *Tropical Animal Health and Production*, 36(8), 823-834.

Chang, H.-S., (2018). *Overview of the World Broiler Industry: Implications for the Philippines*. [Online] Available at: <https://pdfs.semanticscholar.org/ddf8/4c0a07e614185ce585c72ec04134eee69260.pdf> [Accessed 17 July 2019].

Cheng, M., Liu, Y. & Zhou, Y., (2019). Measuring the symbiotic development of rural housing and industry: A case study of Fuping County in the Taihang Mountains in China. *Journal of Land Use Policy*, 82(2), 307-316.

Chibanda, C., Wieck, C., & Sall, M. (2023). An analysis of the broiler value chain and economics of broiler production in Senegal: status quo after two decades of import restrictions. *Journal of Agribusiness in Developing and Emerging Economies*.

Chatterjee, R. N., & Rajkumar, U. (2015). An overview of poultry production in India. *Indian Journal of Animal Health*, 54(2), 89-108.

Conan, A., Goutard, F. L., Sorn, S., & Vong, S. (2012). Biosecurity measures for backyard poultry in developing countries: a systematic review. *BMC veterinary research*, 8(1), 1-10.

Department of Agriculture, Forestry and Fisheries DAFF, (2017). A profile of the South African broiler market value chain

DAFF, (2018). *The development of small-scale farmers through cooperatives development*. [Online] Available at: [https://www.nda.agric.za/daaDev/sideMenu/cooperativeandenterprisedevelopment/docs/Framework-%20of%20Small%20Farmers%20\(2\).pdf](https://www.nda.agric.za/daaDev/sideMenu/cooperativeandenterprisedevelopment/docs/Framework-%20of%20Small%20Farmers%20(2).pdf) [Accessed 23 January 2019].

Dunne., (2001). Supply chain management: fad, panacea or opportunity? Occasional paper Vol (2)1–40. School of Natural and Rural Systems Management, University of Queensland, Gatton, Queensland, Australia.

- Dokter, A., Desmet, P., Spaaks, J. & Hoey, S. V., (2018). bioRad: biological analysis and visualization of weather radar data. *Journal of Ecography*, 42(5), 23-29.
- Delabouglise, A., Nguyen-Van-Yen, B., Thanh, N. T. L., Xuyen, H. T. A., Tuyet, P. N., Lam, H. M., & Boni, M. F. (2019). Poultry population dynamics and mortality risks in smallholder farms of the Mekong River delta region. *BMC veterinary research*, 15(1), 1-13.
- Egbetokun O.A., Sittu B.A. & Ayode M.O. (2017). Determinants of market participation among maize farmer's in Ogbomoso Zone, Oyo State, Nigeria. *Cercetari Agronomice in Moldova*. 1, 109-118.
- FAO. (2011). Food and Agriculture organisation of the United Nations. Value chain of fish and fishery products: origin, functions, and application in developed and developing country. Accessed at: [rg/fileadmin/user_upload/fisheries/docs/De_Silva_report_with_summary_.doc](http://fileadmin/user_upload/fisheries/docs/De_Silva_report_with_summary_.doc). Accessed on 24 January 2019.
- Food and Agriculture Organisation (2013). *A profile of the South African broiler market value chain*, Pretoria: DAFF.
- Food and Agriculture Organisation (2017). *Egg production*. [Online] Available at: <http://www.fao.org/docrep/005/Y4628E/y4628e03.htm> [Accessed 23 January 2019].
- Food and Agriculture Organisation (2018). *Agriculture and food marketing*. [Online] Available at: <http://www.fao.org/docrep/004/w3240e/W3240E01.htm> [Accessed 23 January 2019].
- Fellmann, T. et al., (2018). Major challenges of integrating agriculture into climate change mitigation policy frameworks. *Springerlink*, 23(3), 451-468.
- Gwin, L., Thiboumery, A. & Stillman, R., (2013). Local Meat and Broiler Processing. Available at: <http://www.lorenzmeats.com/wp-content/uploads/2015/03/Local-Meat-and-Broiler-Processing.pdf> Accessed on 24 January 2019.
- Greenberg, S., Anne-Marie, T. & Hara, M., (2017). *Trade, food and nutrition security in South Africa*, Pretoria: Institute for poverty, land and agrarian studies.

- Girei, A., Ohen, S., Saingbe, N. & Habila, A., (2018). Costs and Return Analysis in Poultry Egg Production in Lafia Local Government Area (LGA) of Nasarawa State, Nigeria. [Online] Available at: <http://journalajaees.com/index.php/AJAEES/article/view/28383>[Accessed 14 November 2019].
- Gilbert, M., Conchedda, G., Van Boeckel, T. P., Cinardi, G., Linard, C., Nicolas, G., ... & Robinson, T. P. (2015). Income disparities and the global distribution of intensively farmed chicken and pigs. *PLoS One*, 10(7), e0133381.
- Hernández, V., & Pedersen, T. (2017). Global value chain configuration: A review and research agenda. *BRQ Business Research Quarterly*, 20(2), 137-150.
- Hesse-Biber, S.N. (2010). *Mixed Methods Research: Merging Both Theory with Practise*. New York: The Guilford Press.
- Idowu, P. A., Zishiri, O., Nephawe, K. A., & Mtileni, B. (2021). Current status and intervention of South Africa chicken production—A review. *World's Poultry Science Journal*, 77(1), 115-133.
- IFAD (2001). *The challenges of ending rural poverty*, Rural Poverty Report – 2001, Oxford University Press Inc., NY, USA.
- Janni, K., & Cortus, E. (2020). Common animal production systems and manure storage methods. *Animal manure: Production, characteristics, environmental concerns, and management*, 67, 27-43.
- Moreki J. C. (2011). Challenges in small-scale broiler production in Botswana. *Journal of Agricultural Technology* 7(6), 1579-1587.
- Keller, J., (2017). *The Importance Of Rural Development In The 21st Century - Persistence, Sustainability, And Futures*. [Online] Available at: <http://www.regional.org.au/au/countrytowns/keynote/keller.htm> [Accessed 23 January 2019].

- Kirui, K., (2014). *Factor influencing performance of Broiler farming projects in Bureit Sub Country*, Kericho, Kenya, Kericho: University of Nairobi.
- Klerkx, L., Aarts, N., & Leeuwis, C. (2010). Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment. *Agricultural systems*, 103(6), 390-400.
- Kawsar, M. H., Chowdhury, S. D., Raha, S. K., Rashid, M. A., & Sarkar, P. K. (2018). Small-Scale Broiler Farming at Rural Households with or Without Management Intervention During Winter. *IOSR Journal of Agriculture and Veterinary Science*, 11(3), 7-14.
- Kamoyo, M., & Guta, P. F. (2021). Family poultry development systems among smallholder broiler farmers in the Goromonzi district of Zimbabwe. *Community Development*, 52(4), 538-552.
- Lombard, W. and Bahta, Y., 2018. Overview of the South African poultry industry - current affairs. *Sabinet*, 4(2), 6-9.
- Mabhaudhi, T., Mpandeli, S., Nhamo, L., Chimonyo, V. G., Nhemachena, C., Senzanje, A., ... & Modi, A. T. (2018). Prospects for improving irrigated agriculture in southern Africa: Linking water, energy and food. *Water*, 10(12), 1881.
- Majaya, R., (2019). Characteristics and methods of ~~small-scale~~ small-scale mixed farming. [Online]
Available at: <https://www.revision.co.zw/characteristics-methods-small-scale-mixed-farming/>[Accessed 24 January 2019].
- Mango, N. et al., 2018. Adoption of Small-Scale Irrigation Farming as a Climate-Smart Agriculture Practice and Its Influence on Household Income in the Chinyanja Triangle, Southern Africa. *Journal of Land*, 7(2), 49-58.
- Mayer, E., (2018). *The Articulated Peasant*. 1st ed. New York: Routledge.
- McAllister, P., (2018). *Building the Homestead: Agriculture, Labour, and Beer in South Africa's Transkei*. 1 ed. London: Routledge.

- Mkuhlani, S. et al., (2019). Classification of small-scale farmers for improved rainfall variability management in South Africa. *Agroecology and Sustainable Food System*, 44(1), 7-29.
- Mouel, C. L., Lattre-Gasquet, D. M. & Mora, O., (2018). *Land Use and Food Security in 2050: a Narrow Road*, s.l.: Matreere.
- Mo Lianguang. (2014). Study on Supply-Chain of Broiler Products Based on IOT. Sixth International Conference on Measuring Technology and Mechatronics Automation, 2014.
- Mao, H., Zhou, L., Ifft, J., & Ying, R. (2019). Risk preferences, production contracts and technology adoption by broiler farmers in China. *China Economic Review*, 54, 147-159.
- Masuku, M. B. (2011). An analysis of the broiler supply chain in Swaziland: a case study of the Manzini region. *Asian Journal of Agricultural Sciences*, 3(6), 492-499.
- Mishra, A. K., Kumar, A., Joshi, P. K., & D'souza, A. (2018). Production risks, risk preference and contract farming: Impact on food security in India. *Applied Economic Perspectives and Policy*, 40(3), 353-378.
- Mulaudzi, R. G. (2015). Socio-economic analysis and profitability of small-scale broiler production enterprises in Vhembe District, Limpopo Province (Doctoral dissertation).
- Mottet, A., & Tempio, G. (2017). Global poultry production: current state and future outlook and challenges. *World's Poultry Science Journal*, 73(2), 245-256.
- Mazenda, A., Obi, A., & Masiya, T. (2022). The Contribution of the Small-Scale Agricultural Sector into South Africa's Food Value Addition Agenda. In *The Palgrave Handbook of Africa's Economic Sectors* (pp. 117-134). Cham: Springer International Publishing.
- National Agricultural Marketing Council, (2018). Evaluating the competitiveness of the South African broiler value chain, Pretoria: Beareu for Food and Agricultural Policy.

- Nallusamy, S., Suganthini, R., Balakannan, K., Chakraborty, P.S. & Gautam, M., (2015). A Proposed Agile Based Supply Chain Model for Broiler Based Products in India. *International Journal of Broiler Science*, 14 (1), 57-62.
- Ncube, P., (2018). The southern African poultry value chain: Corporate strategies, investments and agro-industrial policies. *Development Southern Africa*, 35(3), 369-387.
- Nicolescu, B., (2018). The Transdisciplinary Evolution of the University Condition for Sustainable Development. *SpringerLink* , 56(3), 73-81.
- Ntshangase, N. L., Muroyiwa, B., & Sibanda, M. (2018). Farmers' perceptions and factors influencing the adoption of no-till conservation agriculture by small-scale farmers in Zashuke, KwaZulu-Natal Province. *Sustainability*, 10(2), 555.
- Nkgadima, K., & Muchopa, C. L. (2022). Do Import Tariff Adjustments Bolster Domestic Production? Analysis of the South African-Brazilian Poultry Market Case. *Economies*, 10(12), 318.
- Omondi, S., (2018). Economic analysis of small-scale poultry production in Kenyan medium-sized cities of Kisumu and Thika. [Online] Available at: <https://ageconsearch.umn.edu/record/277360/> [Accessed 14 November 2019].
- Onwuegbuzie, A. J., & Collins, K. M. T. (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report*, 12(2), 281–316. Available at www.nova.edu/ssss/QR/QR12-2/onwuegbuzie2.pdf.
- Ozdemir, P., (2018). *The Social Marketing Campaign by Greenpeace Mediterranean Against Broiler Chicken Consumption*, Turkey: Ankara University.
- Ocholi, A., & Ayila, V. N. (2018). Determinants of technical efficiency of small-scale broiler production enterprises in Benue State, Nigeria. *International Journal of Agricultural and Veterinary Sciences*., 4(1), 4-17.

- Oladeebo J.O. and Ambe-Lamidi A.I (2007). Profitability, Input Elasticities and Economic Efficiency of Poultry Production among Youth Farmers in Osun State, Nigeria. *Int. J. Poult. Sci.* 6(12), 994-998.
- Olorunwa O., J. (2018). Economic Analysis of Broiler Production in Lagos State Poultry Estate, Nigeria. *Journal of Investment and Management.* 7(1), 35-44. doi: 10.11648/j.jim.20180701.15.
- Osmani A.G. and Hossain E. (2015). Market participation decision of smallholder's farmers and its determinants in Bangladesh. *Economics of Agriculture.* 62(1), 163-179.
- Qaid, M. M., & Al-Garadi, M. A. (2021). Protein and amino acid metabolism in poultry during and after heat stress: a review. *Animals*, 11(4), 1167.
- Queenan, K., Cuevas, S., Mabhaudhi, T., Chimonyo, M., Slotow, R., & Häsler, B. (2021). A Qualitative Analysis of the Commercial Broiler System, and the Links to Consumers' Nutrition and Health, and to Environmental Sustainability: A South African Case Study. *Frontiers in Sustainable Food Systems*, 5, 650469.
- Rahman, M., Chowdhury, E. H., & Parvin, R. (2021). Small-scale poultry.
- Roberts, J., (2018). *Multinational Business Service Firms*. 1st ed. London: Routledge.
- Rossi, A., Bui, S. & Marsden, T., (2019). Redefining power relations in agrifood systems. *Journal of Rural Studies*, 68(2), 149-158.
- Sebetta C., Mugisha J., Katungi E., Kashaaru A. & Kyomugisha H. (2014). Smallholder farmer's decision and level of participation in the Potato market in Uganda. *Modern Economy.* 5, 895-906.
- Scheba, A., & Turok, I. N. (2020, March). Strengthening township economies in South Africa: The case for better regulation and policy innovation. In *Urban Forum.* 31(1), 77-94. Dordrecht: Springer Netherlands.

- Sabul, A. A. M., Mabmud, T. & Barua, N., 2019. Passive surveillance of clinical poultry diseases in an Upazila Government Veterinary Hospital of Bangladesh. *African Journal of Microbiology Research*, 13(29), 632-639.
- Shinde P.K & Srivastava N. (2007). Adaptive research intervention on household poultry. Lesson learned and feedback for further research. In P.V.K Sasidhar, ed. Poultry research priorities to 2020. Proceedings of National Seminar, November 2-3, 2006, Izatnagar, India, pp 239-243. Central Avian research institute, Indian Council Agricultural research.
- Stieglitz, S., Mirbabaie, M., Ross, B. & Neuberger, C., (2018). Social media analytics – Challenges in topic discovery, data collection, and data preparation. *International Journal of Information Management*, 39(4), pp. 156-168.
- SAPA., (2014). South African Broiler Association. Annual imports report. Available at: <http://www.sabroiler.co.za/pdf-statistics/provisional-distribution-of-chickens-in-sa.pdf>. Accessed on 24 January 2019.
- SAPA., (2017). South African Broiler Association. Annual imports report. Available at: <http://www.sabroiler.co.za/pdf-statistics/provisional-distribution-of-chickens-in-sa.pdf>. Accessed on 24 January 2019.
- SAPA., (2017a). South African Broiler Association 2017 Industry Profile. Available at: <http://www.sabroiler.co.za/pdf-docs/sapa-industry-profile.pdf> Accessed on 24 May 2019.
- SAPA., (2018). South African Broiler Association. South African Broiler Association. Annual imports report. Available at: <http://www.sabroiler.co.za/pdf-statistics/provisional-distribution-of-chickens-in-sa.pdf>. Accessed on 24 January 2019.
- South African Poultry Association (2022). Code of Practice. (June, 2022). Accessed on 16 May 2023 at <https://www.sapoultry.co.za/wp-content/uploads/2022/06/2022SAPA-COP.pdf>
- Thurlow, J., Dorosh, P. & Davis, B., (2019). Chapter 3 - Demographic Change, Agriculture, and Rural Poverty. *Sustainable Food and Agriculture*, 34(12), 31-53.

- UNDP, (2015). Sustainable development goals booklet. New York, USA: (last accessed 18 September 2016), from <http://www.undp.org/content/undp/en/home/librarypage/corporate/sustainable-development-goals-booklet.html>).
- Villano, R. A., Koomson, I., Nengovhela, N. B., Mudau, L., Burrow, H. M., & Bhullar, N. (2023). Relationships between farmer psychological profiles and farm business performance amongst smallholder beef and poultry farmers in South Africa. *Agriculture*, 13(3), 548.
- Wiid, J. and Diggines, C. (2013). *Marketing research*. (2nd ed.). Cape Town: Juta and Company Ltd.
- Wossen, T., Berger, T., Haile, M. & Troost, C., (2017). Impacts of climate variability and food price volatility on household income and food security of farm households in East and West Africa. *Journal of Agricultural Systems*, 163(2), 7-15.
- Wong, J. T., de Bruyn, J., Bagnol, B., Grieve, H., Li, M., Pym, R., & Alders, R. G. (2017). Small-scale poultry and food security in resource-poor settings: A review. *Global Food Security*, 15, 43-52.
- World Bank (2007). World Development Report 2008: Agriculture for Development: overview, Washington, DC, USA, available at: http://siteresources.worldbank.org/INTWDR2008/Resources?WDR_00_book.pdf.
- Zantsi, S. (2021). Why do agricultural co-operatives fail to attract youth and create rural employment? Evidence from a case study of Zanokhanyo in Butterworth, Eastern Cape. *South African journal of agricultural extension*, 49(1), 183-197.
- Zikmund, W.G. (2011). *Business Research Methods*. (9th ed.). Mason, OH: South-Western Educational Publishing.

Appendix 1: Ethical Clearance letter

ETHICS APPROVAL CERTIFICATE

**RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR**

**NAME OF RESEARCHER/INVESTIGATOR:
Mr RR NemaKonde**

**STUDENT NO:
9903285**

PROJECT TITLE: Market Access Challenges Faced by Small Scale Broiler Farmers along the Broiler Products Value Chain in Vhembe District of Limpopo Province in South Africa.

ETHICAL CLEARANCE NO: SARDF/21/IRD/09/0806

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

| NAME | INSTITUTION & DEPARTMENT | ROLE |
|--------------------|--------------------------|------------------------|
| Dr M Manjoro-Mwale | University of Venda | Supervisor |
| Dr J Zuwarimwe | University of Venda | Co - Supervisor |
| Mr RR NemaKonde | University of Venda | Investigator – Student |

Type: **Masters Research**

Risk: **Minimal risk to humans, animals or environment (Category 2)**

Approval Period: **June 2021 – June 2023**

The Research Ethics Social Sciences Committee (RESSC) hereby approves your project as indicated above.

General Conditions

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following.

- The project leader (principal investigator) must report in the prescribed format to the REC:
 - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project
 - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
 - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
 - Request access to any information or data at any time during the course or after completion of the project,
 - To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.
 - withdraw or postpone approval if:
 - Any unethical principles or practices of the project are revealed or suspected.
 - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
 - The required annual report and reporting of adverse events was not done timely and accurately,
 - New institutional rules, national legislation or international conventions deem it necessary

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: May 2021

Name of the RESSC Chairperson of the Committee: Prof Takalani Mashau

Signature: 



Appendix 2: Language editing letter

Language Editing for Richard NemaKonde September 2023 ©

CONFIDENTIAL

To Whom It May Concern

Date:14/03/2023

This serves to confirm that The WyzeSymba Pty Ltd language edited the research project for **Richard Rabelani NemaKonde** titled "***The Small-Scale Broiler Value Chain Configuration and Market Access Constraints in Vhembe District of Limpopo Province, South Africa***".

The project is informative and well-constructed. However, there were significant grammatical concerns, sentence construction problems and repetitions of ideas as shown in the document with track changes. This was addressed and improved together with technical aspects related to the structure were noted and amendments recommended.

Should you need any clarify or have a concern in relation to the edition made, feel free to contact us on the details provided at the end of this letter.

The WyzeSymba Pty. Ltd
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