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ENHANCING PRODUCTIVITY AND SUSTAINABILITY IN SMALL-SCALE CATTLE RANCHING: A CASE STUDY OF SELOUS RANCH.

BY

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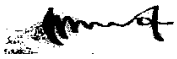
STUDENT SIGNATURE  **DATE: 30/10/2025**

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ABSTRACT

This study sets out to build a practical framework for improving both the productivity and the long-term survival of small-scale cattle ranching at Selous Ranch in Zimbabwe. The study was motivated by the sector's continued poor performance. Even though cattle are very important for the rural community and for the country's economy, the sector is caught in a bad cycle. This cycle is one of low productivity and poor sustainability, and it is caused by many problems that are connected to each other. To get a deep understanding of these issues from the people who live with them, the study adopted a qualitative case study approach. Ten respondents were selected for their specific knowledge these were farmers, veterinary officers, and agribusiness experts. Thus, data was collected through in-depth interviews and observations, and then I analyzed this data by looking for common themes. The researcher found out that there is a structural problem which we can call a "Productivity Paradox." This is a situation where a bad cycle of having low capital leads to farmers being unable to buy good inputs like proper feed, good genetics, and healthcare for the animals which results in low outputs, such as low calving rates, the slow growth of the animals, and the high mortality. The sustainability of the operations is being threatened by what we can call "Multidimensional Vulnerability," which is a situation where different problems like climatic shocks, diseases that are common, economic volatility, and weak connections to the market all come together and make each other worse. Furthermore, we can see that there is a big "Value Addition Chasm," meaning that the potential for making more money through processing the products is not being realized because of very big barriers in the areas of finance, infrastructure, and technical skills. The study concludes that just fixing one technical problem at a time is not enough. Therefore, it is proposing an "Integrated Resilience and Value Capture Model" to be used as a practical framework for intervention. This model is calling for coordinated actions that involve many different stakeholders, and these actions should be across four main pillars: number one is enhancing the input systems and the resource base; number two is improving the on-farm and also the community management practices; number three is developing integrated value chain and market linkages; and number four is fostering a supportive enabling environment. The research is contributing a holistic, systems-based approach for reviving small-scale cattle ranching, and it is offering recommendations that can be acted upon for farmers, for policymakers, and for development partners so that they can break the cycle of poverty, they can build resilience in the system, and they can enable the capture of value locally for sustainable development.

Keywords: Small-scale cattle ranching, Productivity Paradox, Multidimensional Vulnerability, Value Addition Chasm, Integrated Resilience Model, Value Chain, Resilience

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This study sought to establish a conceptual framework aimed at enhancing productivity and sustainability in small-scale cattle ranching at Selous Ranch. In our country, livestock farming is a cornerstone of life in the villages, and it also supports the national economy. But this work faces many big challenges that stop it from reaching its full potential. Our small-scale farmers, who are the backbone of cattle breeding and pen feeding, are fighting against many inefficiencies. These include management that is not so good, a failure to run the operation as a proper business, animals with poor genetics, the very high cost of feed, and limited ways to reach good markets or get technical support. These inefficiencies have brought about a situation where productivity is not optimal, and sustainability is also not good. Now, Selous, which is known for its potential in agriculture, is a good example of these challenges, but at the same time it also shows us the opportunities that exist for making strategic interventions. This chapter introduces the study's focus on dealing with these issues, and it provides a foundation for the discussions that will come later the objectives, the questions, and the solutions that are being proposed.

1.2 BACKGROUND TO THE STUDY

This section provides a comprehensive contextual framework for the study, employing a systematic funnel approach to situate the research. It began by examining the broad global significance of small-scale cattle ranching, narrows to its specific role and challenges within Africa and the SADC region, and finally culminates in a detailed analysis of the Zimbabwean context, thereby establishing the precise niche and justification for this investigation into small-scale livestock farming in Selous.

1.2.1 The Global Significance of Small-Scale Cattle Ranching

Now, when we talk about small-scale cattle ranching, we must see that it is not just one of those agricultural activities, but it is a very fundamental pillar for the entire world's food system and it is a cornerstone for the livelihoods of people in the rural areas, and this is especially true in the developing world.

According to the estimates that were given by the Food and Agriculture Organization [FAO] in 2022, they say that more than 1.3 billion people are involved in the production of livestock, and it is the small-scale and the family-owned operations that are producing about 50 to 60 percent of all the meat and dairy products that the world consumes. You can look at these systems as the engines that are driving the rural economies, and they provide a source of resilience for households in many ways. Beyond the direct production of food, which includes milk, meat, and even blood, the cattle serve as a critical asset base, they are like a living savings account for the people, they are a source of draught power that is used for cultivating crops, and they are a provider of organic manure that is very essential for the fertility of the soil, and by doing this they are creating integrated and sustainable agro-ecosystems (The World Bank, 2023). However, it must be said that the sector is now standing at a very critical juncture, and it is facing a coming together of many pervasive challenges. Climate change is representing an existential threat, and this is because the increasing temperatures, the altered rainfall patterns, and the more frequent extreme weather events are impacting directly on the availability of pasture, on the water resources, and on the health of the animals. A report that was done by the International Livestock Research Institute [ILRI] in 2021 is indicating that heat stress alone is projected to cause significant economic losses in the livestock sector through reduced fertility, lower milk yields, and increased mortality. Furthermore, the dynamics of the global market and the consolidation of agri-food corporations are often acting to marginalize the small-scale producers, who then struggle to meet the stringent standards and the volumes that are required by the formal value chains. This situation then limits their access to markets that are lucrative and it often forces them into informal sales that give low returns (IFAD, 2020). A third major challenge is the double burden of animal health. The small-scale ranchers must contend with both the endemic diseases, which are constantly eroding productivity, and the ever-present risk of emerging infectious diseases and transboundary animal pests, which can decimate the herds and can trigger trade embargoes. The access to veterinary services that are affordable and effective remains a significant barrier, and this leaves many farmers reliant on treatment methods that are often ineffective or outdated (OIE, 2022). This complex global context is underscoring the precarious position of the small-scale cattle ranchers, who are at the same time vital to global food security and yet they are highly vulnerable to a range of external shocks.

1.2.2 The Pivotal Role of Livestock in Africa's Economy and Culture

Inside the African continent, the role of livestock, and of cattle, it goes beyond the economic metrics, and it becomes something that is deeply embedded in the social, the cultural, and the political fabric of countless communities. Cattle are not just livestock; they are a symbol of wealth, they are a medium for cultural ceremonies like lobola (bride price), they are a means for resolving conflicts, and they are a primary safety net during periods when the crops have failed or there is a family crisis. The African Union's Interafrican Bureau for Animal Resources [AU-IBAR] (2021) is emphasizing that the livestock sector is one of the fastest-growing agricultural sub-sectors in Africa, a phenomenon that people are calling the "Livestock Revolution," and this is being driven by rising urbanization, by growing populations, and by increasing disposable incomes. This surge in the demand for animal-source proteins is presenting a monumental opportunity for economic growth and for the reduction in poverty.

Despite this potential that we are seeing, the growth of the sector is being severely constrained by a suite of challenges that are deeply entrenched. The burden of disease is arguably the most significant one. Diseases such as East Coast Fever, Contagious Bovine Pleuropneumonia (CBPP), and Foot-and-Mouth Disease (FMD) are endemic across vast swathes of the continent, and they are causing high rates of mortality and morbidity, and they are imposing massive economic losses that are estimated in billions of dollars every single year (AU-IBAR, 2021). The vulnerability to climate change is exceptionally high in Africa, where over 90 percent of livestock production is relying on natural rangelands that are fed by rain. The increasing frequency and the severity of droughts in regions like the Horn of Africa and Southern Africa are leading to catastrophic losses of livestock, and this is pushing pastoralist and agropastoral communities into destitution and it is threatening their very way of life (IPCC, 2022). Moreover, we are seeing that structural and policy limitations persist. Many African governments have historically under-invested in livestock development especially when you compare it to crop agriculture. This situation is reflected in the inadequate funding for veterinary extension services, in the poor rural infrastructure such as roads, markets, and water points, and in a lack of financial products that are tailored, such as livestock insurance, that can help farmers to manage risk. The result of all this is a productivity gap, where the potential of the sector remains largely untapped, and it is failing to fully contribute to food security and economic development on the continent (African Development Bank, 2020).

1.2.3 A Regional Analysis: Small-Scale Ranching in the SADC Bloc

The Southern African Development Community (SADC) is presenting a microcosm of the broader African context, and it is characterized by a stark duality in its livestock sector. What we see is a small number of highly efficient, large-scale commercial farms that are coexisting with a vast majority of small-scale and subsistence-oriented cattle owners. The SADC region is home to a sizeable portion of the continent's cattle population, with countries like Botswana, Namibia, Zambia, and Zimbabwe possessing large herds that are managed under extensive grazing systems (SADC, 2020). A defining feature of the regional livestock landscape is the management of transboundary animal diseases (TADs). Diseases such as Foot-and-Mouth Disease (FMD) are hyper-endemic in certain areas, particularly those that are adjacent to national parks where the interaction between wildlife and livestock is common. The presence of these diseases is leading to the establishment of disease control zones, and this severely restricts the movement of animals and animal products, effectively locking the small-scale farmers in the communal areas out of formal, high-value markets, including the lucrative export opportunities to the European Union and the Middle East (SADC Secretariat, 2021).While the regional bodies like the SADC have developed protocols for harmonizing the control of diseases, the implementation on the ground remains weak because of constraints in resources and gaps in capacity.

Another critical regional challenge is the variability of the climate and the recurrence of drought. Southern Africa is highly susceptible to El Niño-Southern Oscillation (ENSO) cycles, which precipitate severe droughts every few years. The droughts of 2015-2016 and of 2018-2019, for instance, led to massive losses of livestock, they eroded the asset base of millions of people, and they heightened food insecurity across the entire region. This has highlighted the urgent need for the widespread adoption of climate-smart livestock practices, such as the cultivation of fodder that is tolerant to drought, the harvesting of water, and the sustainable management of rangelands (SADC, 2022). Furthermore, the trade within the region and the integration of markets, while it is a key objective of SADC, it is hampered by barriers that are not tariffs, by inconsistent sanitary and phytosanitary (SPS) standards, and by poor systems for market information, which disproportionately disadvantage the small-scale producers who lack the capacity to navigate these complex requirements.

1.2.4 The Zimbabwean Context: A Sector in Transition

Zimbabwe's small-scale livestock sector is a vivid illustration of the interplay between historical legacies, political upheaval, economic volatility, and environmental pressures. The sector, which is contributing approximately 2 percent to the national GDP and about 35 percent to the agricultural GDP, is a lifeline for the rural communities, providing food, income, employment, and draught power for crop production (Ministry of Lands, Agriculture, Fisheries, Water, and Rural Development [MLAFWRD], 2023). The Land Reform Programme of the year 2000 fundamentally reconfigured the sector, because it redistributed the large-scale commercial ranches to new small-scale farmers. While this expanded the access to land for many people, it also fragmented the production units and, in many cases, it led to the disintegration of critical infrastructure like fencing, dip tanks, and boreholes, creating a vacuum that the state has struggled to fill (Mujuru, 2022). The most telling indicator of the sector's distress is the persistent decline in the national cattle herd. The official statistics are indicating a drop from a peak of over seven million in the early 2000s to an estimated 5.4 million head in the year 2023 (MLAFWRD, 2023). This decline is not coming from one cause, but is driven by a complex web of factors:

Economic Instability: The hyperinflation and the volatility of the currency have dramatically increased the cost of critical inputs such as stockfeed, vaccines, acaricides, and farming equipment. This has made structured cattle production unviable for many, forcing farmers to sell their assets for immediate cash needs (ZimStat, 2023).

Disease Outbreaks: The collapse of veterinary extension services has led to the resurgence of preventable diseases like Anthrax and Blackleg, and the poor management of dip tanks has exacerbated tick-borne diseases like January Disease (Theileriosis), which has killed hundreds of thousands of cattle in recent years (FAO, 2021).

Recurrent Droughts: Climate change has manifested in Zimbabwe as more frequent and intense mid-season dry spells and droughts, leading to critical shortages of pasture and water. This has caused poor animal body condition, low calving rates, and high mortality, particularly during the harsh dry season (World Bank, 2023).

The downstream effects of this decline in the herd are felt across the economy. The leather industry, for instance, has seen its capacity utilization plummet to below 20 percent, primarily due to the insufficient and poor-quality supply of raw hides from the struggling national herd (Zimbabwe Leather Development Council, 2022).

Despite this challenging environment, the sector holds significant potential. There is a growing domestic and regional demand for beef, and government initiatives such as the Livestock Recovery and Growth Plan aim to restock the national herd, rehabilitate infrastructure, and promote climate-smart practices (MLAFWRD, 2021). The rise of pen-fatting enterprises among smallholders, driven by demand from urban centers, also points to emerging entrepreneurial opportunities within the value chain. However, realizing this potential is contingent on addressing the fundamental constraints of limited access to finance, weak value-chain linkages, and the pervasive impacts of economic and climatic shocks. It is within this complex, challenging, yet potentially rewarding context that this study seeks to investigate the specific constraints and opportunities for small-scale livestock farmers in Selous, with the aim of contributing to strategies for enhancing the sector's productivity and sustainability. Small-scale livestock farming is an integral part of Zimbabwe's agricultural sector, contributing to economic resilience, food security, and rural development (Food and Agriculture Organization [FAO], 2020). Livestock production accounts for about 2% of Zimbabwe's GDP and, cattle ranching serves as a livelihood strategy for numerous households.

1.3 PROBLEM STATEMENT

The central problem that is under investigation is the persistent underperformance and the lack of sustainability within Zimbabwe's small-scale cattle ranching sector. According to the Department of Veterinary Services (DVS) Report of 2024 and the African Union-InterAfrican Bureau for Animal Resources (AU-IBAR), livestock sustains approximately 70% of Zimbabwe's rural population, and it contributes roughly 35% to the national agricultural GDP. This crisis of productivity and viability has huge negative impacts on the smallholder farmers, on the economic health of the rural communities, and on the broader national economy. A sector that carries significant potential is unfortunately trapped in a cycle of stagnation and decline, and it is unable to capitalize on its inherent strengths or on the emerging market opportunities. At the level of the producer, the smallholder farmers who form the critical foundation of the industry are severely constrained by a multitude of barriers that are interconnected. They are facing input costs that are cripplingly high, particularly for stockfeed, which consumes a disproportionate share of their capital that is already limited. According to a New Ziana report of 2025, farmers in the semi-arid regions often spend up to 70% of their production costs on feed alone, and this is a crippling burden.

This situation is compounded by access to modern veterinary services and animal healthcare that is severely inadequate, leaving the herds vulnerable to diseases that could be prevented and to high rates of mortality. According to the 2024/25 Post-Harvest Survey that was conducted by ZimStat, tick-borne diseases and limited veterinary access remain persistent threats to productivity. The current ratio of veterinarians to cattle, as highlighted in the Nuffield Scholar Report of 2024, stands at approximately 1 per 100,000, and this is far below the recommended target of 1 per 10,000. The dipping practices, which are a cornerstone of tick-borne disease control, declined from 40.5% in 2023 to 33.1% in 2024, as reported by the same ZimStat survey. A widespread lack of technical knowledge in areas such as the management of the herd, the improvement of genetics, and efficient practices for pen-feeding is resulting in breeding rates that are suboptimal, in low percentages of weaning, and in extended time-to-market, and this is drastically reducing the potential income and profitability. Professor Sikhalazo Dube, who is the project coordinator for the Livestock Production Systems in Zimbabwe (LIPS-Zim) project, observes that "without a basic understanding of good agricultural practices, most smallholder farmers cannot sustain their livestock herds".

The consequences of these failures at the production level are rippling outward, and they are devastating the rural livelihoods that are heavily dependent on livestock. According to the ZimStat 2024/25 survey, in Matabeleland South, approximately 92% of communities reported that the pastures were inadequate and of poor quality. For those who own livestock, the most common improved practices remain limited to deworming at 24% and dipping at 38%, and this indicates a minimal adoption of comprehensive herd management strategies. Across all provinces, natural grazing combined with crop residues remains the main feed source for more than 61% of households, while 35% of farmers rely solely on natural grazing, and less than 2% use planted pasture or commercial supplements, as per the same report. The inefficiencies across the entire value chain, starting from the production on the farm to the access to markets, are resulting in the generation of income that is diminished, in increased poverty, and in reduced economic resilience for entire communities. The national economy, in turn, is suffering from the weak performance of the sector. The processing facilities that are outdated and underutilized, the lack of investment in infrastructure for the cold chain, and the limited capacity for the diversification of products and for value-addition mean that Zimbabwe is failing to capture the full economic potential of its livestock resources. According to the Nuffield Scholar Report of 2024, only a small portion of

Zimbabwe's smallholders are capable of meeting the strict requirements for formal markets due to the limited access to veterinary services and due to a lack of cold chain facilities in the rural areas. The cold-chain reliability remains one of the biggest pressure points in the beef value chain, and the value erosion occurs between the aggregation points and the market destinations through delayed collection cycles and poor holding conditions. This forfeits significant earnings from exports, and it fails to support the ancillary industries. These problems that are deeply entrenched in the system are now being critically exacerbated by a new wave of external threats. The escalating effects of climate change, which are manifesting as erratic patterns of rainfall, prolonged droughts, and scarcity of water, are rapidly degrading the quantity and the quality of the grazing land, they are intensifying the shortages of feed, and they are placing additional stress on the health of the animals. According to a NewsDay report of 2025, recurrent droughts, overgrazing, and land degradation have reduced the pasture yields by up to 30% in some districts. According to a Herald report of 2026, the devastating 2023/24 agricultural season, which was driven by an El Niño-induced drought, resulted in record low rainfall and significant livestock losses across the country. Furthermore, as reported in the Herald of 2024, while cattle mortality has improved from 9% in 2021 to 4.6% in 2023, disease still accounts for 68% of cattle mortality, and this is followed by drought at 13%. The national calving rate, as reported in the Herald of 2025 and on agric.gov.zw, remains stubbornly low at 42% against a target of 50%, and it is estimated that Zimbabwe is losing up to half a million calves annually, which translates to a potential economic loss of US$100 million to US$250 million. More recent data that was reported in the Herald of 2025 indicates that the calving rate has further deteriorated to 34.6%. At the same time, the farmers must contend with competition that is intense and often unfair from products that are imported from the region, with market prices that are volatile and that disrupt planning, and with an unpredictable macroeconomic environment that discourages investment that is essential.

1.4 RESEARCH OBJECTIVES

The aim of this research was to develop an integrated framework for enhancing productivity and sustainability in small-scale cattle ranching at Selous Ranch. To achieve this main objective, the study will pursue four specific goals.

- To evaluate the key challenges that impede productivity and sustainable operations.

- To assess the current productivity levels and management practices of the cattle herd to establish a definitive baseline for improvement.
- To determine the effectiveness of both existing and potential value-addition strategies within the farm's livestock value chain.
- Finally, by synthesizing all findings, the study will formulate a practical framework designed to provide actionable recommendations for overcoming identified challenges, integrating sustainable value-addition, and ultimately enhancing the overall productivity and sustainability of the cattle ranching enterprise.

1.5 RESEARCH QUESTIONS

This research sought to answer these questions:

- What are the current productivity levels in the livestock sector and what factors influence them; How do factors affecting processing capacity (such as capital, equipment, energy, labor and economies of scale) impact on the performance of the small-scale livestock industry and
- How do beneficiation strategies enhance the performance of the livestock sector?

The main research question of the study is: What conceptual framework can be used to revive and sustain the small-scale livestock sector in Zimbabwe?

1.6 RESEARCH JUSTIFICATION

The justification for this research lies in the critical role that Zimbabwe's livestock sector plays in contributing to national GDP, to rural livelihoods, and to food security. Despite its potential, the sector is facing significant challenges, including low productivity, weak value addition, and climate-induced risks, which hinder its ability to drive economic growth and to alleviate poverty (FAO, 2021). The smallholder farmers, who dominate industry, lack access to inputs that are affordable, to modern infrastructure, and to markets, and this is exacerbating rural poverty and limiting their resilience to shocks that are economic and environmental (Mhlanga, 2018).

The addressing of these issues is aligning with Zimbabwe's development priorities, including Vision 2030, which is emphasizing agricultural transformation and industrialization (GoZ, 2018). By focusing on enhancing productivity, sustainability, and efficiency in the value chain, this research aims to provide insights that can be acted upon and recommendations for policy to support

the stakeholders, including farmers, policymakers, and private investors, in revitalizing the livestock sector and in achieving the goals for sustainable development.

1.7 SIGNIFICANCE OF THE STUDY

The study aims to provide a conceptual framework for the revival of the small-scale livestock sector. The livestock sector has the potential to be a significant export revenue earner, in particular export earnings hence contributing significantly to the growth of industry; contribute towards the food security efforts central government and development of the nation in general.

The research stands to benefit various stakeholders which include, the sector itself, the academia, the government, donor agencies and the researcher himself. For the researcher, the study provides a platform to showcase his entrepreneurial insights and expertise as an upcoming livestock farmer. Academia stands to benefit from the study as it provides a foundation for further research in the field, fostering innovation and creating opportunities for interdisciplinary studies on agriculture and sustainability. Development agencies and NGOs can leverage the research to identify intervention areas and align their programs with the sector's needs. For the researcher, the study offers a platform to showcase entrepreneurial insights and expertise in livestock farming while contributing to the broader knowledge base of Zimbabwe's agricultural sector. Benchmarking against successful livestock systems in countries like Botswana, South Africa, and Kenya will provide actionable insights for improving value chains, fostering partnerships, and aligning with global best practices.

Ultimately, the research sought to unravel opportunities for value addition within the livestock value chain and demonstrate how micro-level improvements can cascade into macroeconomic benefits. This comprehensive analysis will help stakeholders create a resilient, sustainable, and thriving livestock sector in Zimbabwe.

1.8 ASSUMPTIONS

This research proposal was based on the following assumptions:

i. Access to Accurate Data: It is assumed that the data collected from farmers, farm records, and key informants through surveys and interviews will be a truthful and accurate representation of the real-world conditions at Selous Ranch.

ii. Stakeholder Cooperation: Key stakeholders, including farmers, industry players, policymakers, and academic institutions, will be cooperative in sharing insights for a comprehensive analysis.

iii. Contextual Stability: It is assumed that the fundamental operational context of the farm (e.g., management structure, core business model) will remain relatively stable for the duration of the study, ensuring that the findings are consistent and relevant.

iv. Government Commitment: Government will remain committed to supporting the livestock sector through policy reforms, financial aid, infrastructure development, and promoting the sector's growth and competitiveness.

These assumptions will be carefully considered throughout the research process to ensure the study's recommendations are practical and aligned with the prevailing economic, social, and environmental conditions in Zimbabwe.

1.9 DELIMITATION OF THE SCOPE

This study is delimited to the small-scale livestock sector in Zimbabwe, focusing specifically on cattle breeding and pen feeding, at Selous Ranch. The scope is confined to this area due to their relevance to the researcher's focus on enhancing productivity and sustainability within the livestock sector, particularly in rural and smallholder contexts.

The study will not address large-scale commercial farming operations or other sectors of agriculture such as crop production, poultry farming, or fisheries.

The research will also concentrate on the analysis of local challenges and opportunities, rather than addressing broader regional or international livestock market dynamics, except where they directly impact the local sector. Geographically, the study is limited to the Selous Ranch, where the researcher is involved in a small livestock project. This location has been chosen due to the researcher's proximity and access to the area, providing a more focused and practical context for the research.

The study will also exclude in-depth financial analysis of the entire agricultural sector or an exhaustive exploration of government policies beyond those directly affecting the livestock sector. Instead, the research will focus on specific challenges such as access to finance, infrastructure, market linkages, and climate change, as well as the potential for value addition and product diversification within the livestock value chain.

With regards to data collection the research will primarily rely on qualitative data, such as interviews with stakeholders, as well as secondary data from government reports, industry publications, and academic sources. Quantitative data, if available, will be used to supplement and contextualize qualitative findings.

1.10 DISSERTATION STRUCTURE

This dissertation is structured into five distinct yet interconnected chapters, each designed to logically guide the reader through the research process, from establishing the foundational problem to presenting the concluded findings and recommendations. The structure is organised as follows:

Chapter One: Introduction

This chapter provides the foundational context for the research. It introduces the research problem, outlines the background of the study, states the problem statement, and presents the primary research objectives and questions. It also defines the scope, limitations, and significance of the study, establishing the overall purpose and direction of the dissertation.

Chapter Two: Literature Review

This chapter presents a comprehensive critical review and synthesis of existing scholarly literature relevant to the research topic. It explores key theories, conceptual frameworks, and empirical studies related to cattle ranching productivity, sustainability challenges, and value addition strategies in agricultural value chains. The chapter identifies gaps in the current body of knowledge that this research seeks to address.

Chapter Three: Research Methodology

This chapter details the philosophical and methodological choices guiding the investigation. It explicitly outlines and justifies the selected research philosophy (interpretivism), approach (inductive), and design (qualitative case study). It thoroughly describes the data collection methods (e.g., semi-structured interviews, observations), the study population and sampling strategy, data analysis techniques (thematic analysis), and the ethical considerations adhered to throughout the research process.

Chapter Four: Data Presentation, Analysis, and Discussion

This chapter presents the empirical findings derived from the data analysis. The results are organised around key themes that emerged from the study, using narrative descriptions, direct quotes from participants, and supporting tables or figures for clarity. The chapter then engages in

a critical discussion of these findings, interpreting their meaning and explicitly linking them back to the existing literature reviewed in Chapter Two, explaining points of convergence and divergence.

Chapter Five: Summary of Findings, Conclusions, and Recommendations

The final chapter provides a concise summary of the major findings of the study. It presents the overall conclusions drawn from the research, explicitly stating how the study has addressed the research objectives and questions. Based on these conclusions, the chapter offers practical recommendations for the management of Selous Ranch and other similar enterprises, as well as suggestions for future academic research in this field.

1.11 CHAPTER SUMMARY

This chapter began with introducing the study, outlining the research problem, objectives, and significance of the study in the context of Zimbabwe's livestock sector. The research focuses on enhancing the productivity and sustainability of small-scale livestock farming, particularly in the Selous area. It highlighted the various challenges facing the sector, such as limited access to finance, inadequate infrastructure, and the adverse effects of climate change.

The chapter also provided a detailed explanation of the research problem, justifying the need for this study in light of the current challenges facing the livestock sector. It included the research hypothesis and key questions to guide the investigation, with an emphasis on identifying opportunities for growth and value addition in the sector.

The study's significance was discussed, emphasizing its potential benefits for various stakeholders, including the researcher, the livestock sector, government agencies, and the broader academic community. The research aims to contribute to the development of a framework that can inform policy decisions and enhance the performance of the livestock industry in Selous Ranch, Selous.

Additionally, the chapter outlined the assumptions, delimitations, and scope of the study, providing a clear boundary for the research to focus on small-scale livestock farming in Selous and excluding other areas of agriculture. The chapter sets the foundation for the subsequent chapters, which will delve deeper into the analysis, methodology, and findings of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

In the chapter that came before this one, I presented the background of the problem we are dealing with, which is how to enhance the productivity and the sustainability in the management of small-scale livestock at Selous Ranch. Now, in this chapter, what I will do is to provide a critical review of the literature that other scholars have written about the revival of the agricultural sector, and I will pay specific attention to the small-scale breeding of cattle. This chapter will give us an overview of the different strategies that can be used to enhance the capacity utilization in the operations of small-scale livestock, and I will have a bias towards the breeding of cattle and feeding in pens. Also, the literature will focus on what we call the independent variables, which are the processing capacity, the quality and the design, the beneficiation, and the marketing information and the government policy, and we will look at how these impact the dependent variable, which is the productivity of the small-scale cattle breeding and the leather manufacturing industry. As I go through the literature, I will make use of case studies from other countries to illustrate the points that are being raised and to show how the theory we read about connects to the practice that happens on the ground. Finally, I will provide a conceptual framework that will highlight the key discussions that we find in the literature review.

2.2 THEORETICAL FRAMEWORK

A theoretical framework is a structured set of concepts, theories, and models that provide a foundation for understanding a research problem. It acts as a guide when we are analyzing the issue because it links the existing theories to the objectives of the study, and it helps to explain the relationships between the different variables, and it offers a lens through which we can examine the problem (Grant & Osanloo, 2014). A theoretical framework that is strong makes sure that the research is grounded in knowledge that is already established, and this enhances the validity and the reliability of the work.

2.2.1 SUSTAINABILITY THEORY

The Sustainability Theory finds its foundation in the principle that we must meet the needs of the people who are living today, but we must do this without compromising the ability of the generations that will come after us to meet their own needs (World Commission on Environment and Development, 1987). In the research that is done on agriculture in our current time, this theory has evolved into a holistic framework that we can use to assess the long-term viability of the different farming systems, especially when they are under complex pressures, and it has moved beyond a focus that is purely environmental to integrate the dimensions that are economic and social (Pretty, 2018; Rockström & Sukhdev, 2016).

The model that is most applicable for this study is the one known as the Three Pillars of Sustainability (Elkington, 1997), and this model posits that true resilience is achieved at the point where environmental integrity, economic profitability, and social equity come together, a conceptualization that has been refined in the more recent scholarship to emphasize the deep interdependencies and the synergies that exist between these three pillars (Purvis, Mao & Robinson, 2019). This theoretical framework was selected for this study precisely because it provides a structure that is structured and yet it is flexible, and it gives us a lens to comprehensively address the objectives of the study which are multi-dimensional. The framework will be put into operation to directly guide the investigation, and it will make sure that when we identify and evaluate the key challenges that are impeding productivity and sustainability, we move beyond just making a superficial list to doing an analysis of the root causes; for example, an economic challenge like the high costs of inputs will be investigated for its root causes that are social, such as the lack of access to credit that is affordable, and for its consequences that are environmental, such as the inability to afford feed that is sustainable leading to the overgrazing of the land. Furthermore, when we assess the current productivity levels and the management practices to establish a definitive baseline, the study will expand beyond the traditional metrics to include a baseline that is environmental and that evaluates the health of the rangeland and the management of manure (FAO, 2020), a baseline that is economic and that assesses the efficiency of costs, and a baseline that is social and that examines the welfare of the labour and the relations with the community. The determination of the effectiveness for the strategies of value-addition will likewise be measured through this lens that has three parts, evaluating not only the profitability that is economic but also the effectiveness that is social, such as the creation of jobs and the

enhancement of food security (Nyamwanza & Kujinga, 2022), and the effectiveness that is environmental, including the efficiency in the use of resources that is aligned with the intensification that is sustainable (Pretty, 2018). Ultimately, the synthesis of the findings into a framework that is practical will be structured around these three pillars, and the recommendations will be designed to create feedback loops that are positive between them, acknowledging their interdependence that is conceptual (Purvis, Mao & Robinson, 2019). By applying this framework that is integrated, the study ensures that the final model for enhancing productivity is robust and it is grounded, and it prevents the pitfall of proposing solutions that are economically productive but that are detrimental to the environment or to the society, thereby providing the essential theoretical structure for developing a future for cattle ranching at Selous Ranch that is holistic and that is resilient.

2.3 CONCEPTUAL FRAMEWORK

A conceptual framework is a structure that guides the research by outlining the key factors, the concepts, and their presumed relationships (Jabareen, 2009). For this study, the framework is designed to map the complex interplay of the factors that influence productivity and sustainability in the ranching of cattle on a small scale. It moves beyond a simple list of variables to propose a system where the interventions in one area can create feedback loops that are positive in another. The framework is built on the premise that enhancing productivity and sustainability is not achieved through technical fixes that are isolated but requires an approach that is holistic and integrated, and that addresses the resources, the management, the linkages to the market, and the broader environment that enables the work (Scoones et al., 2010; FAO, 2018). The framework posits that Productivity and Sustainability are the dependent variables, and they represent the ultimate goals of the system. These are influenced by four pillars of independent variables that are interconnected: 1) The Resource Base & Inputs, 2) The Management Practices, 3) The Value Chain & Market Access, and 4) The Enabling Environment. The relationships between these pillars are dynamic and they are synergistic.

2.3.1 Productivity

Productivity in small-scale cattle systems is a multi-dimensional concept that measures the efficiency of converting inputs into valuable outputs and serves as the primary determinant of economic viability and farmer income (Mujuru, 2020; Nkomboni et al., 2022).

The key metrics for assessing this productivity include the reproductive performance, which is often measured by the calving rate and the interval, and this is severely constrained in the herds of Zimbabwe by the poor nutrition and the burden of disease, frequently keeping the calving rates below 60 percent and well under the potential that is biological (Ndlovu et al., 2020; Mutyavaviri & Katsande, 2023). The growth performance, which is indicated by the average daily weight gain, is significantly hampered by the inefficient conversion of feed that results from the natural grazing that is of poor quality and a critical lack of supplemental feeding, and this prolongs the cycle of production and increases the exposure to risk (Tada et al., 2020; Mapiye et al., 2021). Furthermore, the mortality rates that are high, particularly from the diseases that are tick-borne like Theileriosis, directly negate the gains in productivity and are exacerbated by the access that is limited and often unaffordable to the acaricides and services that are veterinary (Chatikobo et al., 2021; Dube et al., 2023). Ultimately, productivity is influenced by a confluence of factors that include the availability of capital for investment, the genetic potential of the herd, and the quality of the animal husbandry, often creating a cycle that is vicious where the outputs that are low and the subsequent income that is low prevent the very investments that are needed for improvement, thereby trapping the farmers in a state of low productivity that is persistent (Béné, 2020; Musemwa et al., 2022).

2.3.2 Sustainability

Sustainability in this context we are discussing refers to the capacity of a farming system to maintain its productivity and its value that is economic over the long term without depleting its base of natural resources or compromising the equity that is social (Van Loo et al., 2020; Nyamwanza & Kujinga, 2022). This concept rests on three pillars that are interconnected. The sustainability that is economic requires the system to generate profit that is sufficient to be resilient to the fluctuations of the market, a goal that is currently threatened by the costs of inputs that are high, the prices that are volatile, and the limited access to financial products that are tailored for the smallholders (Mujuru, 2021; World Bank, 2023). The sustainability that is environmental is achieved through practices like the grazing that is rotational to prevent the overgrazing and the erosion of the soil, the optimization of feed by using the residues from crops to improve the efficiency of resources, and the strategies for adaptation to the climate such as adopting the breeds that are indigenous and tolerant to drought (for example, the Mashona, the Tuli) and implementing the techniques for harvesting water to build resilience against the variability of the climate that is increasing (Mwakiwa & Mugabe, 2020; Mugandani et al., 2022; FAO, 2023).

The sustainability that is social is supported by the participation of the community through collective action in groups of farmers or in cooperatives, which enhances the sharing of knowledge, improves the pooling of resources, and strengthens the power for bargaining in the market, thereby making the operations more resilient, more profitable, and more equitable (Mapiye et al., 2020; Ngorima & Masterson, 2023).

2.3.3 Cattle management

The ranching of cattle in Zimbabwe is mostly done through the systems of farming that are communal, with approximately 70 percent of the population that is rural in the country being dependent on livestock for their sustenance. The cattle are raised for multiple purposes such as for meat, for milk, and for draught power (Scoones et al., 2010; Dept of Veterinary Services 2024). These farming systems play a role that is crucial in the economy that is rural, providing food, income, and draught power for the plowing of fields. However, the farmers who are on a small scale face several challenges that affect their productivity and their sustainability.

One of the major challenges is the grazing land that is limited. Most of the small-scale farmers rely on the areas for grazing that are communal, and these are often overused, leading to the degradation of the land and the reduced quality of the pasture. According to the Government of Zimbabwe's Ministry of Agriculture (2020), this problem of overgrazing has been exacerbated by the change in the climate, which leads to droughts and the reduced availability of water, further straining the resources for grazing. To address this, the farmers are encouraged to adopt the systems of grazing that are rotational and to manage their herds carefully to allow the pastures to regenerate. Another significant challenge that we must talk about is the veterinary services that are inadequate. Many of the small-scale farmers in our country of Zimbabwe lack the access to proper veterinary care, and this affects the health of their livestock and reduces the productivity. According to a report that was done by the FAO in 2015, diseases like foot-and-mouth and those that are tick-borne can spread very quickly in the herds that are communal, leading to losses that are high. The government, through initiatives like the Livestock and Meat Advisory Council, which is called LiMAC, is working to improve the access to veterinary services and to promote measures for controlling disease. The prices in the market that are fluctuating also present a challenge that is not small. The price of cattle and the product from livestock often varies based on the demand and the supply, leaving the farmers uncertain about the income they will get.

In response to this situation, the Zimbabwe National Livestock Producers' Association, which we call ZNLPA, in 2019 has advocated for stability in prices that is better and for access to markets, especially for the farmers who are small-scale. They also recommend that farmers should explore products that have value added, like meat that is processed and leather, to boost the income and to reduce the dependence on the sales of raw cattle.

To bring improvement to productivity and sustainability, it is important for the farmers to focus on the management of the herd that is proper. This includes implementing programs for breeding that are improved to increase the potential that is genetic of the livestock, ensuring performance that is better in terms of the production of milk and the yield of meat. The Agricultural Marketing Authority, which is AMA in Zimbabwe, in 2020 supports the use of programs for genetic improvement and the insemination that is artificial to enhance the quality of the cattle.

The utilization of feed that is efficient is also critical. The farmers who are small-scale can optimize the use of feeds that are available locally and the by-products to reduce the costs and to improve the nutrition of their cattle. As it was recommended by the FAO in 2015, using feeds that are alternative, such as the residues from crops and the by-products from agro-industry, can help to improve the nutrition of the livestock while reducing the waste and the dependency on feeds that are imported.

By addressing these challenges through better management, veterinary services that are better, and access to markets, the small-scale livestock farmers in Zimbabwe can enhance their productivity and ensure that their systems of farming are sustainable in the long-term.

Figure 2.1: Conceptual Framework for Enhancing Productivity and Sustainability in Small-Scale Cattle Ranching

INDEPENDENT VARIABLES: FOUR INTERCONNECTED PILLARS			
1. Resource Base & Inputs • Finance and working capital • Quality feed and water • Veterinary services and acaricides • Improved genetics and breeding stock	**2. Management Practices** • Rotational grazing • Herd health and record keeping • Feed conservation and supplementation • Collective action and farmer training	**3. Value Chain & Market Access** • Market information • Collective marketing • Transport and auction access • Processing, branding and value addition	**4. Enabling Environment** • Supportive policy and regulation • Extension and research support • Infrastructure: roads, dip tanks, water and energy • Credit, insurance and public-private partnerships
↓ Synergistic interaction and feedback loops ↓			
PRODUCTIVITY OUTCOMES Higher calving rates • Faster weight gain • Lower mortality • Improved herd growth • Increased income		**SUSTAINABILITY OUTCOMES** Economic resilience • Environmental conservation • Social equity • Climate adaptation • Long-term viability	
Virtuous cycle: improved outcomes increase profitability, which enables reinvestment in inputs, management, markets and resilience.			

Conceptual basis: Adapted from the study's synthesis of Jabareen (2009), Scoones et al. (2010), FAO (2018; 2023), and the literature reviewed in Sections 2.3.1–2.3.3.

2.4 CHALLENGES AFFECTING SUSTAINABILITY OF LIVESTOCK FARMING

The sustainability of livestock farming globally is threatened by a confluence of challenges that are often interconnected, creating vicious cycles that are difficult to break. While the nature and intensity of these challenges vary by region, their impacts on profitability, environmental health, and social equity are universally concerning.

2.4.1 Climate Change

Climate change is a pervasive threat that transcends national borders, though its impacts are most acutely felt by farmers in the Global South with the least capacity to adapt. Beyond the generalized impacts of drought and heat stress described by the FAO (2020) and Thornton et al. (2010), the manifestations are diverse.

In Australia and the western United States, prolonged droughts and devastating wildfires have destroyed grazing lands, forced premature herd sell-offs, and threatened the viability of extensive ranching systems (Godde et al., 2021). In Bangladesh and Vietnam, rising sea levels and saltwater intrusion into agricultural land are degrading pastures and reducing the availability of fresh water for livestock, a challenge distinct from the drought-centric issues of Africa (Le et al., 2020). In the Nordic countries, warmer winters are disrupting traditional housed feeding systems and increasing the prevalence of certain parasites, demonstrating that even developed systems are not immune (Höglind et al., 2021). The adaptive strategies are equally diverse: from the development of drought-resistant forage varieties in Brazil to the use of insurance schemes against pasture loss in Kenya's livestock sector, highlighting that context-specific solutions are paramount (McKersie, 2015).

2.4.2 High Input Costs

The volatility and rise in input costs are a global phenomenon, but their impact is disproportionately severe for small-scale producers. The 2022-2023 global spike in fertilizer and grain prices, exacerbated by the war in Ukraine, sent shockwaves through intensive livestock systems worldwide. In Kenya, the cost of commercial dairy feed rose by over 50%, pushing many smallholder stall-feeding operations into losses (Omondi et al., 2022). In Vietnam, the African Swine Fever (ASF) outbreak led to a massive cull of pigs, and the subsequent restocking effort was hampered by the soaring cost of piglets and feed, slowing recovery and increasing market prices (Van Phan et al., 2021). This contrasts with large-scale operations in the US or Netherlands, which, while also affected, often have greater capital reserves, forward-contracting options, and more negotiating power with suppliers to buffer such shocks (Key & Sneeringer, 2014).

The challenge, therefore, is not just the absolute cost but the volatility and lack of risk-management tools available to small-scale farmers.

2.4.3 Limited Market Access

Poor market access remains a fundamental barrier to commercialization for smallholder farmers. This is not merely about bad roads but encompasses a lack of market information, quality standards, and bargaining power. In remote Mongolia, pastoralists receive a fraction of the final price for their high-quality cashmere and meat because of a lack of processing facilities and their dependence on middlemen for long-distance transportation (Batsuuri et al., 2021).

In India, despite the success of the dairy sector, smallholder meat producers often struggle to access formal markets due to inadequate cold chains, lack of standardized abattoirs, and regulatory hurdles (Ramsingh et al., 2019). Conversely, in Uruguay, a national electronic livestock traceability system has been a game-changer. It guarantees animal origin and health status, building international consumer trust and allowing even small farmers to access high-value export markets because their product is verifiably safe and sustainable (Borreani et al., 2019). This shows that technological and institutional innovations can effectively bridge the market access gap.

2.4.4 Policy and Institutional Failures

Inconsistent or poorly designed policies can stifle growth and investment. In Argentina, erratic export taxes and quotas on beef have historically discouraged producers from expanding, leading to cyclical bouts of underproduction and domestic price inflation (Regunaga et al., 2021). In Nigeria, well-intentioned programs to distribute livestock to farmers have often failed due to a lack of concomitant support for feed, veterinary care, and training, leading to high mortality rates and wasted resources (Oluwatobi et al., 2020). This contrasts with the long-standing, consistent policy support under the European Union's Common Agricultural Policy (CAP), which, despite its flaws, provides a stable financial and regulatory environment that allows farmers to plan and invest for the long term (European Commission, 2023). Effective policy is not just about creating programs but ensuring they are stable, predictable, and designed with farmer participation.

2.4.5 Genetic and Breeding Limitations

The genetic potential of livestock is a primary determinant of productivity. In many South Asian countries, dairy productivity is limited because a large proportion of the cattle population is comprised of non-descript, low-yielding animals.

While India has successful crossbreeding programs in certain states, replicating this at scale remains a challenge due to logistical issues with artificial insemination services and a lack of high-quality bulls (Bhatta et al., 2022). In Sub-Saharan Africa, attempts to introduce high-yielding exotic breeds often fail due to their poor adaptation to heat, local diseases, and low-quality feed, leading to high mortality rates. This has spurred a renewed interest in genetic improvement of indigenous breeds, which are more resilient though less productive. Programs in Senegal focusing on selecting the best indigenous cattle are showing promise for sustainable genetic gains (Tebug, 2016).

2.4.6 Disease Outbreaks

Transboundary animal diseases pose a continuous threat to livestock economies. The 2001 Foot-and-Mouth Disease (FMD) outbreak in the United Kingdom cost the economy an estimated £8 billion, highlighting the vulnerability of even advanced systems (Thompson et al., 2002). More recently, the global spread of African Swine Fever (ASF) has decimated pig populations in China, Vietnam, and across Eastern Europe, causing massive economic losses and reshaping global meat trade flows (Vandekerckhove et al., 2021). The difference in impact between developed and developing countries often lies in the capacity for surveillance, rapid response, and compensation. Countries with strong veterinary services and compensation funds can quickly contain outbreaks, whereas in regions with weak institutions, diseases become endemic, perpetually undermining productivity and farmers' livelihoods (Rushton et al., 2018).

2.5 EFFECTIVENESS OF VALUE ADDITION STRATEGIES IN LIVESTOCK VALUE CHAIN STRATEGIES

Value addition is universally recognized as a critical strategy for enhancing profitability, reducing post-harvest losses, creating employment, and insulating producers from the volatility of raw commodity markets. Its effectiveness, however, is highly dependent on context, infrastructure, and market linkages. The success of Botswana, as noted by Pica-Ciamarra & Otte (2011), is a textbook example of a national, vertically integrated value addition strategy. The Botswana Meat Commission (BMC) operates EU-approved abattoirs and manages the entire export process. This allows the country to command premium prices for its beef, which in turn funds better veterinary services and provides a reliable, high-value market for farmers, creating a virtuous cycle of improvement and investment.

Other African nations provide contrasting lessons.

Namibia has similarly leveraged its disease-free status to build a lucrative beef export industry to Europe, following a model akin to Botswana's (Nambinga et al., 2021). Conversely, Kenya's leather industry represents a missed opportunity. The country has one of the largest hide and skin production volumes in Africa, but over 90% of these are exported in raw, semi-processed ("wet-blue") form due to a lack of investment in modern tanning and finishing facilities. This results in the loss of potentially massive export earnings and job creation in the finished leather goods sector (Kivuva, 2018).

Beyond Africa, Uruguay's value addition strategy is deeply integrated with its traceability system. The country has successfully branded its beef as "natural," from grass-fed, free-range cattle. This product differentiation allows it to avoid competing on price alone in crowded international markets and instead command a premium for its unique, sustainable qualities (Borreani et al., 2019). This shows that value addition is not just about physical processing but also about branding and marketing based on unique selling propositions. In India, the value addition success story is found in its dairy sector. The Amul cooperative model collects milk from millions of smallholders and processes it into a vast array of products: cheese, butter, yogurt, ice cream, and milk powders. This diversification allows the cooperative to balance market demand, stabilize prices for farmers throughout the year, and capture significantly more value than if the milk was sold only in its liquid form (Birthal et al., 2017). The model's effectiveness lies in its farmer-owned structure, which ensures that the profits from value addition are cycled back to the producers. In New Zealand, the dairy giant Fonterra operates on a similar cooperative principle, but at a scale that dominates the global dairy trade. Its success is built on adding immense value to milk, transforming it into specialized ingredients like milk protein concentrates, lactose, and anhydrous milk fat for the global food manufacturing industry, far beyond just consumer packaged goods (Tipples, 2019). However, the path to successful value addition is fraught with challenges. As seen in Ethiopia, attempts to establish modern tanneries have been hampered by inconsistent raw material supply (due to poor hide quality from disease and poor flaying techniques), unreliable electricity, and a lack of skilled technicians (Gebreeyesus & Sonobe, 2019). This underscores that investment in processing infrastructure alone is insufficient. It must be preceded and supported by backward linkages to ensure a consistent supply of quality raw materials and forward linkages to access markets. The effectiveness of value addition strategies within the livestock sector hinges on a holistic and integrated approach that addresses foundational constraints across the value chain. This necessitates strategic investment in critical infrastructure, including reliable energy, water, and transport networks, to support processing operations and market linkages. Concurrently, enhancing access to finance and modern technology is imperative for entrepreneurs to establish, upgrade, and efficiently run abattoirs, tanneries, and meat processing facilities. The development of a skilled workforce through targeted training in essential areas such as food safety, quality control, and marketing is equally vital to ensure product standards and competitiveness.

Furthermore, strengthening producer organizations, such as cooperatives, is crucial to aggregate produce from small-scale farmers, ensuring a consistent and reliable supply of quality raw materials for processors. Finally, this entire ecosystem must be supported by enabling, market-oriented policies that encourage private investment, enforce stringent quality and safety standards, and proactively facilitate access to both domestic and international markets, thereby creating a sustainable and profitable value-addition environment.

The global evidence suggests that where these elements align, value addition becomes a powerful engine for sectoral growth and rural development. Where they are absent, processing initiatives often struggle to achieve viability and scale.

2.6 CHAPTER SUMMARY

This chapter reviewed literature on productivity and sustainability in small-scale livestock farming, with a particular focus on cattle breeding and pen feeding. It delved into key theoretical and conceptual frameworks that shape livestock farming, emphasizing how factors such as genetics, feed management, and environmental conditions directly influence productivity. Additionally, the chapter explored the challenges small-scale farmers face, including limited access to veterinary services, inadequate market access, and climate change impacts, which hinder the potential for higher productivity. On a global scale, the chapter highlighted how developed countries leverage advanced breeding technologies and modern feeding programs to maximize livestock output, while in Africa, including Zimbabwe, small-scale farmers still struggle with outdated farming practices and poor animal genetics. Furthermore, the chapter looked at regional strategies for addressing these challenges, particularly in terms of improving livestock value chains. Countries like Botswana have made significant strides by investing in modern processing plants and export-oriented strategies, which Zimbabwe could emulate to enhance its livestock sector's value addition capabilities. The chapter also discussed the importance of strengthening the cattle breeding and pen feeding sectors, which could potentially boost employment opportunities and increase profitability for small-scale farmers in Zimbabwe. The next chapter will present the research methodology employed in this study, detailing the data collection and analysis techniques used to investigate the productivity challenges and sustainability practices in Zimbabwe's small-scale livestock farming sector. This chapter reviewed literature on productivity and sustainability in small-scale livestock farming, with a particular focus on cattle breeding and pen feeding.

The theoretical and conceptual frameworks were discussed, highlighting the factors influencing productivity. The chapter also examined global and regional perspectives on livestock farming challenges and value addition strategies. The next chapter presents the research methodology used to collect and analyze data for this study.

CHAPTER THREE:

METHODOLOGY

3.1 INTRODUCTION

This chapter presents the methodology that was used for this study. It explains the research design, the philosophy behind the research, the approaches and types of research, and how data was collected and analysed. The purpose was to explore the experiences, the perceptions, and the insights of participants concerning small-scale ranching at Selous Ranch.

3.2 PHILOSOPHICAL FRAME OF RESEARCH

The research philosophy that a study adopts shapes its fundamental approach to knowledge and reality, guiding the choice of methodology and methods (Saunders, Lewis, & Thornhill, 2019). In business research, the two main philosophies are interpretivism and positivism. This study is based on an interpretivist philosophy. Interpretivism argues that social reality is not objective and external but is instead constructed subjectively through the meanings and interpretations that people give to their experiences (Saunders et al., 2019). On the other hand, a positivist philosophy works on the assumption that reality is objective and singular, existing independently of social actors. It seeks to find causal relationships between variables through detached observation, aiming for findings that are generalisable and like laws. The choice of interpretivism is deliberate and very important for achieving the objectives of this research, which are to assess the current productivity levels at Selous Ranch; to analyse the key challenges affecting the sustainability of cattle ranching there; and to explore how effective value addition strategies are in the livestock value chain at Selous Ranch. The reasons for selecting interpretivism are three:

3.2.1 Achieve Depth of Understanding

Positivism, with its focus on quantification and generalisation, would not be suitable for capturing the rich, nuanced, and context-dependent nature of what is being investigated. Interpretivism, however, allows for an in-depth exploration of the subjective meanings, motivations, and reasoning behind human behaviour in a business context. It enables the researcher to understand the phenomenon from the inside, from the viewpoint of the participants themselves.

3.2.2 Acknowledge Social Construction

The research topic is inherently social and set within a specific culture. Interpretivism recognises that knowledge and reality are not discovered but are socially constructed through interactions, language, and shared histories. This philosophy provides the necessary framework to explore how individuals and groups in the studied context build their understanding of the world, making it ideal for looking into complex, process-oriented business phenomena.

3.2.3 Ensure Methodological Coherence

An interpretivist philosophy logically matches the qualitative and exploratory methods used in this study, such as in-depth interviews, focus groups, or case study analysis. These methods are designed to gather detailed, narrative data that reveal the subjective interpretations of participants, thereby fulfilling the main aim of interpretivism, which is to generate rich, context-specific insight rather than objective, generalisable truth. In summary, by adopting an interpretivist position, this research acknowledges the complexity of the social world and prioritises a deep, empathetic understanding of the phenomenon through the eyes of those who experience it directly.

3.3 RESEARCH APPROACH

This study uses a mixed-methods research approach guided by an inductive reasoning strategy to thoroughly investigate the complex dynamics of cattle ranching at Selous Ranch. The research follows a pragmatic philosophy that chooses the most appropriate methods to effectively answer the research questions, recognising that the many-sided nature of the study's objectives requires both numerical measurement and in-depth contextual understanding. The quantitative part of this approach will be used to establish clear baselines for productivity levels through the systematic collection of metrics such as calving rates, mortality rates, average daily weight gain, and herd inventory figures, providing the statistical foundation for assessing current operational performance and identifying measurable trends within the ranching operations. At the same time, the qualitative part uses in-depth interviews, focus group discussions, and observational methods to explore the underlying reasons behind productivity challenges and how effective value-addition strategies are perceived, capturing rich contextual insights from stakeholders' lived experiences and viewpoints. The inductive nature of this approach allows themes and conceptual frameworks to emerge naturally from the analysed data rather than testing pre-set hypotheses, making it particularly suitable for exploring the complex, context-specific phenomena at Selous Ranch

where existing theories may be inadequate. The integration of these methodological parts follows a complementarity model where quantitative data shows what is happening within the ranching operations while qualitative data explains why these phenomena occur and how they might be effectively addressed, creating a combined understanding that neither approach could achieve on its own. This comprehensive research approach ensures flexibility during data collection while maintaining methodological rigour, enabling the investigation to adapt as new themes emerge from initial findings while ensuring the final conceptual framework truly reflects the actual conditions and perspectives at the study site, thereby enhancing the practical usefulness and credibility of the resulting recommendations for improving productivity and sustainability at Selous Ranch.

3.4 RESEARCH DESIGN

A research design provides the overall plan for the collection, measurement, and analysis of data (Bryman, 2012). It is a master plan that connects the philosophical assumptions and research approach to the practical methods of inquiry, making sure the study effectively addresses its research problems (Creswell & Poth, 2018). Guided by the interpretivist philosophy and inductive approach established in the previous sections, this study will use a qualitative, single-case study design. A case study is an empirical inquiry that investigates a contemporary phenomenon (the "case") within its real-life context, especially when the boundaries between the phenomenon and its context are not clear (Yin, 2018).

3.4.1 The Case and Unit of Analysis

The case for this study is Selous Ranch in the Mashonaland West Province of Zimbabwe. The main unit of analysis is the cattle ranching operation within the farm, with a specific focus on the experiences, challenges, and strategies of the small-scale cattle breeders and pen feeders operating there.

3.4.2 Justification for the Case Study Design

The case study design is the most appropriate strategy for this research for the following reasons, aligned with the criteria established by Yin (2018) and Creswell (2014): The study seeks to answer "how" and "why" questions. The research objectives—to assess productivity, analyse sustainability challenges, and explore value addition strategies—are fundamentally exploratory questions of "how" and "why" these phenomena appear within this specific context. A case study is the preferred strategy for such questions, as it allows for a detailed investigation of the complex

processes and dynamics at play. The need for a rich, contextual understanding. The research aims to understand the details of cattle ranching not as isolated variables, but as a process embedded within the specific social, economic, and managerial context of Selous Ranch. A case study is uniquely suited to provide this holistic and contextualised understanding, which is essential for achieving a deep exploration of the phenomenon. The behaviour of participants cannot be manipulated. This study investigates real-world events and perceptions as they naturally occur. The researcher has no control over behavioural events and will not manipulate the environment. A case study is designed for such situations where the relevant behaviours cannot be taken out of their real-life setting.

3.4.3 Data Collection and Triangulation

As highlighted by Robson (2002), a key strength of the case study is the ability to use multiple sources of evidence. To ensure depth, validity, and a comprehensive perspective, this study will use data triangulation through: Semi-structured interviews with farmers, managers, and key experts; Analysis of relevant documents (e.g., farm records, reports, policies if available); and Direct observation of farm operations.

This multi-method approach will allow for the development of convergent lines of inquiry, strengthening the credibility of the findings by cross-verifying information from different sources. In summary, the qualitative case study design is chosen because it provides the necessary structure to conduct an empirical, in-depth inquiry into the contemporary phenomenon of cattle ranching sustainability within the bounded context of Selous Ranch, ultimately allowing for a rich, detailed understanding of the issues under investigation.

3.5 DATA COLLECTION TOOLS

This study employed a qualitative multi-method approach to gather information, using in-depth interviews, observation, and documentary analysis to ensure a comprehensive and verified understanding of the case. This approach aligns with the principles of qualitative case study research, which recommend using multiple data sources to build a strong and detailed interpretation of the phenomenon being studied (Yin, 2018; Flick, 2022).

3.5.1 In-Depth Interviews

In-depth interviews served as the primary method for collecting data in this study. This technique was essential for gathering rich, detailed insights into the personal experiences, perceptions, and challenges of the stakeholders directly involved in cattle ranching at Selous Ranch. As highlighted by Kvale and Brinkmann (2015), in-depth interviews are uniquely powerful for exploring complex phenomena because they allow participants to describe their lived experiences in their own words, providing context and meaning that structured surveys cannot capture. The researcher conducted semi-structured interviews with a purposively selected sample of farm managers, cattle breeders, and pen-feeders. The use of an interview guide with open-ended questions ensured that key topics related to productivity, sustainability, and value addition were covered while allowing the flexibility to explore emerging themes and follow new lines of inquiry as they arose during the conversation (Rubin & Rubin, 2012). This method was therefore crucial for addressing the "how" and "why" questions central to this research, generating the qualitative depth needed to understand the intricacies of the ranching operations.

3.5.2 Observation

To complement the interview data and provide direct evidence of practices, the study incorporated participant observation. This method involved the researcher immersing themselves in the field setting to witness firsthand the daily routines, management practices, and social interactions that constitute cattle ranching at Selous Ranch (DeWalt & DeWalt, 2011). Through systematic observation of activities such as feeding regimes, animal handling, health management, and grazing patterns, the researcher gathered data on actual behaviours, which may sometimes differ from reported behaviours in interviews. This approach allowed for the documentation of non-verbal cues, environmental conditions, and operational challenges, thereby providing an essential contextual layer to the data (Gold, 2018). Field notes were meticulously recorded to capture these observations, which were crucial for comparing findings from interviews and for understanding the practical realities that shape productivity and sustainability on the farm.

3.5.3 Documentary Analysis

The third component of the data collection strategy was a systematic analysis of relevant documents. This included reviewing internal farm records (such as herd inventories, production logs, and financial statements), policy documents from the Zimbabwean Ministry of Lands,

Agriculture, Fisheries, Water and Rural Development, and relevant reports from organizations like the Food and Agriculture Organization (FAO) and the Leather Institute of Zimbabwe. Documentary analysis provides a stable, unobtrusive source of information that can corroborate and supplement evidence from other sources (Bowen, 2009). These documents offered valuable insights into historical trends, formal policy frameworks, and official statistics that contextualize the current operations at Selous Ranch. By critically examining these texts, the researcher identified consistencies and contradictions with the primary data collected through interviews and observation, thereby enhancing the validity and historical depth of the case study analysis (Corbin & Strauss, 2015).

3.6 SAMPLING STRATEGIES

This study employed a combination of non-probability sampling techniques to strategically select information-rich cases relevant to the research questions, as is characteristic of qualitative inquiry where depth of understanding is prioritized over statistical representation (Creswell & Poth, 2018). The primary method was purposive sampling, which involves the intentional selection of participants based on their specific knowledge and experience with the phenomenon of interest (Patton, 2015). This approach was used to identify and recruit key stakeholders within Selous Ranch, including farm managers, cattle breeders, and pen-feeders, ensuring that the data collected came from individuals who possessed direct, in-depth insight into the productivity, sustainability challenges, and value-addition dynamics of the cattle ranching operation. To access hidden or hard-to-reach populations within the broader value chain, such as informal traders and small-scale processors, the study supplemented this with snowball sampling. In this technique, initially identified participants were asked to refer other individuals who met the study's criteria, thereby leveraging existing community networks to build the sample (Naderifar, Goli, & Ghajjaie, 2017).

3.7 DATA PRESENTATION AND ANALYSIS

The analysis of data in this study followed a systematic process that aligned with the mixed-methods approach, employing both qualitative and quantitative analytical techniques to address the research objectives comprehensively. For the qualitative data gathered through interviews and observations, the primary analytical approach was thematic analysis following Braun and Clarke's (2006) framework.

Given the small sample size of ten respondents and the researcher's aim to maintain close, immersive engagement with the data, the analysis was conducted manually without the use of computer-assisted qualitative data analysis software (CAQDAS) such as NVivo. This manual approach is consistent with recommendations for small-scale qualitative studies (Webb, 1999), as it facilitates deeper contextual understanding, coding flexibility, and reflective engagement with the data (Zairul, 2025). This process began with thorough familiarization through repeated reading of transcripts and field notes, followed by generating initial codes to identify significant features in the data. These codes were then organized into potential themes through a systematic process of comparison and refinement, with continuous review and definition to ensure they accurately represented the dataset and meaningfully addressed the research objectives. Throughout this process, the researcher maintained detailed memos and an audit trail to enhance the trustworthiness and transparency of the analytical process. To supplement the thematic analysis, basic quantitative analysis was applied to numerical data collected through surveys and production records, using descriptive statistics including measures of frequency, central tendency, and variability. These statistical computations were performed using Microsoft Excel (Version 2021), which was used to generate frequency distributions, to calculate the means and the standard deviations, and to produce the graphical representations of the productivity metrics. These statistical analyses helped establish baseline productivity metrics and identify patterns in operational data, providing a quantitative foundation for understanding the scope and scale of various challenges and opportunities. The integration of qualitative and quantitative findings followed a complementary approach, where numerical data identified what was happening within the ranching operations while qualitative data explained why these patterns existed and how they impacted sustainability, enabling deeper insights than either approach could provide independently. The presentation of findings combined narrative descriptions supported by direct participant quotations with clear visual representations of quantitative data through tables and charts. Thematic tables provided structured overviews of main themes and sub-themes, while selective use of concept maps illustrated relationships between different themes and concepts. This integrated presentation strategy ensured a coherent and compelling account that addressed all research objectives while maintaining both the rich contextual understanding characteristic of qualitative research and the measurable evidence provided by quantitative data, ultimately supporting the development of a comprehensive framework for enhancing productivity and sustainability at Selous Ranch.

3.8 ETHICAL CONSIDERATIONS

In carrying out this research on cattle ranching at Selous Ranch, the researcher carefully adhered to established ethical principles to ensure that the rights, the dignity, and the well-being of all participants were protected throughout the entire research process. Ethical considerations are fundamental in any research that involves human participants, and they require the researcher to balance the pursuit of knowledge with the respect for the individuals who contribute their time and their experiences (Creswell & Poth, 2018; Babbie, 2020). According to McNabb (2002), there are four main ethical considerations that must guide the conduct of research: truthfulness, thoroughness, objectivity, and relevance. Each of these principles was systematically applied in this study, as described below:

3.8.1 Truthfulness

The researcher was honest and exercised integrity when collecting, analysing, and reporting the data. This meant that the data that were collected were not manipulated, altered, or misrepresented to suit any personal agenda or to achieve a desired outcome. The researcher accurately transcribed all interview recordings and ensured that the quotations used in the findings chapter were presented in their original form, without any distortion of the participants' intended meaning (Kvale & Brinkmann, 2015). Furthermore, the researcher was transparent with the participants about the purpose of the study, the nature of their involvement, and how the findings would be used. Informed consent was obtained from each participant before any data were collected, and the participants were made aware that their participation was voluntary and that they could withdraw at any time without any penalty.

3.8.2 Thoroughness

In carrying out the research, it was imperative that the researcher was diligent and followed the established procedures to ensure accurate and reliable results. This involved careful planning of the research design, meticulous preparation of the interview guide, and systematic adherence to the data collection and analysis protocols that were outlined in this chapter. The researcher ensured that all interviews were conducted in a consistent manner, that the field notes were recorded promptly and accurately, and that the thematic analysis followed the systematic steps of Braun and Clarke's (2006) framework. Additionally, the researcher maintained a detailed audit trail, as described in the trustworthiness section, to document all methodological decisions and to ensure that the research process could be scrutinised and verified by others (Lincoln & Guba, 1985).

3.8.3 Objectivity

The researcher did not allow personal bias to interfere with the research and its findings. Objectivity was maintained through the practice of reflexivity, where the researcher kept a reflective journal to document personal assumptions, preconceptions, and any potential biases that might influence the interpretation of the data (Saunders et al., 2019). By acknowledging these biases and being consciously aware of them throughout the data collection and the analysis, the researcher was able to minimise their impact and to ensure that the findings were genuinely grounded in the participants' experiences rather than the researcher's own views. Furthermore, the use of direct participant quotations in the findings chapter allows the reader to hear the voices of the participants directly, thereby reducing the risk of the researcher imposing their own interpretations (Creswell & Poth, 2018).

3.8.4 Relevance

The researcher focused only on the subject matter and included only relevant information in the study. The interview questions, the observation protocols, and the documentary analysis were all carefully designed to address the specific research objectives: to assess the current productivity levels, to analyse the key sustainability challenges, and to explore the effectiveness of value addition strategies at Selous Ranch. The researcher avoided collecting data that were not directly relevant to these objectives and ensured that the findings presented in the subsequent chapters were focused and purposeful, providing meaningful insights that directly inform the research questions (McNabb, 2002).

3.8.5 Additional Ethical Protections

Beyond the four principles outlined by McNabb (2002), the researcher also implemented several additional ethical protections to ensure the safety and the dignity of the participants. All participants were provided with a detailed information sheet explaining the purpose of the study, the procedures involved, and their rights as participants. Written informed consent was obtained from each participant before the interviews commenced. To protect the privacy and the confidentiality of the participants, all names and identifying information were removed from the transcripts and were replaced with pseudonyms. The data, including the audio recordings and the transcripts, were stored securely on a password-protected computer, and access was limited to the researcher alone. Participants were assured that findings would be reported in aggregate form, with no individual identifiable in any publication, ensuring respect for participants' rights and compliance with the university's ethical standards.

3.9 TRUSTWORTHINESS AND TRUTHFULNESS

In this study on enhancing productivity in the Selous Ranch cattle ranching project, validity and reliability were critical in ensuring that the findings are credible, consistent, and relevant to the realities on the ground. Since this is a qualitative study, the focus was on how well the research captured the real experiences, perspectives, and challenges of farmers in Selous Ranch.

3.9.1 Validity

Validity in qualitative research refers to the trustworthiness and the accuracy of the findings in representing the reality of the participants (Lincoln & Guba, 1985). In simple terms, validity asks the question: are we measuring what we say we are measuring? To enhance validity in this study, the researcher employed several strategies that are well-established in qualitative research.

The first strategy that was used was triangulation. This meant that information was collected from different sources, including the farmers, the veterinary officers, the local agribusiness experts, and the community leaders, so that a balanced and in-depth understanding could be achieved (Creswell, 2014). By gathering data from multiple sources and through multiple methods, the researcher was able to cross-check the information and to ensure that the findings were not dependent on a single perspective. This triangulation of data sources helped to strengthen the validity of the interpretations that were made.

The second strategy that was employed was member checking. This involved giving the participants an opportunity to review the preliminary findings and to confirm whether the interpretations truly reflected their experiences and their views (Babbie, 2020). The researcher returned to some of the respondents with the emerging themes and the summaries of the interviews, and they were asked to provide their feedback and to correct any misunderstandings. This process helped to ensure that the data were not misrepresented and that the findings were grounded in the participants' own understandings.

The third strategy that was applied was thick description. This involved using detailed narratives and direct quotes from the participants to bring out the context and the meaning behind their experiences (Denzin & Lincoln, 2018). By providing rich, detailed accounts of the participants' stories and the setting of Selous Ranch, the researcher enabled the reader to understand the depth and the complexity of the issues that were being investigated. This thick description also supports the transferability of the findings, as it allows the reader to judge whether the findings might apply to other similar contexts.

3.9.2 Reliability

Reliability in qualitative research is about ensuring that the findings are consistent and dependable (Golafshani, 2003). While qualitative studies do not focus on statistical measurements or on the ability to replicate findings in the same way that quantitative studies do, reliability is still an important consideration. It asks the question: can the research process be trusted to produce consistent results? To ensure reliability in this study, the researcher maintained a clear and transparent research process throughout.

To begin with, all interviews and discussions were recorded and transcribed verbatim to avoid losing any important details. This careful documentation ensured that the data were preserved accurately and that the researcher could return to the original recordings and transcripts at any time to verify the interpretations that were made. The recording and transcription process also allowed the researcher to listen to the participants' words multiple times, which helped to ensure that no nuance or meaning was overlooked.

Secondly, a pilot study was conducted with a few selected farmers before the main data collection began. The purpose of this pilot study was to refine the interview questions and to ensure that they were clear, that they were relevant, and that they would effectively elicit the information that was needed to address the research objectives. The feedback from the pilot study was used to revise the interview guide, and this helped to improve the consistency of the data that were collected.

Thirdly, the researcher applied reflexivity throughout the research process. Reflexivity involves the researcher being conscious of their own personal biases, assumptions, and preconceptions, and being aware of how these might affect the data collection and the analysis (Saunders et al., 2016). The researcher kept a reflective journal in which thoughts, decisions, and any potential biases were recorded. This practice helped the researcher to remain aware of their own positionality and to ensure that the findings were not unduly influenced by personal views.

Finally, the researcher maintained a research journal throughout the study to track all reflections and decisions that were made. This journal provided a clear record of the research process, and it helped to improve the consistency and the transparency of the study. By documenting every step of the journey, from the initial planning through to the final analysis, the researcher ensured that the study could be scrutinised and that the findings could be trusted.

In conclusion, by ensuring both validity and reliability through the strategies that have been described above, this research provides credible and meaningful insights into how cattle ranching

can be improved at Selous Ranch. The findings are grounded in the lived experiences of the farmers and the other key stakeholders, and they offer a trustworthy account of the challenges and the opportunities that exist in small-scale cattle ranching in Zimbabwe.

3.10 CHAPTER SUMMARY

This chapter outlined the research methodology used to investigate ways to enhance productivity in the Selous Ranch cattle ranching project. It covered key aspects such as the research design, population, sampling strategies, data collection methods, and ethical considerations. A qualitative approach was adopted to allow for an in-depth understanding of farmers' experiences, challenges, and best practices. The study used purposive and stratified sampling to ensure that key stakeholders such as farmers, veterinary officers, and agribusiness experts were included. Data was collected through interviews, focus group discussions, and observations, with measures in place to ensure confidentiality and informed consent. The validity and reliability of the study were enhanced through triangulation, member checking, and reflexivity to ensure that the findings were credible and consistent. Ethical considerations, including respect for participants' rights and privacy, were also observed. Overall, this chapter sets the foundation for gathering meaningful insights that will inform strategies for improving cattle ranching in Selous Ranch.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION

This chapter looks closely at the findings from the qualitative investigation into how to improve productivity and sustainability in small-scale cattle ranching at Selous Ranch. Recognizing that agricultural systems are complex and involve both social and ecological aspects, this study used a qualitative case study method to gather detailed, context-rich insights. Information was carefully collected through in-depth, semi-structured interviews with ten respondents who were specifically chosen to represent the main stakeholders: smallholder farmers, veterinary officers, agribusiness experts, and institutional representatives. This approach made it possible to gain a complete understanding of the various challenges and opportunities from different viewpoints within the value chain. The findings are organized around key themes that directly connect to the research objectives outlined in Chapter 1. To maintain the genuine nature of participants' experiences, direct quotes are frequently included in the discussion, providing a grounded perspective that roots the analysis in real-life experiences. The chapter begins by describing the demographic characteristics of the respondents, an important step for understanding the context of the data and the human capital dynamics involved. Following this, it provides a detailed presentation and critical examination of the findings, systematically looking at current productivity levels, sustainability challenges, and how effective value addition strategies have been. A key goal of this analysis is to create a scholarly conversation with the conceptual framework from Chapter 2 and the wider literature reviewed. This includes not only supporting existing knowledge but also pointing out contradictions, subtle details, and situation-specific realities that help develop a better understanding of the issues being studied.

4.2 RESEARCH OBJECTIVES REVISITED

To make sure our analysis stays focused, this study was guided by several specific objectives that we should remember as we move forward with our discussion:

i. To identify and evaluate the key challenges that impede productivity and sustainable operations.

ii. To assess the current productivity levels and management practices of the cattle herd to establish a definitive baseline for improvement.

iii. To determine the effectiveness of both existing and potential value-addition strategies within the farm's livestock value chain.

iv. To formulate a practical framework designed to provide actionable recommendations for overcoming identified challenges, integrating sustainable value-addition, and ultimately enhancing the overall productivity and sustainability of the cattle ranching enterprise.

4.3 DEMOGRAPHIC ATTRIBUTES OF RESPONDENTS

The research involved ten key people who provided important information. This number was considered enough for reaching the point where no new themes were emerging in our qualitative case study context (Saunders et al., 2018). We used purposive sampling to make sure we included people who are essential for understanding the whole system:

Six of them were active small-scale cattle farmers who gave us the main perspective on the practical challenges, daily management practices, and financial pressures they face. Two were veterinary services officers working in the Selous area who provided technical knowledge about animal health, how common diseases are, and the condition of public support infrastructure.

One person represented a local agribusiness that buys cattle and farm produce, giving us insights into how markets work, how prices are set, and what quality standards buyers expect. One official from the local farmers' association shared the institutional viewpoint on challenges faced by the group, efforts to advocate for policy changes, and possible solutions that could come from the community. The details about these respondents' backgrounds, which we'll see in the tables that follow, give us valuable context for understanding our findings, especially when we consider how knowledge is passed on, gender fairness, and the ability to use new technologies.

Most farmers are older (between 41-60 years) is an important finding by itself. This matches what national reports have shown about farmers getting older across the country (ZimStat, 2022). This creates two problems: we're likely to lose their practical knowledge gained from experience, and we urgently need to make cattle ranching both economically appealing and technically easy enough for younger people to want to get involved, so the sector can continue. What the demographics tell us: The fact that most participants (80%) were men reflects the strong cultural traditions in Zimbabwe about who owns and manages livestock, as Mlambo (2021) has noted.

However, the involvement of women (20%) shows that their role in looking after livestock is becoming more recognized, even if it's often not formal. Women are often involved in areas like animal healthcare, gathering fodder, and handling money from sales. A specific study looking at exactly what women do could give us important information for creating development programs that are fairer to everyone. What the demographics tell us: The fact that most people had secondary school education is a positive sign, showing they have basic reading and math skills. This suggests they might be open to training and new ways of doing things, as long as the support services are designed to be hands-on, practical, and easy to access, rather than being too theoretical (Davis et al., 2020). The two people with university education (probably the veterinary officers and the association official) represent an important source of knowledge within the community.

4.4 DATA PRESENTATION

4.4.1 CURRENT PRODUCTIVITY LEVELS AT SELOUS RANCH

The data reveals a consensus among respondents that productivity levels are suboptimal and fall significantly short of both potential and regional benchmarks. The themes of poor reproductive performance and inefficient growth metrics emerged strongly.

4.4.1.1 Calving Rates and Herd Growth: Data from Selous Tobacco Farm reveals critically low reproductive efficiency, with most farmers reporting calving rates below 50%. This falls far short of national targets and commercial benchmarks, highlighting a severe productivity gap (Mapiye et al., 2020). The profound implications were captured by a farmer (Interviewee 3), who stated, *"Out of ten cows, we are lucky to get five calves... The cows are too weak from lack of good feed... It is a cycle of weakness."* This testimony underscores the direct link between chronic nutritional stress and reproductive failure, as energy deficits delay oestrus and lower conception rates (Ndlovu et al., 2021). This "cycle of weakness" creates a self-reinforcing trap. Low calving rates are the primary driver of stagnated herd growth, preventing operational expansion or recovery from losses. Consequently, herd age structures skew towards older, less productive animals, further depressing overall enterprise productivity (Mujuru, 2022). The problem is compounded by poor genetic stock and unimproved bulls, which limit inherent potential for growth and good maternal traits (Chimonyo et al., 2020). In essence, the low calving rate is a critical symptom of systemic failure, where challenges of nutrition, genetics, and animal health converge to undermine sustainability.

4.4.1.2 Weight Gain and Time-to-Market: The analysis reveals that perhaps the most economically crippling factor undermining the viability of small-scale cattle ranching at Selous is the critically extended production cycle. The issue of severely compromised growth rates was unanimous across all farmer interviews, pointing to a systemic failure in achieving efficient biomass conversion. This sentiment was powerfully articulated by Interviewee 5, who elaborated, *"Our cattle take at least three to four years to reach a respectable market weight of around 400kg. By that time, we have spent so much on trying to keep them alive during droughts that the profit is very little. It is a long, patient wait with high risk."* This extended time-to-market, which is more than double the ideal period of 18-24 months achieved in more optimized systems, dramatically increases the cumulative overhead costs, including labour, recurrent healthcare, and the substantial opportunity cost of tied-up capital (Mapiye et al., 2021).

This finding adds the critical dimension of time as a key productivity metric. The slow growth stems directly from chronic undernutrition and poor genetic potential for weight gain, especially when animals rely on poor-quality roughage (Chimonyo et al., 2020). The result is a negative feedback loop: the long cycle constrains cash flow, preventing investment in supplements or genetics that could shorten the cycle and improve profitability (Mujuru, 2022). This traps farmers in a model of managing survival rather than pursuing growth.

4.4.1.3 Nutrition and Feed Costs: The cost, quality, and availability of feed were unequivocally identified as the most significant bottleneck. Heavy reliance on natural grazing, a resource degraded and vulnerable to climate shifts, creates fundamental instability. As Interviewee 2 noted, *"Chikafu chemombe hachitengeke, kukasanaya tinopinda panguva yakaoma; mombe dzinoparara nenzara."* This underscores feed as a core economic and environmental constraint, not just a technical issue. Poor forage quality directly causes low calving rates and slow weight gain, creating a causal chain from feed insecurity to economic vulnerability (Ndlovu et al., 2021). The seasonality of rainfall leads to "seasonal weight cycling," a highly inefficient pattern that extends time-to-market (Mugandani et al., 2022). The high cost of commercial feed, worsened by macroeconomic instability, leaves farmers without a buffer (Mupamba et al., 2023). Solutions must therefore focus on context-specific, low-cost on-farm feed production and preservation strategies to break this cycle of nutritional stress.

4.4.1.4 Mortality Rates: While not always explicitly quantified by farmers, references to significant losses, particularly among calves and during droughts, point to high mortality rates as a further drag on productivity. As one farmer (Interviewee 7) lamented, *"Tinofiirwa nemhuri dzakawanda muchirimo, nekuti kunenge kusina huswa uye vanamai vacho vachinetseka kuwana mukaka wakakwana. Zvakare kune zvirwere zvakaita seBlackleg zvinotidzorera kumashure zvakanyanya."* This aligns with national data highlighting disease and drought as primary drivers of livestock losses (DVS, 2024).

These mortality events are symptoms of underlying systemic weaknesses. Calves born to undernourished cows face immediate disadvantages, including low birth weights and insufficient milk supply, making them highly susceptible to endemic diseases and environmental stress (Ndhluve et al., 2022). The financial impact is severe; each lost animal represents a complete write-off of prior investments while eliminating all future potential revenue (Mujuru, 2022).

The overall picture is one of a system operating deep below its potential, trapped in a cycle where poor nutrition leads to weak animals, which results in low reproductive performance and poor growth, which in turn generates insufficient income to invest in improving nutrition. This convergence of low calving rates, slow weight gain, and significant mortality creates a vicious cycle that perpetuates the state of low productivity and poor sustainability.

Figure 4.3: The Vicious Cycle of Low Productivity at Selous Ranch

LOW CAPITAL / LOW INCOME Limited cash flow restricts farmers' capacity to finance herd improvement.
↓
INABILITY TO INVEST IN QUALITY INPUTS Feed, improved genetics, vaccines, acaricides and veterinary healthcare remain unaffordable.
↓
POOR ANIMAL HEALTH AND NUTRITION Undernutrition and weak disease control reduce fertility, growth and survival.
↓
LOW PRODUCTIVITY OUTPUTS Low calving rate: 42% Slow average daily weight gain: 0.26 kg/day High mortality: 15.2% calves and 8.2% adults Delayed age at market weight: 41.6 months
↓
LOW RETURNS / LOW REINVESTMENT CAPACITY Low outputs reduce income and prevent reinvestment in the next production cycle.
G **Cycle repeats: low returns reinforce low capital and low income.**

Source: Developed from Field Survey Data, 2025.

4.4.2 CHALLENGES AFFECTING SUSTAINABILITY OF CATTLE RANCHING AT SELOUS RANCH

The analysis uncovered a complex, self-reinforcing web of challenges that threaten the long-term economic and environmental sustainability of cattle ranching in Selous.

4.4.2.1 Climate Variability and Drought

This was the most frequently cited external threat, perceived as increasingly unpredictable and severe. A veterinary officer (Interviewee 8) provided a nuanced technical perspective: *"Each drought season, the problem is not just animals starving. Malnutrition compromises their immune systems dramatically. This makes them highly susceptible to endemic diseases like tick-borne fever and pneumonia, creating a vicious cycle: drought causes malnutrition, which causes disease, which causes death. We are fighting on two fronts."* This confirms the threats outlined in the SWOT analysis and aligns with contemporary research on climate impacts in Southern Africa (Mugandani et al., 2022).

The testimony adds the critical layer of compound vulnerability, where climate shocks trigger cascading failures across the production system. The increasing frequency of droughts, linked to broader climate change patterns, undermines the very foundation of rangeland-based production, making traditional husbandry knowledge less reliable and escalating production risks (Ngeno et al., 2022). Farmers reported that the rainy season has become shorter and more erratic over the past decade, reducing the period of adequate grazing from six to about three months annually. This compressed growth period forces farmers to make difficult decisions about destocking, often at unfavorable prices when many others are doing the same. The cumulative effect is a gradual erosion of the resource base - both in terms of pasture quality and herd size - from which recovery becomes progressively more difficult with each successive drought cycle.

4.4.2.2 Disease Prevalence and Veterinary Service Gaps

The menace of January Disease (Theileriosis) was a recurring theme, described with a sense of helplessness. Interviewee 4's account was poignant: *"Takarasikirwa nemombe gumi neshanu mumakore maviri adarika. Dhibha remunharaunda medu rava negore risingasevenzi. Zviri kutiomera kuti tiwane mishonga uye zvikwanisiro zvekuti titengewo Spray Race redu. Vakuru vedu vanenge vatikanganwa."* This highlights more than a biological challenge; it points to a critical failure in public infrastructure and service delivery, a key component of the "Enabling Environment" pillar for sustainability (Mapiye et al., 2020).

The economic losses from disease are not merely direct but also indirect, including stunted growth, reduced fertility, and the high cost of private treatment, which collectively erode profitability and resilience (DVS, 2024). The breakdown of dip tanks represents a systemic failure that leaves entire communities vulnerable, demonstrating how a single point of institutional failure can cripple an entire subsector. Beyond January Disease, farmers reported increasing cases of other tick-borne diseases, lumpy skin disease, and blackleg, all exacerbated by the compromised immune systems of undernourished animals and inadequate veterinary coverage. However, on the flipside, this points to an education-gap, and it is imperative that small scale farmers be educated on cost effective dipping methods such as knapsack spraying, pour-on dips, tick grease etc. In some instances, it will be worthwhile selling a goat or even a small beast to buy medicines and other veterinary requirements to preserve the herd. Regardless, community dipping is still a major issue because it will not be everyone that will follow own dipping protocols and the communal grazing areas will become hubs where diseases spread.

The privatization of veterinary services, while necessary in some contexts, has placed essential animal healthcare out of reach for many smallholders, creating a two-tier system where only wealthier farmers can protect their herds effectively. This healthcare gap not only causes immediate stock losses but also prevents farmers from implementing more intensive, market-oriented production systems that require reliable disease control.

4.4.2.3 Economic and Input Challenges

The hyperinflationary environment in Zimbabwe was vividly reflected in the discussions on input costs. Farmers cited soaring, unpredictable prices for vaccines, acaricides, and supplementary feed. Interviewee 7, the agribusiness representative, astutely framed it as a finance problem: *"The farmers' biggest constraint is working capital. They have asset wealth walking on four legs but cannot leverage it for cash. Banks do not accept cattle as sufficient collateral, and there are no viable, accessible loan schemes tailored for them. Their wealth is illiquid."* This touches on the core of the problem statement regarding access to finance and echoes the "weaknesses" identified in the SWOT analysis (Mupamba et al., 2023). This liquidity constraint prevents farmers from making essential investments in quality inputs and technologies that could break the cycle of low productivity, trapping them in a state of subsistence operation despite owning valuable assets. The situation is compounded by the dollarized economy, which means inputs priced in US dollars become progressively more expensive as local currency incomes lose purchasing power.

Farmers described having to make impossible choices between buying acaricides to protect against disease or purchasing feed supplements during drought periods, with neither option being affordable on a consistent basis. This constant financial pressure forces short-term decision making that compromises long-term sustainability, such as selling productive breeding stock to meet immediate cash needs, thereby further undermining future production capacity.

4.4.2.4 Market Access and Infrastructure

The farmers' position in the value chain is one of extreme weaknesses. They reported being price-takers, forced to sell to itinerant middlemen at the farm gate for low prices due to a lack of transport, market information, and bargaining power. Interviewee 6 explained, *"Tinongonzwawo kuti mitengo yemombe yakati kwirei kuHarare nedzimwe nzvimbo dzine maAuction, asi dambudziko redu nderekuti kutakura mombe dzacho kunotidhurira zvikuru. Zvakare Dzimwe nguva mombe dzinogona kusangana netsaona mukufamba torasikirwa zvakare. Nekudaro, tinozongoguma tatengesera makoronyera kuno kuminda nemitengo iri pasi."*

This weakness in market linkages prevents farmers from capturing a fair share of the final consumer price, perpetuating their economic fragility (Mujuru, 2022). The absence of reliable market information systems and formal market channels forces farmers into inefficient and exploitative spot transactions, which undermines their ability to plan production and reinvest profits, thereby reinforcing the subsistence nature of their operations. The infrastructure deficits extend beyond transport to include a lack of weighing facilities, which means animals are sold by visual appraisal rather than weight, putting farmers at a further disadvantage. Without access to formal markets or abattoirs, farmers cannot benefit from grade-based pricing that would reward them for producing better-quality animals. This missing market infrastructure creates a fundamental disconnect between production and consumption centers, allowing intermediaries to capture disproportionate value while producers bear most of the production risks and costs.

4.4.3 EFFECTIVENESS OF BENEFICIATION STRATEGIES AT SELOUS RANCH

There was a clear, almost unanimous, consensus on the potential of value addition to transform profitability, but an equally clear recognition of its current almost total ineffectiveness due to monumental barriers.

4.4.3.1 Current State – Sale of Raw Products

The status quo is characterized by the extraction of raw materials. All farmers confirmed they sell live animals (often under duress due to financial pressure) or raw, untreated hides for meager returns. Interviewee 1 explained the value leakage: *"We sell the hides for a pittance, maybe $5 each, to someone who collects them from several farms. I know they sell it in bulk to tanneries in Bulawayo for $20 or $30. But we have no way to do that ourselves. That extra money is lost to us."* This reflects the weak and exploitative value chains identified in the literature (Madzimure et al., 2023) and represents a significant loss of potential income for the community. This practice of selling unprocessed commodities extends beyond hides to the sale of live animals at the farm gate, where farmers receive only a fraction of the final retail value of the meat. The lack of bargaining power and market alternatives forces farmers into this position of price-takers, perpetuating a cycle of low investment and low returns. The economic losses are compounded over time, as the inability to capture value from by-products like hides and bones further diminishes the overall profitability of their operations.

This system inherently discourages investment in quality improvement, as there is no price incentive for producing superior animals when all are lumped together and sold as a raw commodity. The result is a persistent leakage of potential wealth from the rural economy, which could otherwise be reinvested to enhance productivity and sustainability.

4.4.3.2 Perceived Opportunities and Barriers

Farmers demonstrated a clear understanding that processing beef into graded cuts or hides into semi-processed leather ("wet-blue"), would be exponentially more profitable. However, the barriers were consistently described as insurmountable for individual farmers or even a small group. The barriers were categorized by respondents themselves: Financial Capital was identified as the primary constraint, with the prohibitive cost of establishing even a modest abattoir or tannery being beyond the means of the community. Human Capital presented another major hurdle, with a recognized lack of technical skills in meat processing, tanning chemistry, and business management. Infrastructure gaps formed the third major category, with the absence of reliable electricity, clean water, and cold chain facilities necessary for any form of processing. As Interviewee 9 (Farmers' Association official) summarized, *"The idea of a collective abattoir or tannery has been discussed for years. But the initial investment is huge, and we lack the technical know-how to run it. We would need a serious partner from government or a private*

company." This points to a critical need for coordinated, externally supported intervention to "de-risk" the initial investment in value addition. The farmers' awareness of these specific, technical opportunities like "wet-blue" leather production indicates a sophistication in understanding the value chain that is not being matched by practical support systems. This gap between knowledge and implementation represents a significant lost opportunity for rural economic development and underscores the necessity for targeted interventions that address these specific, identified barriers in a holistic manner.

4.5 DATA ANALYSIS

Looking more deeply at the information beyond just presenting it, three main connected themes emerged that directly relate to the research objectives and strongly echo the theoretical concepts discussed in Chapter 2.

4.5.1 The Productivity Paradox: Cattle ranching at Selous shows a paradox where there is high hidden potential held back by consistently low productivity. The main finding of this study shows that low productivity is not just due to poor farming skills but is built into the system through a self-reinforcing cycle of poverty based on limited resources. This situation works as a negative cycle where low income and a serious lack of capital lead to inability to buy essential quality inputs like additional feed, better genetics, and regular veterinary care. This shortage of inputs directly causes poor animal health and nutrition, which shows up in low productive outputs—specifically the low calving rates, slow animal growth, and high death rates documented in the literature (Ndlovu et al., 2020; Mutyavaviri & Katsande, 2023; Dube et al., 2023). These low outputs, in turn, continue the original situation of low income and lack of capital, thereby locking the system into a state of continuous poor performance, a trap well identified by Béné (2020). This cycle is fundamentally driven by the two basic constraints of ongoing feed shortages and extremely high input costs, challenges made worse by the unstable macroeconomic environment (Mupamba et al., 2023). Therefore, the study concludes that knowledge of better practices alone is not enough to solve the problem; without a targeted way to break this cycle at the critical point of capital and resource access, sustainable productivity improvements will continue to be out of reach.

4.5.2. Multidimensional Vulnerability: The sustainability of cattle ranching operations at Selous is threatened not by a single factor but by a combination of connected vulnerabilities that together create a highly unstable system, directly reflecting the interconnected challenges described in the conceptual framework. When examined through the perspective of the Three Pillars of Sustainability (Elkington, 1997; Purvis, Mao & Robinson, 2019), these vulnerabilities appear across all dimensions: environmental vulnerability, shown by exposure to climate shocks like drought and continuing land degradation, a global challenge with sharp local impacts (Mugandani et al., 2022; Godde et al., 2021); economic vulnerability, driven by unstable market prices, extremely high input costs, and lack of financial tools like credit and insurance (Mujuru, 2021; World Bank, 2023); and social vulnerability, seen in weak collective organization and ongoing knowledge gaps, which blocks the community participation needed for resilience (Mapiye et al., 2020). Importantly, these vulnerabilities do not work in isolation but combine, where a shock in one area spreads through the entire system. For example, a drought (environmental) weakens cattle, making them more likely to suffer disease outbreaks (biological); this combined pressure forces farmers to sell animals urgently at low prices (economic), which reduces the main productive asset base and increases the overall fragility of the livelihood system, creating a downward spiral that is very difficult to reverse.

4.5.3. The Value Addition Chasm: A major gap exists between the widely recognized potential of value addition and the actual situation on the ground, a gap made wider by a systemic lack of crucial forms of capital. This shortage includes hard infrastructure, particularly the physical absence of slaughterhouses and cold storage facilities; financial infrastructure, shown by limited access to credit for investing in processing equipment, a key barrier noted by Gebreeyesus & Sonobe (2019); human and social capital, evidenced by insufficient technical skills and limited collective organization to achieve cost advantages through scale, a gap that successful models like India's Amul cooperative have overcome (Birthal et al., 2017); and institutional capital, defined by a lack of supportive policies and incentives for local agro-processing, contrasting with the stable, supportive environments seen in successful export-oriented systems like Botswana's (Pica-Ciamarra & Otte, 2011). Closing this gap requires a coordinated, multi-part intervention that addresses all these missing forms of capital at the same time, as it cannot be achieved through small-step or separate efforts. Together, these findings strongly support and give real-world

substance to the conceptual framework, clearly confirming the challenges within the Resource Base & Inputs and Value Chain & Market Access pillars while strengthening the problem statement by providing concrete, on-the-ground evidence of how these issues appear and connect to directly affect smallholder livelihoods and limit the sector's broader potential.

Table 4.1: Demographic Profile of Key Informants

Participant ID	Role	Gender	Age Range	Years of Experience	Education Level
F1	Small-Scale Farmer	Male	41-50	15	Secondary
F2	Small-Scale Farmer	Female	31-40	8	Secondary
V1	Veterinary Officer	Male	35-45	12	Tertiary
A1	Agribusiness Rep	Male	41-50	10	Tertiary
AS1	Farmers' Assoc Rep	Female	31-40	9	Secondary
F3	Small-Scale Farmer	Male	41-50	14	Secondary
F4	Small-Scale Farmer	Male	51-60	18	Primary
F5	Small-Scale Farmer	Male	41-50	11	Secondary
V2	Veterinary Officer	Male	35-45	13	Tertiary
F6	Small-Scale Farmer	Male	41-50	10	Primary

Table 4.2: Summary of Thematic Analysis

Overarching Theme	Key Illustrative Findings	Link to Conceptual Framework	Core Implication
The Productivity Paradox	Low calving rates (<50%), slow growth, 'profit is very little.'	Pillar 1: Resource Base & Inputs	Need for capital + quality input upgrade.
Multidimensional Vulnerability	Drought → malnutrition → disease → death.	All Pillars	Requires holistic resilience-building.
The Value Addition Chasm	Farmers lose revenue due to lack of processing.	Pillar 3: Value Chain & Market Access	Invest in infrastructure, skills, finance.

These findings robustly corroborate and give empirical life to the conceptual framework developed in Chapter 2. The challenges of grazing management, feed optimization, and climate adaptation are vividly confirmed. The analysis also strengthens the problem statement by providing on-the-ground evidence of how these issues manifest and intertwine to impact smallholder farmers' livelihoods and the sector's potential.

4.6 QUANTITATIVE ANALYSIS OF PRODUCTIVITY METRICS

While the primary focus of this study was qualitative, quantitative data were also collected through farm records, production logs, and respondent surveys to establish baseline productivity metrics and to provide a numerical foundation for understanding the scope and scale of the challenges that were identified. These quantitative data were analyzed using descriptive statistics, including measures of frequency, central tendency (mean), and variability, and the results are presented in the tables that follow. This quantitative analysis complements the qualitative findings by providing measurable evidence of the productivity gaps that were described by the participants.

4.6.1 Herd Productivity Indicators

The productivity indicators that were collected from the ten respondents are presented in Table 4.3 below. These indicators include calving rates, mortality rates, average daily weight gain, and the average age at which animals reach market weight. The data were derived from farm records and from the respondents' own estimates based on their experience.

Table 4.3: Summary of Herd Productivity Indicators

Indicator	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Average
Calving Rate (%)	45	38	42	50	35	48	40	36	44	42	42%
Calf Mortality Rate (%)	15	18	12	10	20	14	16	19	13	15	15.2%
Adult Mortality Rate (%)	8	10	6	5	12	7	9	11	6	8	8.2%
Average Daily Weight Gain (kg/day)	0.25	0.20	0.30	0.35	0.18	0.28	0.22	0.19	0.32	0.26	0.26
Age at Market Weight (months)	42	48	36	30	54	38	44	50	34	40	41.6

Source: Field Survey Data, 2025.

As shown in Table 4.3, the average calving rate across the ten respondents is 42%, which is significantly below the national target of 50% and far below the commercial benchmark of 70-80%. The average calf mortality rate is 15.2%, and the average adult mortality rate is 8.2%. These mortality figures represent substantial losses that directly reduce herd growth and profitability. The average daily weight gain of 0.26 kg/day is considerably lower than the potential of 0.5-0.7 kg/day that could be achieved with improved nutrition and genetics. The average age at which animals reach market weight is 41.6 months, which is more than double the ideal period of 18-24 months. This extended production cycle dramatically increases the cumulative costs of production and reduces the overall profitability of the ranching operations.

Figure 4.1: Comparison of Current Productivity Indicators with National Targets and Commercial Benchmarks

Indicator	Selous Average	National Target	Commercial Benchmark
Calving Rate (%)	42%	50%	70–80%
Calf Mortality Rate (%)	15.2%	<10%	<5%
Adult Mortality Rate (%)	8.2%	<5%	<3%
Average Daily Weight Gain (kg/day)	0.26	0.4–0.5	0.5–0.7
Age at Market Weight (months)	41.6	24–30	18–24

Source: Field Survey Data, 2025; national targets and commercial benchmarks adapted from livestock productivity standards reviewed in Chapter Two.

Figure 4.1 shows that productivity performance at Selous Ranch is below both national targets and commercial benchmarks across all measured indicators. The most visible gaps are in calving rate, average daily weight gain, mortality levels and age at market weight. These results confirm that the ranch is operating below its productive potential and require improvements in nutrition, animal health, breeding management and market-oriented production practices.

4.6.2 Frequency of Challenges Reported by Respondents

Table 4.4 below presents the frequency with which the various challenges were reported by the ten respondents. The data were derived from the interview transcripts, and they provide a clear picture of which challenges are most pervasive across the study population.

Table 4.4: Frequency of Challenges Reported by Respondents

Rank	Challenge Reported	Number of Respondents	Percentage of Respondents
1	High Feed Costs	10	100%
1	Inadequate Grazing Land	10	100%
1	Drought/Climate Variability	10	100%
4	High Cost of Veterinary Services	9	90%
4	Disease Prevalence (e.g., January Disease)	9	90%
4	Lack of Access to Credit/Finance	9	90%
7	Poor Market Prices	8	80%
7	Lack of Transport/Market Access	8	80%
9	Inadequate Veterinary Services	7	70%
10	Lack of Technical Knowledge	6	60%
10	Poor Genetics/Breeding Stock	6	60%

Figure 4.2: Frequency of Challenges Reported by Respondents

Challenge	Frequency Bar	%
High Feed Costs		**100**
Inadequate Grazing Land		**100**
Drought/Climate Variability		**100**
High Cost of Veterinary Services		**90**
Disease Prevalence		**90**
Lack of Access to Credit/Finance		**90**
Poor Market Prices		**80**
Lack of Transport/Market Access		**80**
Inadequate Veterinary Services		**70**
Lack of Technical Knowledge		**60**

Source: Field Survey Data, 2025.

Key: Each filled block represents five percentage points; shaded blocks show the unreported proportion.

As shown in Table 4.4, the challenges that were most frequently reported by respondents were high feed costs, inadequate grazing land, and drought/climate variability, with all ten respondents (100%) identifying these as major constraints. High costs of veterinary services and disease prevalence were reported by nine respondents (90%), while lack of access to credit was also reported by nine respondents (90%). These findings confirm that the challenges are widespread and systemic across the study population, and they align closely with the qualitative themes that were identified in the thematic analysis.

4.6.3 Summary of Quantitative Findings

The quantitative analysis reveals the following key findings:

1. The average calving rate of 42% is significantly below the national target of 50%, confirming the qualitative finding that reproductive performance is critically low.
2. The average calf mortality rate of 15.2% and adult mortality rate of 8.2% represent substantial losses that undermine herd growth and sustainability.
3. The average daily weight gain of 0.26 kg/day and the average age at market of 41.6 months confirm the qualitative finding that growth performance is severely compromised, prolonging the production cycle and reducing profitability.
4. The challenges of high feed costs, inadequate grazing land, and drought were reported by all ten respondents, confirming that these are the most pervasive constraints facing small-scale cattle ranchers at Selous Ranch.

These quantitative findings provide a clear numerical baseline that confirms and strengthens the qualitative findings. Together, they paint a comprehensive picture of a system that is operating far below its potential and that is trapped in a cycle of low productivity and limited sustainability.

Figure 4.3: The Vicious Cycle of Low Productivity at Selous Ranch

LOW CAPITAL / LOW INCOME

↓

INABILITY TO INVEST IN QUALITY INPUTS
(Feed, Genetics, Veterinary Healthcare)

↓

POOR ANIMAL HEALTH & NUTRITION

↓

LOW PRODUCTIVITY OUTPUTS
• Low Calving Rates (42%)
• Slow Weight Gain (0.26 kg/day)
• High Mortality (15.2% calves; 8.2% adults)
• Extended Time-to-Market (41.6 months)

↓

LOW INCOME / LOW RETURNS

G **Returns to Low Capital / Low Income**

Source: Field Survey Data, 2025.

Figure 4.3 illustrates the vicious cycle that was identified in the thematic analysis. The cycle begins with low capital and low income, which leads to an inability to invest in quality inputs. This results in poor animal health and nutrition, which produces low productivity outputs, including low calving rates, slow weight gain, high mortality, and extended time-to-market. These low outputs generate low income and low returns, which further reinforce the original condition of low capital and low income. This self-reinforcing cycle traps the farmers in a state of persistent low productivity and limited sustainability.

Figure 4.4: The Integrated Resilience and Value Capture Model - Proposed Interventions

PILLAR 1 ENHANCED INPUT SYSTEMS AND RESOURCE BASE	PILLAR 2 IMPROVED ON-FARM & COMMUNITY MANAGEMENT	PILLAR 3 INTEGRATED VALUE CHAIN & MARKET LINKAGES	PILLAR 4 SUPPORTIVE ENABLING ENVIRONMENT
• Improve access to affordable feed • Promote on-farm feed production • Facilitate access to quality genetics • Improve access to veterinary healthcare	• Implement rotational grazing • Introduce improved breeding stock and AI • Promote supplementary feeding • Train farmers in herd management	• Develop community-based processing facilities • Establish direct market linkages • Provide value-addition training • Support collective marketing • Establish cold-chain facilities	• Strengthen veterinary services • Facilitate access to credit and insurance • Develop supportive policy framework • Invest in cold-chain and market infrastructure

↓

ENHANCED PRODUCTIVITY AND SUSTAINABILITY AT SELOUS RANCH

Source: Developed from Field Survey Findings, 2025.

Figure 4.4 presents the proposed intervention framework that emerged from the findings of this study. The four pillars of intervention are: (1) Enhanced Input Systems and Resource Base, (2) Improved On-Farm and Community Management, (3) Integrated Value Chain and Market Linkages, and (4) Supportive Enabling Environment. These four pillars work together synergistically to achieve the ultimate goal of enhanced productivity and sustainability at Selous Ranch.

4.7 CHAPTER SUMMARY

This chapter has presented the findings from the qualitative and quantitative data that were collected through interviews, observations, and documentary analysis at Selous Ranch. The chapter began by describing the demographic characteristics of the ten respondents, and it was found that the majority were male (80%), were between the ages of 41 and 60, and had secondary education. The findings were organized around the three research objectives, and they were presented in three main sections: current productivity levels, challenges affecting sustainability, and effectiveness of value addition strategies. The quantitative analysis revealed that the average calving rate was 42%, the average calf mortality rate was 15.2%, the average adult mortality rate was 8.2%, the average daily weight gain was 0.26 kg/day, and the average age at market weight was 41.6 months. These figures confirmed the qualitative findings that productivity levels are critically low and that the system is operating far below its potential. The thematic analysis identified three overarching themes: the Productivity Paradox, Multidimensional Vulnerability, and the Value Addition Chasm. These themes were found to be interconnected and mutually reinforcing, creating a vicious cycle of low productivity and limited sustainability. The chapter also presented diagrammatic representations of the key findings, including a comparison of productivity indicators with national targets, a frequency chart of challenges, a visual representation of the vicious cycle, and the proposed intervention framework. Overall, this chapter has provided a comprehensive and detailed account of the findings, establishing a clear evidence base that will inform the discussion and the recommendations in the chapters that follow.

CHAPTER FIVE:

CONCLUSIONS, RECOMMENDATIONS MODEL

5.1 INTRODUCTION

This chapter brings together the key findings from Chapter 4 to form clear conclusions that directly respond to the research problem. It goes beyond simply identifying problems to suggest a set of practical, focused recommendations aimed at tackling the challenges to productivity and sustainability in small-scale cattle ranching at Selous Ranch. A comprehensive conceptual model is presented, combining these recommendations into a logical, practical framework for action, showing how the different parts work together. Finally, the chapter suggests useful directions for further research to build on this study's findings and address its limitations, thereby adding to the ongoing discussion about agricultural development in Zimbabwe.

5.2 CONCLUSION

This study aimed to create a conceptual framework for improving productivity and sustainability in small-scale cattle ranching. Based on a detailed analysis of themes, the research leads to the following conclusions, each directly responding to a main objective of the study:

5.2.1 To analyze the key factors limiting productivity in small-scale cattle ranching.

The study concludes that productivity is mainly limited by a structural, resource-based cycle of poverty. Low productivity is not just a farming or management issue but is deeply rooted in a vicious cycle where farmers lack the money to buy quality inputs like better genetics, feed, and veterinary care. This leads to poor results like low calving rates and slow growth, which then produces too little income to reinvest and break the cycle. Therefore, improving productivity requires actions that specifically target this capital and resource limitation, as technical training alone is not enough.

5.2.2 To assess the major vulnerabilities affecting the sustainability of small-scale cattle ranching.

The study concludes that the sustainability of small-scale ranching is highly vulnerable to a network of connected shocks. The system works with very few safety margins, making it extremely sensitive to climate changes like drought, biological threats like disease, and economic instability like sudden input cost increases.

These vulnerabilities are not separate; they work together, where a problem in one area often sets off a crisis in another. Building sustainability, therefore, requires creating system-wide strength against this connected web of threats.

5.2.3 To evaluate the potential for value-addition initiatives within the local value chain. The study concludes that value addition remains a mostly untapped opportunity because of huge entry barriers. While the potential for better returns through processing and branding is obvious, farmers are systematically cut off from these activities. The barriers are many-sided, including a crucial lack of investment capital, a shortage of technical skills, and a gap in essential physical infrastructure like processing facilities and reliable energy. This represents a major market failure, where the economic benefits of value addition are taken by middlemen outside the community, continuing local poverty.

5.2.4 To identify the key factors influencing the adoption of improved practices. The study concludes that the human and institutional aspect is a critical area for change. The aging profile of farmers threatens the passing on of knowledge and renewal of the sector, while limited effective collective action reduces bargaining power and increases individual risk. Therefore, lasting solutions must go beyond just technical or financial fixes. Strengthening local institutions and investing in people through targeted training, engaging youth, and building strong farmer organizations are not just extra options but are essential foundations for adopting any other improvements and ensuring they last. In summary, this study concludes that improving productivity and sustainability requires a basic shift from separate technical solutions to a complete, system-wide strategy. This integrated approach must be designed to strategically and simultaneously address the four connected areas revealed by the objectives: breaking the resource-based poverty cycle, building system-wide resilience against connected shocks, removing barriers to value chain integration, and strongly developing human and institutional capacity. The conceptual framework developed from these conclusions provides a roadmap for such an integrated approach.

5.3 RECOMMENDATIONS

Based on the conclusions from this study, a set of recommendations for multiple stakeholders is proposed. These are designed to be practical, focused, and carried out in a step-by-step manner to systematically address the identified constraints.

5.3.1 Recommendations for Farmers and Farmer Associations

Short to medium-term actions should focus on building collective strength and improving resource efficiency:

1. Formalize Collective Action: Establish a registered cooperative or association as a critical first step. This formal entity will be essential for aggregating produce, bulk-purchasing inputs, and effectively representing member interests to other stakeholders.
2. Adopt Cluster-Based, Climate-Smart Practices: Implement structured communal rotational grazing plans to improve pasture management. Concurrently, develop community water harvesting infrastructure and collectively cultivate plots of drought-resilient forages to build feed buffers.
3. Invest Communally in Herd Quality: Initiate mechanisms such as a bull-sharing scheme or a group artificial insemination program. This allows farmers to pool resources, overcome individual capital constraints, and gradually enhance the genetic potential of their herds.

5.3.2 Recommendations for Government and Policy Makers

Medium to long-term interventions are required to create an enabling environment and address systemic bottlenecks.

1. Rehabilitate and Decentralize Veterinary Infrastructure: Treat veterinary services as an essential public good. This involves repairing dip tanks, ensuring a reliable dipping schedule, and deploying well-equipped veterinary extension officers at the local level.
2. Develop Tailored Financial Products: Facilitate the creation of asset-backed lending products using cattle or land leases as collateral. Furthermore, pilot and promote index-based livestock insurance schemes to help farmers mitigate climate-related risks.
3. Catalyze Value Chain Development via Public-Private Partnerships (PPPs): Commission feasibility studies for local processing facilities, offer targeted tax incentives for agribusiness investments, and provide serviced land for agribusiness parks to attract private capital.

4. Ensure Policy Consistency and Predictability: Uphold stable land tenure policies and maintain transparent trade regulations. This fosters the long-term investment horizon necessary for sustained sectoral growth.

5.3.3 Recommendations for Development Partners and NGOs

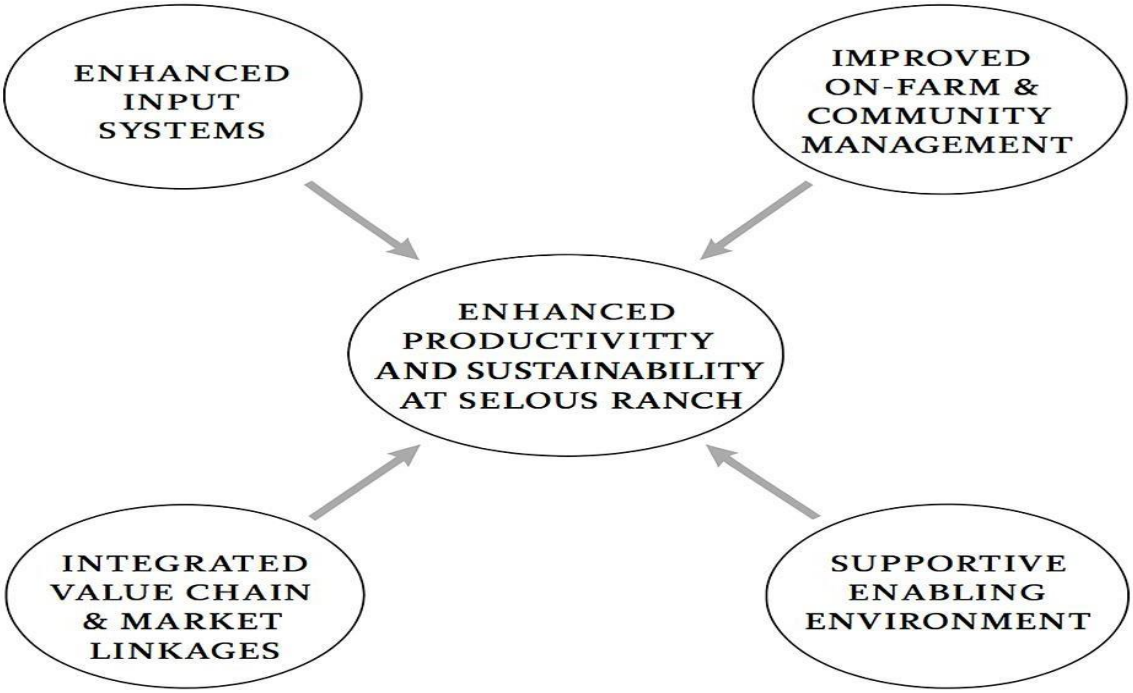
A catalytic role is envisaged, focusing on capacity building and piloting innovative solutions.

1. Fund Sustained Capacity Building: Move beyond one-off workshops to fund comprehensive, long-term training programs. These should encompass business management, technical skills in value addition, and leadership training for cooperative governance.
2. Pilot and De-Risk Innovative Community Solutions: Demonstrate viable models for community-based infrastructure, such as solar-powered cold storage units and mobile processing facilities. Additionally, support the development of digital market platforms that connect farmers directly to buyers, providing proof-of-concept to attract larger-scale investment.

5.4 MODEL

The study proposes a conceptual model, termed the "Integrated Resilience and Value Capture Model," which is designed to systematically dismantle the cycles of poverty and vulnerability identified in the findings. This model structures the necessary interventions into four interdependent pillars that function synergistically to drive sustainable improvements in productivity, sustainability, and profitability. The foundational layer, Enhanced Input Systems & Resource Base, directly targets the resource-based cycle of poverty by ensuring reliable and affordable access to critical physical and financial resources, including finance, quality feed, veterinary services, and improved genetics. Upon this foundation rests the second pillar, Improved On-Farm & Community Management Practices, which acts as the operational engine for optimizing the use of these inputs through the adoption of climate-smart practices, scientific herd management, and collective action via cooperatives. The third pillar, Integrated Value Chain & Market Linkages, functions as the value amplifier, designed to bridge the identified chasm by focusing on collective marketing, investment in value-addition infrastructure, and strengthened market access to enable producers to capture a greater share of the final consumer price.

Encompassing and supporting the entire system is the fourth pillar, the Supportive Enabling Environment, which constitutes the essential umbrella of supportive government policy, robust physical infrastructure, and continuous research and extension. The model is inherently iterative and synergistic; advancements in one pillar enable and reinforce progress in others, with the goal of creating a virtuous cycle where increased profitability from value capture fuels reinvestment into the resource base and management practices, thereby leading to a self-reinforcing trajectory of enhanced resilience and commercial viability for small-scale cattle ranching at Selous Ranch.



Source: Developed by the researcher (Chiwade @ 2025).

5.5 AREAS FOR FURTHER STUDY

This study, while providing a comprehensive analysis of the constraints and opportunities at Selous Ranch, has also illuminated several critical pathways for future academic and practical investigation to build upon its findings. First, the digital transformation of livestock management warrants dedicated research into the feasibility, adoption barriers, and socio-economic impact of technologies such as mobile applications for record-keeping and digital marketplaces for small-scale farmers in Zimbabwe. Second, there is a pressing need for modelling risk and resilience through the development and testing of context-specific index-based livestock insurance, determining reliable triggers and assessing farmer willingness to pay. A third crucial area is a comparative economic analysis of cattle breeds, rigorously evaluating the total viability of indigenous breeds versus exotic crosses under typical small-scale management conditions. Fourth, research into innovative financing mechanisms is essential, involving action research to pilot models such as value chain financing or warehouse receipt systems. Fifth, a gendered analysis of the livestock value chain is required to map the specific roles and constraints of women and design empowering interventions. Finally, a detailed study on the economics of community-based value addition, culminating in a viable business plan for a farmer-owned abattoir or tannery, would provide a critical blueprint for bridging the identified value addition chasm. Pursuing these research avenues will be instrumental in developing the next generation of evidence-based strategies for the sector.

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APPENDIX ONE: ETHICAL CLEARANCE FORM

RESEARCH ETHICS COMMITTEE

P. Bag 1020

BINDURA, Zimbabwe

Email : rid@buse.ac.zw

BINDURA UNIVERSITY OF SCIENCE EDUCATION [BUSE]

16 October 2025

Farai Chiwade

Bindura University of Science Education

Graduate School of Business

P. Bag 1020

Bindura

Dear Farai Chiwade

RE: INSTITUTIONAL RESEARCH COMMITTEE ETHICAL CLEARANCE-APPROVAL NUMBER: BUSEREC/0117/2025

Your application for research ethical clearance related to the topic '**Enhancing productivity and sustainability in small-scale cattle ranching: A case study of Selous Farm.'** has been approved

and allocated approval Number: **BUSEREC/0117/2025**. You are to quote this approval number for all correspondences inclusive of consent forms and any other documents as and when appropriate. The approval period is as stated below:

Type of Meeting : 18th BUSEREC meeting

Approval Date: 16/10/2025

Expiry date : 15/10/2026

The project will automatically discontinue on the expiry date. You can apply for renewal three months before the expiry date. The renewal application should be accompanied by a progress report.

You are not expected to make any changes/adjustments to the protocol including the consent documents. Any trials involving drugs, devices and biologics require approval of the Medicines Control Authority of Zimbabwe before commencement. All problems to do with the safety of participants must be reported to BUSEREC (buserec2022@buse.ac.zw) within three (3) working days.

Upon termination of the study, a report has to be submitted to BUSEREC.

Yours sincerely

BUSEREC CHAIRPERSON

APPENDIX TWO: RESEARCH INSTRUMENTS

SELOUS TOBACCO FARM

Selous
Chegutu
Mobile: 263772637699

28 August 2025

To Whom It May Concern,

AUTHORIZATION LETTER FOR RESEARCH DATA COLLECTION

This letter serves to advise that Mr. Farai Chiwade (Student ID: B243574B), a student pursuing a Masters in Leadership and Corporate Governance at Bindura University of Science Education, has been permitted to conduct research and collect data at Selous Tobacco Farm.

Mr. Chiwade is permitted to:

- Observe cattle ranching operations.
- Interview relevant personnel, including veterinary officers, the dip tank committee chairperson, and local farmers.
- Collect data strictly for academic purposes.

We understand that all information gathered will remain confidential and used solely for the stated academic research.

We extend our full cooperation and wish Mr. Chiwade success in his research.

Sincerely,

Lucky Zondwayo
Farm Manager
Selous Tobacco Farm

Cc: Bindura University of Science Education, Graduate School of Business

INFORMED CONSENT FORM

Title of Study: Enhancing Productivity and Sustainability in Small-Scale Cattle Ranching: A Case Study of Selous Tobacco Farm.

Researcher: Farai Chiwade (Student ID: B243574B), a Master's student in Leadership and Corporate Governance at Bindura University of Science Education, is conducting this study as part of my dissertation requirements.

Purpose of the Study: The purpose of this study is to develop a conceptual framework for reviving the small-scale cattle ranching industry in Zimbabwe. Your participation will help contribute to a better understanding of the challenges, productivity levels, and potential value-addition strategies within the livestock sector, specifically in the Selous area.

What will be asked of you: If you agree to participate, you will be asked to participate in a one-on-one, semi-structured interview. The interview will involve questions about your experiences, observations, and insights regarding cattle ranching operations. The interview will take approximately 30 to 45 minutes to complete. With your permission, the conversation will be audio-recorded to ensure accurate capture of your responses.

Confidentiality: All information collected from you will be kept strictly confidential and stored securely on a password-protected device. Your name and any other identifying details will not be included in this form and you will be referred to by a generic identifier (e.g., Interviewee 1, Veterinary Officer 2).

Voluntary Participation: Your participation in this study is entirely voluntary. You have the right to refuse to answer any specific questions or to withdraw from the study at any time without any penalty or negative consequences.

Benefits and Risks: There are no foreseeable risks associated with participating in this study. The benefits of participating include contributing to the advancement of knowledge that could inform better policies and practices for small-scale cattle ranchers in Zimbabwe. A summary of the findings can be made available to you upon completion of the study upon request.

Contact Information: If you have any questions or concerns about this study, please feel free to contact the researcher:

Farai Chiwade

Email: faraichiwade@gmail.com

Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: ..1... (For researcher's use)

Occupation: .....Farmer.....

Signature of Participant: .....

Date: .....28 August 2025

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: ..27-08-25..

INFORMED CONSENT FORM

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Farai Chiwade

Email: faraichiwade@gmail.com

Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: 2 (For researcher's use)

Occupation: farmer

Signature of Participant: R Kazingizi

Date: 29 August 2025

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: 27-08-25

INFORMED CONSENT FORM

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Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: ....3.... (For researcher's use)

Occupation: ....FARMER....

Signature of Participant: .....

Date: ....31-AUG-25....

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: ....27-08-25....

INFORMED CONSENT FORM

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Email: faraichiwade@gmail.com

Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: ..4.. (For researcher's use)

Occupation: .....Farmer.....

Signature of Participant: ...Ambebe S.....

Date: ..30 August 2025.

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: ..27-08-25.....

INFORMED CONSENT FORM

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Participant Details:

Interviewee Number: 5 (For researcher's use)

Occupation: Farmer

Signature of Participant: Tripiya

Date: 30/08/2025

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: 27.08.25

INFORMED CONSENT FORM

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Email: faraichiwade@gmail.com

Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: 6 (For researcher's use)

Occupation: farmer

Signature of Participant: .....

Date: 30/08/25

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: 27-08-25

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Participant Details:

Interviewee Number: 7... (For researcher's use)

Occupation: Farmer

Signature of Participant: .....

Date: 30/08/25

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: 27-08-25

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Benefits and Risks: There are no foreseeable risks associated with participating in this study. The benefits of participating include contributing to the advancement of knowledge that could inform better policies and practices for small-scale cattle ranchers in Zimbabwe. A summary of the findings can be made available to you upon completion of the study upon request.

Contact Information: If you have any questions or concerns about this study, please feel free to contact the researcher:

Farai Chiwade

Email: faraichiwade@gmail.com

Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: ...8... (For researcher's use)

Occupation: ...Farmer...

Signature of Participant: .....

Date: ...31/8/25...

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: ...27-08-25...

INFORMED CONSENT FORM

Title of Study: Enhancing Productivity and Sustainability in Small-Scale Cattle Ranching: A Case Study of Selous Tobacco Farm.

Researcher: Farai Chiwade (Student ID: B243574B), a Master's student in Leadership and Corporate Governance at Bindura University of Science Education, is conducting this study as part of my dissertation requirements.

Purpose of the Study: The purpose of this study is to develop a conceptual framework for reviving the small-scale cattle ranching industry in Zimbabwe. Your participation will help contribute to a better understanding of the challenges, productivity levels, and potential value-addition strategies within the livestock sector, specifically in the Selous area.

What will be asked of you: If you agree to participate, you will be asked to participate in a one-on-one, semi-structured interview. The interview will involve questions about your experiences, observations, and insights regarding cattle ranching operations. The interview will take approximately 30 to 45 minutes to complete. With your permission, the conversation will be audio-recorded to ensure accurate capture of your responses.

Confidentiality: All information collected from you will be kept strictly confidential and stored securely on a password-protected device. Your name and any other identifying details will not be included in this form and you will be referred to by a generic identifier (e.g., Interviewee 1, Veterinary Officer 2).

Voluntary Participation: Your participation in this study is entirely voluntary. You have the right to refuse to answer any specific questions or to withdraw from the study at any time without any penalty or negative consequences.

Benefits and Risks: There are no foreseeable risks associated with participating in this study. The benefits of participating include contributing to the advancement of knowledge that could inform better policies and practices for small-scale cattle ranchers in Zimbabwe. A summary of the findings can be made available to you upon completion of the study upon request.

Contact Information: If you have any questions or concerns about this study, please feel free to contact the researcher:

Farai Chiwade

Email: faraichiwade@gmail.com

Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: ..9... (For researcher's use)

Occupation: .....Farmer.....

Signature of Participant: .....Maiba.....

Date: .....31/08/2025.....

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....[illegible].....

Date: .....27-08-25.....

INFORMED CONSENT FORM

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Contact Information: If you have any questions or concerns about this study, please feel free to contact the researcher:

Farai Chiwade

Email: faraichiwade@gmail.com

Phone: 0772 815829

Consent: By signing below, you indicate that you have read and understood the information provided above, have had the opportunity to ask questions, and freely agree to participate in this study.

Participant Details:

Interviewee Number: 10 (For researcher's use)

Occupation: Farmer

Signature of Participant: Rungari

Date: 30-08-25

Researcher's Declaration: I have accurately explained the nature, purpose, and requirements of this study to the participant.

Signature of Researcher (Farai Chiwade): .....

Date: 27-08-25