VALUE CHAIN MAPPING AND PROFITABILITY ANALYSIS OF THE BINDURA UNIVERSITY SMALL-SCALE VILLAGE TO MARKET BEEF PROJECT

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A dissertation submitted in partial fulfilment of the requirements for the Bachelor of Science Honours Degree in Agricultural Economics and Management.

By

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RELEASE FORM

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APPROVAL FORM

We, the undersigned, hereby certify that we have reviewed and recommend to Bindura University of Science Education the acceptance of the dissertation titled Value Chain Mapping and Profitability Analysis of the Bindura University Scale Village to Market Beef Project, which has been written for partial fulfilment of a Bachelor of Science Honours Degree in Agricultural Economics & Management.

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DECLARATION

In accordance with the rules set out by Bindura University of Science Education, I now certify that the above-mentioned title 'Value chain mapping and profitability analysis of the Bindura University small scale village to market beef project' is indeed a record of original work done by me under the guidance of Dr Lovemore Musemwa and this work is submitted in partial fulfilment of the requirements for the award of a Bachelor of Science Honours Degree in Agricultural Economics and Management at Bindura University of Science Education. The results contained in this thesis have never before been presented to any University or Institute for any degree or diploma.

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DEDICATION

This work is dedicated to my family members, who trusted in me and continued to pay my school fees. I am grateful to them for enabling me to realise my dreams by providing me with resources. I love you, my family. Blessings of God be upon you.

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First and foremost, let me extend my gratitude to my family for their support in my academic pursuits. I also want to thank my supervisor for his help in the writing of this research paper. My fellow students and lecturers, your contributions in helping me reach this point will not be forgotten in a hurry. Thanks for pushing me to my limits and for all the help you rendered. It was through your cooperation that this research became a reality through the acquisition of the necessary data. I thank you for that. Having said that, all the praise must go to God for blessing me in this research.

ABSTRACT

The study examined the profitability of the Bindura University Small-Scale Village-to-Market Beef Project and the factors that influence its profitability. The beef project was initiated to improve the production and marketing of beef as well as to earn some money for the university through selling beef and other by-products. Although the project can be beneficial to the institution in terms of food security and money earning, there are various difficulties that the project could face and hence its profitability. The research objectives are as follows: mapping the beef value chain, identifying the challenges that hinder performance of the project, determining the profitability of the project, and the factors that influence its profitability.

Quantitative research methodology was used and complemented with key informant interviews to give further insight into value chain operations and problems. Data were obtained from records at the farms and project documentation involving 65 cattle sold through the project. Data analysis involved descriptive statistics, profitability analysis and multiple regression analysis done using IBM SPSS Statistics software. The study was guided by the Global Value Chain Theory, Transaction Cost Theory, and Production Economics Theory.

From the results, it is clear that the value chain of the project includes input suppliers, farmers, middlemen, auction houses, transporters, veterinary officers, police, abattoirs, BUSE Farm, and Bindura University Dining Hall. Some of the main challenges that affect the performance of the project include high transport costs, sourcing problems, disease occurrence, pest attack, delays in releasing money for purchasing cattle, lack of proper transport, poor slaughterhouses, poor genetics of animals, and inadequate stakeholder coordination.

From the profitability analysis, it is evident that the venture is profitable. From the start-up capital analysis, it is evident that an amount of around USD 2,275 can result in a profit of around USD 977.50 for each cycle of production. From the descriptive statistics, it is evident that the project makes an average profit of USD 234.37 for each animal. Income has been earned through the sale of carcasses and products such as offals, livers, heads, and hooves. Regression analysis indicated that carcass weight ($\beta = 1.480$, $p < 0.001$) and offal weight ($\beta = 0.156$, $p < 0.001$) were significant positively influencing profitability factors, whereas the buying price ($\beta = -0.784$, $p < 0.001$) was a significant negatively influencing factor. The regression analysis accounted for 99.9% of the variations in profitability ($R^2 = 0.999$).

Seasonality was also found to be significantly affecting profitability in that profits were high in the early wet season, while they were low in the late dry season.

This paper suggests that the Bindura University Small-Scale Village-to-Market Beef Project is a profit-making venture that possesses good chances for development and sustainability. Nevertheless, there are some problems limiting its profitability, such as transport problems, delayed financing, animal health problems, lack of adequate infrastructure and poor stakeholder coordination. The author suggests making an investment in transport means, timely release of procurement funds, animal health improvement, improving the slaughtering facilities, improving cattle genetics and coordination between value chain actors. In addition, Bindura Farm needs to expand its market not only to Bindura DH but also to the community, employees, and students. Solving these problems will help to increase efficiency and make the project more profitable and sustainable in the future.

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LIST OF ABBREVIATIONS

FAO : Food and Agriculture Organization

NGO : Non-Governmental Organization

IFAD : International Fund for Agricultural Development

GVC : Global Value Chain

SPSS : Statistical Package for the Social Sciences

IBM : International Business Machines

GM : Gross Margin

TR : Total Revenue

TVC : Total Variable Cost

USD : United States Dollar

Kg : Kilogram

Km : Kilometer

Mm : Millimeter

T&S : Travelling and Subsistence

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the study

Agriculture is still a major pillar of most economies across the world, providing immense contributions in terms of food systems, job creation, and sustainable livelihoods, with about 1.3 billion people globally being employed in agriculture and generating an estimated 11-15% of the gross domestic product of many developing nations (Shahini et al., 2023; Raja et al., 2022). Apart from being economically beneficial, agriculture is essential in terms of ensuring food security, promoting agro-industrial development, and poverty reduction, particularly in rural areas where agriculture is the only means of livelihood (FAO, 2017). In Zimbabwe, agriculture is of great importance not only in rural but also in institutional economies, especially in provinces like Mashonaland Central, where agriculture facilitates income generation, food production, and job creation (Musemwa et al., 2011). Yet, agriculture is still faced with various problems such as ineffective market systems, poor infrastructure, lack of advanced technologies, and inconsistent policies that impede productivity and profitability (Ume et al., 2020). Additionally, small-scale agriculture faces various constraints like high transaction costs and inadequate market integration, restricting the benefits of production (Barrett, 2008).

In agriculture, beef farming is one of the enterprises that have a vital role to play in ensuring food security, income generation, and value chain development. The beef industry is one of the industries that are very instrumental in ensuring that animal protein reaches not only the rural but also the urban population and it is also a source of income and savings for small-scale producers. According to FAO (2017), proper livestock value chains can assist in ensuring better access to markets, increase efficiency and profitability due to coordination amongst actors such as producers, traders, processors, and retailers. However, it is clear that in many developing countries including Zimbabwe, the livestock value chain is fragmented and inefficient hence failing to maximize its economic potential (Barrett, 2008). This is evident in the presence of weak linkage to markets, limited access to formal markets, poor price information systems and high transaction costs, which lead many small scale farmers into using informal channels of marketing their products and using middlemen (Mapiye et al., 2011). The above problems

make it difficult for small scale farmers to receive fair and stable prices hence reducing profitability and discouraging production of beef (Nkomo et al., 2015).

The beef industry in Zimbabwe is controlled by smallholder farmers who own a substantial portion of the country's cattle stock but are poorly linked to the formal market system. According to Mapiye et al. (2011), small scale livestock holders usually depend on informal marketing systems because of inadequate access to organized markets, which leads to inefficient price discovery and low profit making. In addition, Nkomo et al. (2015) point out that inefficiencies within the beef value chain, poor market coordination and high transaction costs result in low levels of profit and discourage commercialization. Effective marketing approaches, which include pricing, promotion, distribution and targeting markets are important elements in improving value chain efficiency and profitability according to Kotler & Keller (2016).

At an institutional level, agricultural firms like the Bindura University Farm practice small scale beef production for commercial and educational purposes. Nonetheless, similar to many small scale livestock systems in Zimbabwe, the beef value chain in such firms is not well developed in terms of marketing and coordination.As per FAO (2017), poor value chain integration is a hindrance in allowing agricultural firms to make full use of the production process. According to Barrett (2008), limited market linkages and weak negotiation power lead to low earnings among small-scale farmers.

1.2 Problem statement

The Zimbabwean small-scale beef value chain remains inefficient and disorganised, and thus unprofitable and unsustainable as a vehicle of development, including institutional development, within Bindura University. While the country reportedly has an animal population that exceeds 5 million, the livestock industry is dominated by small-scale farmers, who form more than 70% of the livestock owners but have little access to formal markets, poor bargaining power, and lack of market information (Bennett et al., 2019; FAO, 2017). This problem can be attributed to fragmented value chain structures, high transaction costs, and dependence on informal marketing systems that lead to poor off-take rates of about 10% or even less in communal areas as well as commercialization problems (Nkomo et al., 2015). Consequences of this situation include poor profitability of livestock enterprises, inefficient distribution of value generated across the players, and little investment in production, making the activities unsustainable (Barrett, 2008). Despite programs such as the Zimbabwe

Agricultural Growth Programme (ZAGP), which aims at strengthening value chains by linking livestock farmers to markets, the problem persists in the small-scale and institutional settings. Consequently, the study attempts to examine the beef value chain in Bindura University in order to evaluate its profitability and identify some of the challenges and ways of improving its performance.

1.3 Research questions

1.What are the main players and phases that characterize the beef value chain in Zimbabwe?

2.What are some of the issues facing the Bindura University small scale village to market beef project?

3.What is the profitability of the Bindura University small scale village to market beef project?

4.What are some of the factors influencing the profitability of the Bindura University small scale village to market beef project?

1.4 Objectives

1.4.1 Main Objectives

To map the beef value chain and determine challenges and factors affecting the profitability of Bindura University's small-scale village to market beef project.

1.4.2 Specific Objectives

1) To draw the beef value chain for Zimbabwe.
2) To determine the problems that affect the Bindura University small-scale village to market beef project.
3) To determine the viability of the Bindura University small-scale village to market beef project.
4) To determine factors that influence the viability of the Bindura University small-scale village to market beef project..

1.5 Research hypothesis

Buying price of cattle, average carcass weight, and weight of offal cattle are factors that significantly affect the profitability of the village to market beef project.

1.6 Justification of the study

The significance of the current study lies in the fact that its findings can contribute to an increase in the efficiency and profitability of the small-scale beef value chain, with benefits accruing not only to farmers but to the government, academics, and civil society organizations. For farmers, especially small-scale farmers, good value chain systems are key to improving market access, increasing profits, and decreasing post-production losses (FAO, 2017). Unfortunately, many farmers in Zimbabwe have been hindered by problems such as weak market connections, low bargaining power, and lack of market information in realizing the benefits associated with a good value chain (Barrett, 2008; Mapiye et al., 2011).

The government, especially the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development, finds the study very significant for its role in formulating policies and programs intended to enhance value chains and commercialization of agriculture. It has been shown that efficient value chains play a role in food security, job creation, and economic growth. Some of the initiatives in Zimbabwe such as the Zimbabwe Agricultural Growth Programme (ZAGP) have demonstrated the importance of improving coordination among actors in the value chains and better market systems to enhance smallholder farmers (FAO, 2017). Recommendations from the study could be used to influence such policies.

The study is a contribution to the field of agricultural economics and agribusiness because it will provide empirical data on the performance, profitability, and challenges of value chains operating within the institutional farming system. Research is important in advancing knowledge in practice and theory, according to Creswell and Creswell (2018). Besides, the study will serve as a useful resource for future scholars who are interested in livestock value chains and marketing.

There are some civil society organizations and non-governmental organizations (NGOs) that work in the rural development and food security areas and find this study beneficial in designing interventions for smallholder farmers. Value chain development has been recognized as one of the ways to reduce poverty and improve the livelihoods of people in rural communities (IFAD, 2016). Through identification of challenges and opportunities associated with the beef value chain, this research will enable civil society organizations to develop focused programs aimed at increasing market involvement, generating income, and building community resilience. In general, this research is significant in that it offers practical and

policy-related information for improvement of performance of the beef value chains in Zimbabwe.

1.7 Scope and Limitations of the Study

1.7.1 Scope of the study

This study seeks to evaluate the process of value chain mapping and profitability analysis of a small scale beef project from village to market using Bindura University farm as a case study. The study will seek to analyze the various actors, processes, and linkages associated with the beef value chain in Zimbabwe. This will be with special consideration to production, processing, distribution, and marketing of the beef in the context of the Bindura University beef project. The profitability of the beef project from village to market will also be evaluated alongside the factors affecting profitability which will include the cost and price of beef as well as marketing strategies. Challenges facing the performance of beef value chain in the university will also be analysed. The study will be confined geographically to Bindura University and its surrounding market. The study will not consider large scale beef farmers and national level beef value chain.

1.7.2 Limitations of the study

The research is likely to encounter several limitations that will affect the scope and generality of the results obtained. For instance, there might be challenges in accessing adequate, accurate, and complete financial and production records of the enterprises involved in order to conduct a credible profitability analysis. In addition to this, the research is likely to encounter problems regarding the small sample size used since data will only be collected from a small number of respondents at Bindura University. The researcher also anticipates challenges of getting complete and truthful responses from the respondents because of institutional sensitivity (Creswell & Creswell, 2018). Time and budget constraints are likely to pose another limitation in terms of collecting comprehensive data and doing extensive fieldwork. Finally, external factors like market prices, seasonal changes, and economic instability in Zimbabwe are expected to affect the profitability and performance of the value chains without necessarily taking into account the variables under consideration (FAO, 2017).

1.8 Organisation of the study

The study is divided into five chapters that will give a systematic presentation of the study. Chapter one gives an overview of the study where the background of the study, problem statement, research objectives, research questions, justification, scope, and limitations of the

study will be covered. The second chapter will cover the literature review which will be concerned with the theoretical and empirical review of the beef value chain analysis, agricultural marketing, profitability, and challenges facing small-scale livestock production systems. Chapter three will cover the research methodology which will give an overview of the research design, study area, population, sampling technique, data collection technique, and data analysis technique employed in the study. Chapter four will be concerned with the findings of the research and it will cover the beef value chain mapping, profitability, and challenges of the Bindura University beef project from village to market.

Chapter summary

The current chapter provides an introduction to the research on the small-scale beef value chain mapping and profitability analysis at Bindura University of Science Education on the village to market beef value chain. The introduction to the study provided the background of the study where emphasis is placed on the importance of agriculture and livestock production in the economy of Zimbabwe. Some of the problems facing small-scale beef value chains have been highlighted in the problem statement. Some of the important problems include poor market linkages, poor coordination of the value chain and poor profitability of small-scale beef value chains. In addition to the introduction, the chapter gives an outline of the objective of the study and the specific objectives. The research questions have been developed based on the objectives of the study. In addition to that, justification of the study has been provided with the emphasis on the importance of the study to farmers, government, academia and civil society organizations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section serves to introduce the chapter, highlighting the themes that will be considered in this review, which are related to the study objectives of value chain mapping, profitability, and profitability drivers among small-scale beef enterprises..

2.2 Overview of the Beef Industry in Zimbabwe

The beef sector in Zimbabwe is a key player in the agriculture industry that contributes a lot to food security, job creation, and economic development of the country. Zimbabwe is known for having one of the highest numbers of cattle in Southern Africa; according to estimates, there are about 5 to 5.5 million cattle in the country, most of which belong to smallholder farmers in the communal and resettlement areas (Bennett et al., 2019). The structure of the beef industry consists of commercial and smallholder beef industries. The former is characterized by a better infrastructure, improved breeds, and more market integration, whereas the latter consists mostly of cattle owners who use their livestock in low-input and not very commercial systems (Mapiye et al., 2011). According to FAO (2017), the value chain of the beef industry in Zimbabwe comprises such players as input suppliers, cattle owners, traders, transporters, abattoirs, butcheries, retailers, and consumers. However, linkages between those parties are weak enough for the value chains to be fractured and inefficient.

Smallholder farming systems also constitute an important part of the beef industry in Zimbabwe. The contribution of cattle production in smallholder farming is not only limited to the commercial aspect but also to socio-cultural functions including draught labor, wealth accumulation, and ceremonies among others (Nkomo et al., 2015). Although smallholder farming systems play a great role in beef production, they are faced by some challenges that include poor access to markets, lack of adequate veterinary services, poor infrastructure, and low bargaining power (Barrett, 2008). Besides smallholder farming systems, another institutional farming system that contributes to the beef production industry in universities includes the beef project at Bindura University. This beef production enterprise allows the university to offer training and income to its stakeholders through value addition within the livestock production and beef value chains.

The market dynamics of the village-to-market beef system in Zimbabwe are highly affected by the relationship between the formal and informal marketing systems. Small scale farmers usually engage in selling their livestock through informal marketing systems such as local traders, middlemen, and community butcheries because of the absence of proper markets and inadequate market information (Mapiye et al., 2011). According to Barrett (2008), high transaction costs and weak bargaining power compel many producers to accept low prices, thereby lowering the profit margin in the whole value chain. In formal marketing systems, the marketing of cattle is done through abattoirs, auctions, butcheries, and even supermarkets although the participation of smallholder farmers is very minimal owing to the difficult market requirements (FAO, 2017). The above market dynamics portray the complicated nature of beef value chain in Zimbabwe and reveal the importance of value chain mapping in determining critical players and bottlenecks in the process. Hence, understanding the structure of the beef industry, the smallholder and university systems as well as the market dynamics is crucial in the mapping of Zimbabwe's beef value chain.

2.3 Beef Value Chain Analysis

2.3.1 Concept and Approaches to Value Chain Analysis

Value chain analysis is an analytical technique employed to assess all the activities and participants involved in the flow of a product from production to the end user. Value chain analysis first gained prominence through Michael Porter's value chain analysis theory in which he referred to a value chain as a series of activities linked together in order to create value throughout production and distribution processes (Porter, 1985). He posited that businesses gain competitive advantage when they increase efficiency and coordination of value adding activities like production, processing, transportation, marketing, and sales. Over the years, the idea developed to become less firm-oriented towards competitiveness and more oriented towards agriculture and international production systems involving various participants and markets. According to Kaplinsky and Morris (2001), value chain analysis grew to become a critical concept as far as organizing economic activities across the globe and distribution of value amongst participants of production systems is concerned. Within the field of agriculture, according to FAO (2017), value chain analysis is useful for identifying bottlenecks, inefficiencies and areas of improvement regarding profitability and market access.

The Global Value Chain (GVC) model is one of the key methods used in value chain analysis developed by Gereffi et al. (2005). According to the GVC model, the issue under consideration is the way production, processing, distribution, and marketing activities are integrated locally

and internationally. Special attention should be paid to relations between participants such as producers, traders, processors, retailers, and consumers as well as power and value distributions in the chain. Gereffi et al. (2005) maintain that the GVC model is efficient in analyzing the role of developing countries and small-scale producers in international and national markets. In agriculture, the GVC model allows revealing the impact of value addition, quality, and market access on competitiveness and profitability. As Humphrey & Schmitz (2002) state, participation in value chains makes better market conditions for small-scale producers provided that effective coordination and access to higher-value markets exist.

Value chain governance is an important concept of value chain analysis meaning the process of coordination and control of relationships and activities in the chain. According to Gereffi et al. (2005), governance refers to the authority and power arrangements that control the allocation of finances, materials, and people in a value chain. Governance arrangements affect decision-making procedures, price mechanisms, quality considerations, and market access. In many cases, the role of governance in agricultural value chains is to determine who gets the maximum benefits from value addition and participating in the market, according to Ponte and Gibbon (2005). In many developing nations, including Zimbabwe, smallholder farmers usually lack bargaining powers within the value chain due to their dependence on mediators (Barrett, 2008). Hence, effective governance becomes extremely critical in improving the coordination of operations in the beef value chain. With regards to the current case study, value chain analysis becomes an extremely critical approach for analyzing the value chain of the Bindura University small-scale village-to-market beef project.

2.3.2 Mapping of Beef Value Chains

In the beef value chain, there exist various actors that participate in specific roles in order to ensure the efficiency of the beef production and marketing process. They include input suppliers, cattle producers, traders, transporters, abattoirs, processors, wholesalers, retailers, butcheries and consumers (Gereffi et al., 2005). Input suppliers are providers of vital inputs like feed, veterinary drugs, breeds and extension services that are important for the production of cattle. Producers, which are mostly small-scale farmers in Zimbabwe, are involved in raising cattle and preparing them for marketing (Mapiye et al., 2011). Traders and aggregators are involved in collection of cattle from producers and marketing them to processors or markets. In line with the views of Barrett (2008), intermediaries tend to dominate most of the agricultural value chains in developing nations owing to their importance in accessing markets.

The steps in the beef value chain include provision of inputs, production, aggregation, processing and marketing. Provision of inputs is a crucial step since it provides the basis of the entire chain through supply of feed, medicine, breeds and equipment that are needed for cattle production. Aggregation is a process whereby intermediaries aggregate animals from various producers for transport to abattoirs or markets. Processing refers to actions performed by abattoirs and meat processors which include slaughtering, packaging, storage and quality control (FAO, 2017). Marketing includes promotion, pricing, distribution and sales of beef to consumers by butcheries, supermarkets, local markets and restaurants. Kotler and Keller (2016) state that good marketing systems are crucial to ensure product availability and high profitability in the value chain.

Distribution channels and linkages play an important role in the beef value chain as they ensure that products reach their producers to consumers. As Shepherd (2007) explains, agriculture distribution channels may be formal or informal depending on the extent of organisation and market integration. In Zimbabwe, smallholder beef producers depend mostly on informal distribution channels such as local traders and community butcheries since most formal markets are inaccessible and inadequate infrastructure is lacking (Nkomo et al., 2015). Informal distribution channels are often characterised by poor coordination, poor market information and price instability. Formal mechanisms, however, include structured procedures that are regulated and include things like abattoirs, grocery stores, and contract marketing. High connections between different actors in the value chain lead to improved communication, low transaction costs, and increased efficiency and profitability (Kaplinsky & Morris, 2001). Consequently, it is imperative that the beef value chain be mapped for this Bindura University village to market beef project.

2.4 Challenges in Small-Scale Beef Value Chains

2.4.1 Production Challenges

The beef value chain in the developing world encounters various problems which affect productivity, profitability, and competitiveness of the value chain. Among these problems is production systems which include scarcity of feed, presence of diseases and the breed of cattle. According to Dzama (2002), feed cost is one of the biggest costs in the process of livestock production. Poor nutrition slows down the growth rate of cattle and also affects meat quality. Seasonal shortage of grazing land and persistent drought cases in Zimbabwe make the problem of scarcity of feeds more difficult in terms of production efficiency (Mapiye et al., 2011). The prevalence of diseases such as tick-borne diseases and foot-and-mouth disease makes the

production of beef less productive and also makes the beef less competitive in the market (FAO, 2017). Indigenous breeds which are drought resistant but are not commercially productive are also used by communal farmers.

2.4.2 Market challenge

Market access is yet another issue impacting the small-scale beef value chains. According to Barrett (2008), small-scale farmers in developing countries face the problem of being badly integrated into markets due to their poor bargaining powers, lack of market information and insufficient production levels. In Zimbabwe, many producers rely on the informal marketing system through intermediaries due to lack of accessibility to the formal markets in terms of abattoirs, auctions, and super markets (Mapiye et al., 2011). This leads to reduced prices and incomes from the sales of beef. FAO (2017) indicates that the tough quality and sanitary standards in formal markets create difficulties for small-scale producers to be in the high-value beef market.

2.4.3 High Transaction Costs

Transaction costs have a significant influence on the efficiency of small scale beef value chains. Transaction costs consist of costs incurred in transportation, information acquisition, negotiation, and marketing activities (Barrett, 2008). In rural Zimbabwe, poor roads and distance to the markets lead to higher transportation costs for beef cattle production, leading to reduced profit levels (Nkomo et al., 2015). Also, limited access to information about the market leads to poor negotiation levels due to asymmetry of information between the producers and buyers.

2.4.4 Poor Infrastructure and Logistics Constraints

The other factors affecting the efficiency of beef value chains are the poor infrastructure and logistical challenges. As pointed out by the Food and Agriculture Organization (FAO, 2017), an effective beef value chain requires proper infrastructure in terms of roads, slaughtering facilities, refrigeration, and transportation. In most rural parts of Zimbabwe, however, there is poor infrastructure that limits the ability of moving and preserving beef. Poor storage facilities lead to wastage after slaughter and also affects the quality of the beef, while poor transport facilities limit timely access to markets.

2.4.5 Institutional and policy challenges

There are some institution-based and policy-based issues which pose risks to the sustainability of beef production in smallholder operations. Lack of robust agricultural support institutions,

poor access to financing options, and unstable policies adversely affect the commercialization of livestock (Ume et al., 2020). According to FAO (2017), insufficient extension services and poor training for farmers limit the adoption of improved production and marketing methods. In Zimbabwe, economic instability, fluctuations in exchange rates, and inconsistent policies have led to uncertainties in the agricultural market environment (Ngarava & Mushunje, 2018). These institution-based and policy-based constraints make it difficult for smallholder farmers to successfully operate in the beef value chain.

2.5 Profitability in Small-Scale Beef Enterprises

2.5.1 Concepts and Measures of Profitability

Profitability is one of the key indicators that measure the financial performance and sustainability of agricultural firms including those engaged in livestock production. As per Atrill and McLaney (2019), the term profitability can be defined as the capability of the firm to earn revenue that surpasses its total cost of production and marketing. Profitability in agricultural economics is the tool for determining whether farm enterprises are profitable and are able to earn adequate profit (FAO, 2017). Furthermore, as mentioned by Horngren et al. (2014), profitability ratios help measure how effectively labor, feed, capital and land have been utilized to generate profits. Profitability in small-scale beef production operations depends on several variables such as cost of production, price of meat in the market, productivity, and marketing efficiency.

2.5.2 Gross Margin Analysis

The use of Gross Margin in agricultural enterprise analysis is very common due to the fact that it determines the gap between total income and total variable cost (Kay et al., 2016). Variable cost is the cost that varies directly with production such as feed cost, veterinary cost, labor cost, transport cost, and water cost. As per FAO (2017), Gross Margin can assist in assessing the enterprise's contribution towards covering fixed costs and profitability.

Formula for Gross Margin

Gross Margin = (Revenue – Cost of goods)/Revenue ×100

Where:

- **Total Revenue (TR)** = Income earned from beef sales
- **Total Variable Costs (TVC)** = Costs directly related to production and marketing

A positive gross margin indicates that the enterprise is financially contributing toward profitability.

2.5.3 Net Returns

Net return can be described as the net income derived after taking away all the variable costs and fixed costs from the total revenues of a company (Drury, 2015). The fixed costs are those that are incurred regardless of the level of production, for instance, the depreciation of the machinery and maintenance costs of the infrastructural facilities.

Formula for Net Returns

Net Return=Total Return-Total Costs/Total Investment ×100

Cost-Benefit Analysis

The Cost-Benefit Analysis technique is applied to assess the extent to which benefits created by an enterprise exceed its costs (Boardman et al., 2018). It can be helpful in estimating the economic viability of agricultural projects. Cost-benefit analysis is considered important in evaluating the efficiency of farming enterprises (Gittinger, 1982).

2.6 Determinants of Profitability in Livestock Enterprises

2.6.1 Buying Price of Cattle

Purchasing price of cattle is among the key factors influencing profitability in livestock farming operations. As Atrill and McLaney (2019) point out, the price at which the cattle is purchased has a direct bearing on the overall cost of production and profitability of the operation. With high purchase prices of cattle, the business will need to have higher sales prices in order to earn profits from the venture. Cattle prices in Zimbabwe depend on supply and demand, breed quality and seasons, influencing profitability of small scale farmers (Nkomo et al., 2015).

2.6.2 Distance from Source Markets

The distance from source markets greatly affects profitability owing to costs incurred in transportation and transactions. According to Barrett (2008), large distances from production locations to markets contribute to increased expenses associated with things like fuel, labor, and handling of the cattle. In Zimbabwe, poorly developed roads and insufficient transport facilities have also contributed to increased transportation costs associated with transporting

cattle and beef to markets (Mapiye et al., 2011). The end effect of all this is lower profits for farmers operating far from markets.

2.6.3 Seasonality

Seasonality is yet another key issue influencing profitability in livestock production systems. The change in season will affect feed availability, body conditions of the cattle, and demand for beef in the market. Feed scarcity in dry seasons affects the performance of the cattle in terms of growth and weight, which affects their price and profitability in the market (Dzama, 2002). Beef prices tend to be high in festive seasons because of the high demands from consumers as per FAO (2017).

2.6.4 Average Carcass Weight

The average weight of the carcass plays an important role in determining profitability, since it determines the amount of marketable beef that will be produced per animal. As indicated by Mapiye et al. (2011), an increase in the weight of the carcass usually results in increased profits due to the fact that the payment made is often determined by the amount of meat yield. The factors which affect the weight of the carcass include the breed, feeding practices, and the management of the animals.

2.6.5 Cost of Sourcing Cattle

The cost of acquiring cattle is also a factor that influences the profitability of livestock business ventures. The cost factors here entail the cost of transport, vet examinations, market tolls, and processing costs while acquiring cattle (Shepherd, 2007). High sourcing costs narrow the margin of difference between purchase cost and sales price, hence lowering the profit margin. In Zimbabwe, fragmentation of markets and weak infrastructure usually make sourcing costs high for both traders and farmers (Nkomo et al., 2015).

2.6.5 Market Price Fluctuations

Market price fluctuations constitute an equally important factor that impacts the profitability of livestock ventures. The prices of beef are affected by factors such as inflation, demand for beef, competition, and general economic conditions. FAO (2017) indicates that volatility in market prices is a significant source of uncertainty in livestock production because it undermines predictability of returns on livestock investments. In Zimbabwe, economic instability and inflationary tendencies have been blamed for price volatility of cattle and beef, thus impacting the profitability of livestock ventures (Ngarava & Mushunje, 2018).

2.7 Theoretical Framework

The study is based on the Global Value Chain theory, Transaction Cost theory and Production Economics theory. This theoretical framework offers a basis through which value chain coordination, profitability, and efficiency in the small scale beef value chain can be analyzed.

2.7.1 Global Value Chain Theory

Global Value Chain (GVC) Theory was formulated by Gereffi et al. (2005), and its emphasis lies in the organization and coordination of the activities associated with production, processing, marketing and distribution of goods in the markets. This theory gives an account of how different actors such as producers, traders, processors, retailers, and consumers are coordinated in a chain, and how value is created and distributed amongst them. According to Gereffi et al. (2005), governance of value chain entails the extent to which coordination, control and decision making is conducted by powerful actors in the value chain. This theory is important for this study as it helps to understand the nature of operation and structure of the beef value chain in Zimbabwe especially the Bindura University village to market beef project. This theory helps in the identification of the actors in the chain, movement of products and information, as well as the distribution of value amongst the actors in the chain. This theory can further be used to explain value chain upgrading, where the producers will upgrade their ways of production and improve the quality of their products to maximize profits and competitive advantage. Value chain governance and coordination within the context of this study can be analysed using this theory.

2.7.2 Transaction Cost Theory

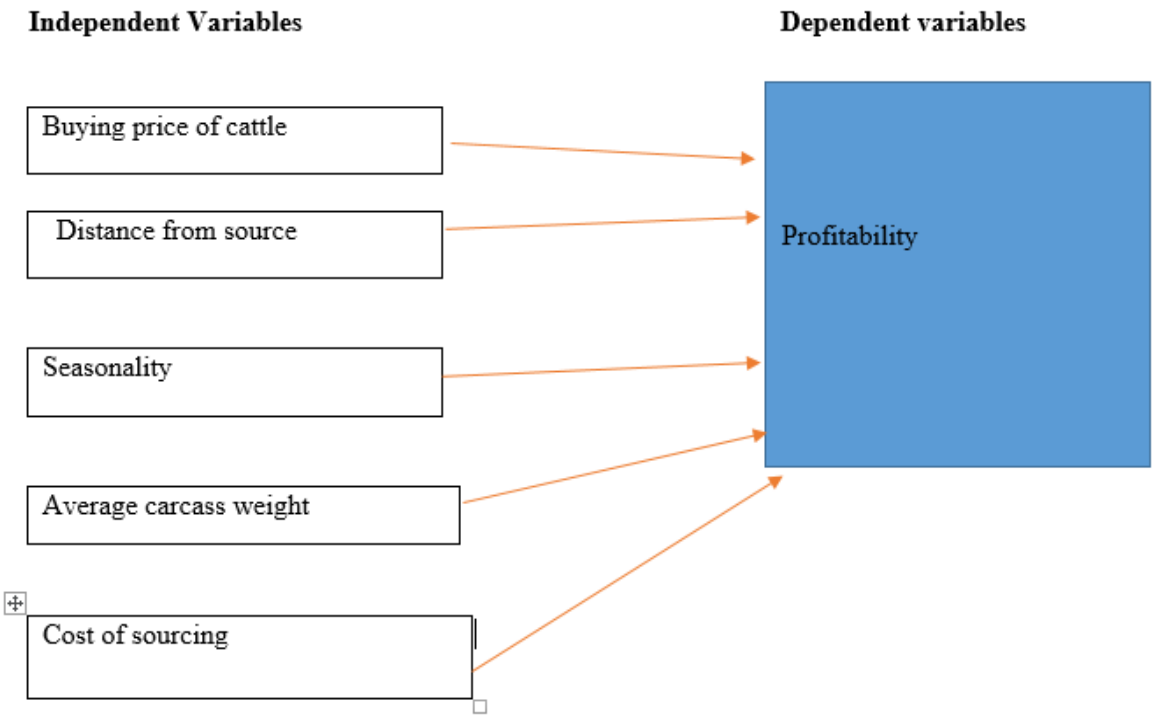
Transaction cost theory was introduced by Coase (1937) and further developed by Williamson (1985). The theory holds that economic agents are always looking to minimize the costs involved in the transactions process such as transport costs, cost of information search, bargaining costs, and coordination costs. According to Williamson (1985), transaction costs are high in a situation where there are low efficiencies in the market and the profitability levels are affected, especially in agriculture markets which suffer from poor infrastructure and market integration. This theory is relevant in the research context since small scale beef producers are faced with high transaction costs involving sourcing of cattle, transportation, and coordination with buyers. As noted by Barrett (2008), transaction costs in developing countries are high owing to poor road networks, distance to markets, and lack of market information. In

Zimbabwe, the beef marketing system being fragmented and the use of intermediaries affects profit levels due to high sourcing and distribution costs (Mapiye et al., 2011).

2.7.3 Production Economics Theory

Theory of Production Economics deals with the process of resource allocation by producers to maximize production and maximize profits. In this case, according to Beattie & Taylor (1993), producers are supposed to allocate their resources in the most efficient manner possible to ensure maximum returns and minimum costs. Efficiency, cost minimization, and profitability are major aspects of this theory. This theory is applicable in this research due to the fact that profitability in beef production is mainly determined by efficient management of resources within the entire production chain. As stated by Dzama (2002), costs of feed, cost of buying cattle, labour, transportation costs, and carcass weight among other factors determine production costs and profitability. According to the Food and Agriculture Organization (FAO) (2017), efficient production systems enhance productivity and minimize wastage while increasing financial gains of livestock enterprises. In this regard, Theory of Production Economics will be very useful in assessing how production decisions and resource allocation affect the profitability of the Bindura University beef project.

2.8 Conceptual Framework



2.8.1 Explanation of Relationships

The above framework depicts how the profitability of the Bindura University small-scale beef value chain project depends on some factors. For instance, the purchasing price of cattle will affect production costs such that when prices are low, profit margins will be high but when prices are high, profit margins will be low. The distance from the source markets will affect transaction costs such that when the distance from the source markets is high, the cost of production increases and hence the profit margins become low. There is the seasonal effect in the project in that seasons will affect production and also market prices because there will be variations in feed availability and demand in different seasons. The average carcass weight will determine revenues in that when carcass weight is high, there will be high revenue because more beef will be produced. Lastly, the cost of cattle procurement will be high when the cost of cattle procurement is high.

In conclusion, the independent variables interact to influence the profitability of the small-scale beef value chain project which is the dependent variable..

2.9 Research Gap

A review of literature on value chains and small scale cattle production in Zimbabwe and similar situations reveals some critical gaps in knowledge which warrant this study. The majority of literature on this topic, for instance, works by Mujeyi et al. (2015) tend to examine the production of beef in communal and smallholder production systems in areas such as Goromonzi and Murehwa, whereby problems of lack of integration in the markets, low productivity and informality of the marketing structure are highlighted, but little attention has been paid to institutional or university "village-to-market" beef production schemes. Similarly, the work of Muteyo et al. (2025) and other value chain studies tend to focus on smallholder involvement and marketing constraints without extending their focus to institutional structured enterprises. Moreover, while some scholars such as Mujeyi et al. (2015) provide a general determinant of profitability including poor animal husbandry, feeding and ineffective market information systems, little literature has focused on particular profit drivers including carcass weight, acquisition cost, seasonality and distance in institutional beef production projects. Thus, the current research aims to fill the gaps by concentrating on the Bindura University small scale village to market beef initiative through empirical evaluation of key profitability factors in addition to value chain mapping and profitability analysis.

2.10 Chapter Summary

In this chapter, literature pertaining to beef value chain mapping and profitability analysis in small scale livestock enterprises has been reviewed. The beef industry structure in Zimbabwe, value chain concepts, actors, and linkage in village to market beef systems have been reviewed. Moreover, various problems associated with small scale beef value chains including production, marketing, infrastructural, and policy problems have been covered in this chapter. Besides, profitability concepts, indicators, and determinants have been discussed along with theories underlying the research such as Global Value Chain theory, Transaction cost theory, and Production economics theory. A conceptual framework has been illustrated in order to demonstrate the relationship between profitability and factors chosen for the research in connection with beef project

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

The methodology applied in this study is described in this chapter. In this chapter, the location of the study, the research design, target population, the sample used in the study, methods of data collection and the tools of data analysis are provided. The chapter also highlights the approach used for profitability analysis and the regression model that will be used in determining factors influencing profitability in the beef industry. Lastly, the ethical considerations adopted in the study are highlighted. The methodology was developed in a way that the research could generate reliable data based on the research objectives and questions.

3.2 Description of Study Area

The data was collected in Bindura University Farm situated in Bindura District of Mashonaland Central Province of Zimbabwe. The farm covers an area of about 534 hectares in Agro-ecological Region IIb where the rainfall ranges between 750 to 1000 mm annually and has limited seasons between November to March. Although the land is ideal for large scale farming, irregular rainfall and seasonal drought might affect dry land farming. The land is however close to the perennial river known as Pote River and hence has the ability to be irrigated throughout the year. Situated strategically for sustainable intensive farming, the Bindura University Farm can be used as the center for viable commercial farming that will test the use of new methods in farming. The arable land is about 300 hectares where 140 hectares are for irrigation while the rest is for farming crops such as maize, sorghum, wheat, barley, soya beans, and horticulture. The farm also utilizes 50 hectares for teaching, learning, and

research purposes in respect of the Faculty of Agriculture and Environmental Science. Apart from that, the farm undertakes various livestock projects like broiler, pigs, beef, goat, and fishery projects, which will be scaled up to become viable businesses.

3.3 Research Design

This research made use of a descriptive case study research design that would give a thorough description of the prevailing situation regarding the Bindura University small scale village to market beef value chain project. This design was suitable for the research since it looked at the structure, actors, processes, problems, and profitability of the beef business in the actual real life context (Yin, 2018). This design was used together with a mixed methods approach that is a combination of quantitative and qualitative methods used to have a thorough investigation of the research problem (Creswell & Creswell, 2018). Quantitative data was employed in the measurement of profitability variables like gross margin and return on investment while qualitative data was utilized to investigate value chain operations and problems.

3.4 Target Population

For the research, the target population was the actors within the Bindura University village to market beef value chain. This population comprised of farm managers, farm workers, cattle providers, transporters, butcheries, beef processors, and the consumers. Mugenda and Mugenda (2003) note that the target population is the total population from which the researcher intends to draw his/her sample and who have characteristics related to the study. Through inclusion of various actors within the beef value chain, the researcher was able to collect all the required information.

3.5 Sampling procedure

In order to conduct the study, a purposive sampling methodology was used to collect pertinent data from participants engaged in the Bindura University Small-Scale Village-to-Market Beef Value Chain Project in Bindura district. According to Patton (2015), purposive sampling is a non-probability sampling method that involves the selection of participants based on their possession of specific knowledge or experience with regard to the subject matter under investigation. Purposive sampling was used to select the key informants possessing rich knowledge and experience in relation to the beef enterprise; these were Livestock Specialist, Livestock Manager and Farm and Accountant. Purposive sampling ensured that participants selected for the study were those who had the required experience and knowledge pertaining

to the production process and financial performance of the beef enterprise. They also offered an insight into the challenges and decision making process within the enterprise that could not be provided by randomly selected participants. This ensured that the validity of the data obtained was enhanced. The simple random sampling technique was used for selecting farmers, students involved in the agriculture process and other stakeholders in the study to make sure that all the eligible respondents have an equal probability of selection to avoid bias and increase the representativeness of the results (Creswell & Creswell, 2018). Along with the sampling of respondents, the study also included the sampling of 65 cattle out of 1,000 cattle sold in the 2025 production year. The 2025 sales data were chosen as the current year's data had not yet been audited and finalized. The chosen sample was sufficient for analysis as it consisted of more than 30 observations which is the minimum number required for research studies (Roscoe, 1975). The use of purposive and random sampling techniques helped the researcher gather both expert knowledge and practical experience and get sufficient data for analysis of the value chain and profitability of the beef enterprise.

3.6 Data collection procedure

The following are the data sources for the study concerning value chain mapping and profitability analysis of the Bindura University small-scale village to market beef venture. These sources include the use of key informant guide to facilitate the process of data collection from the key informants. Before data collection, one lecturer and one farm worker who were not among the key informants were used for piloting. This facilitated improvement in the key informant guide and making the questions more clear. This made sure that the instrument used captures all information on beef production and profitability within the university farm. Finally, the researcher collected data from key informants through face-to-face interviews at Bindura University farm and relevant university officers.

In order to increase the strength of the study, secondary data was collected from farm records, academic journal articles, government documents and agricultural journals.These sources were instrumental in providing a framework for the interpretation of the findings as well as providing a comparison between the Bindura University beef production and other industry practices. The use of primary and secondary sources provided a basis for triangulation of information.

3.7 Data Collection Instruments

3.7.1 Key informant guide

The key informant guide technique was employed in order to collect and extract secondary data from the records of Bindura University (BUSE) on the Small-Scale Village-to-Market Beef Project. Key informant guide that was employed was intended to systematically collect information from the farm records during the period of February 2025 to December 2025. This data included information on cattle buying, production cost, cost of feed, cost of veterinary services, cost of labour, quantity sold, price at which the produce is sold and revenue generated. In order to make sure that the data collected from the farm records was accurate and comprehensive, key informants, including Livestock Specialist, Livestock Manager, Farm Accountant, Veterinary Officers and Agricultural Extension Personnel were interviewed. According to Kothari (2004), structured key informant guides facilitate systematic collection and recording of data in a standardized manner.In this particular case of the study, the key informant guides were very helpful to the researcher in organizing and analyzing the data obtained from the farm records such that one can understand well how the beef value chain operates in terms of activities, expenses, and income.

3.8 Data Analysis

The SPSS version 20 statistical software package was utilized in analyzing data. In the process of analyzing data, both descriptive and inferential statistical methods were applied. Descriptive statistics like frequencies, percentages and means were utilized in summarizing data regarding value chain actors, operations, and problems facing the beef business. Data presentation involved charts, tables and figures. Value chain mapping techniques were applied in order to get the main actors, flows and linkages in the beef value chain from village to market. According to Kaplinsky and Morris (2001), value chain mapping is vital in identifying inefficiencies in production and marketing chains among other things. Inferential statistics especially linear regression were applied in identifying the factors influencing profitability in the beef venture.

Thematic analysis entailed the identification, classification, and interpretation of common themes and patterns concerning value chain activities, production difficulties, marketing processes, and factors of profitability. Braun & Clarke (2006) note that thematic analysis is an effective technique of qualitative data analysis since it helps identify and interpret patterns in the data. The integration of statistical analysis, value chain analysis, and thematic analysis strengthened the depth and thoroughness of the study since it incorporated both quantitative

and qualitative perspectives on the performance and profitability of the Bindura University beef project.

Table 13.1Table Data Analysis Framework

Objective	**Data Collected**	**Analytical Method**	
To map the beef value chain in Zimbabwe	Value chain actors, marketing channels	Value chain mapping	
To identify challenges affecting the Bindura University beef project	transport costs, sourcing challenges, disease outbreaks, lack of own transport for cattle transportation, pest and diseases, delayed release of funds to purchase cattle, lack of transport for sourcing cattle, poor slaughtering facilities, poor animal genetics, poor stakeholder coordination	Thematic analysis	
To determine the profitability of the beef project	Revenue, variable costs, fixed costs	Gross margin analysis	
To determine factors affecting profitability	Buying price, carcass weight, seasonality, sourcing costs, and distance	Linear regression model	

3.9 Profitability Analysis

3.9.1 Gross Margin Analysis

Financial performance of the beef business venture was analyzed using the gross margin analysis approach. As per Kay et al. (2016), gross margin is the difference between total revenues and total variable costs.

Formula

$GM=TR-TVC$

Where:

GM = Gross Margin

TR = Total Revenue

TVC = Total Variable Costs

A positive gross margin indicates that the project is financially viable.

3.9.2 Linear Regression Model

Linear regression is a statistical method used to determine the relationship between a dependent variable and one or more independent variables. Linear regression analysis will be important in determining the effects that some factors have on profitability in the beef business. In this case, profitability is the dependent variable while factors such as the purchasing price of cattle, distance from the source, average weight of carcass and average weight of offal are the independent variables but not distance from the source because there was no variation. Linear regression model is appropriate in this scenario because it allows for the quantitative determination of effect of several independent variables on a dependent variable.

3.9.3 Multilinear Regression Formula

The general form of a multiple linear regression model is:

$GM=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\ldots+\beta_nX_n+\epsilon$

Where:

GM = Gross Margin (dependent variable)

$\beta 0$= Intercept term

$\beta_1, \beta_2, \beta_3 \ldots, \beta_n$ = Coefficients for each independent variable

$X_1, X_2, X_3 \ldots, Xn$ Independent variables (For example, buying price of cattle, seasonality and average carcass weight)

ϵ = Error term

3.10 Ethical considerations

The ethical issues regarding the study were considered very important and followed during the research procedure. All the participants were given consent forms, which ensured that their involvement in the research was voluntary and they understood the aims, procedures, and possible dangers of the research. Participants' confidentiality was also taken into account; their data was de-identified in order to ensure the anonymity of the people who were involved. Moreover, it was attempted to reduce the danger and harm done to the participants during the data collection phase. It should be noted that the research protocol was approved by the relevant ethical review board.

3.11 Chapter Summary

This chapter has discussed the research methodology that has been used in the conduct of value chain mapping and profitability analysis of the Bindura University Small-Scale Village-to-Market Beef Project. It has given a description of the study area, research design, population, data sampling methods, data collection techniques and data analysis methods used to accomplish the research objectives. This research study has used the case study design and the mixed method approach, enabling the researcher to gather and analyze quantitative and qualitative data. Data has been collected from farm records of the period between February 2025 to December 2025, key informant guides, key informants and secondary data sources. The researcher used purposive and simple random sampling methods to gather data from respondents and study units. Different methods of analysis such as descriptive statistics, value chain mapping, gross margin analysis, regression analysis and thematic analysis have been used to analyze the structure, performance, problems and profitability of the beef value chain. This chapter has further noted the ethical issues that have been considered during the research process. Chapter five gives the results of the research study.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1. Introduction

The findings obtained from the data collected will be discussed, analysed and interpreted in this chapter. The main aim of this chapter is to analyse the profitability of the Bindura University Small-scale Village to Market Beef project, and establish the main determinants of financial performance of the project with reference to the research objectives stated in Chapter One. Data Analysis was done using the Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to summarise the operational aspects, cost structure, revenues and profit performance using the guidelines provided by Pallant (2020) for quantitative data analysis. The results obtained have been presented in tables and discussed in relation to the review of the relevant literature in Chapter Two on beef value chain and profitability of livestock production in Zimbabwe and similar settings. This chapter starts with a descriptive analysis of all the variables, followed by calculation and interpretation of profit performance and ends with the factors that influence profitability**.**

4.2 Value chain mapping of the Bindura University small-scale village to market beef project

Figure 4.2.1 represents the actors involved in the village to market beef project of Bindura University. This information was collected using key informant guides and farm records.

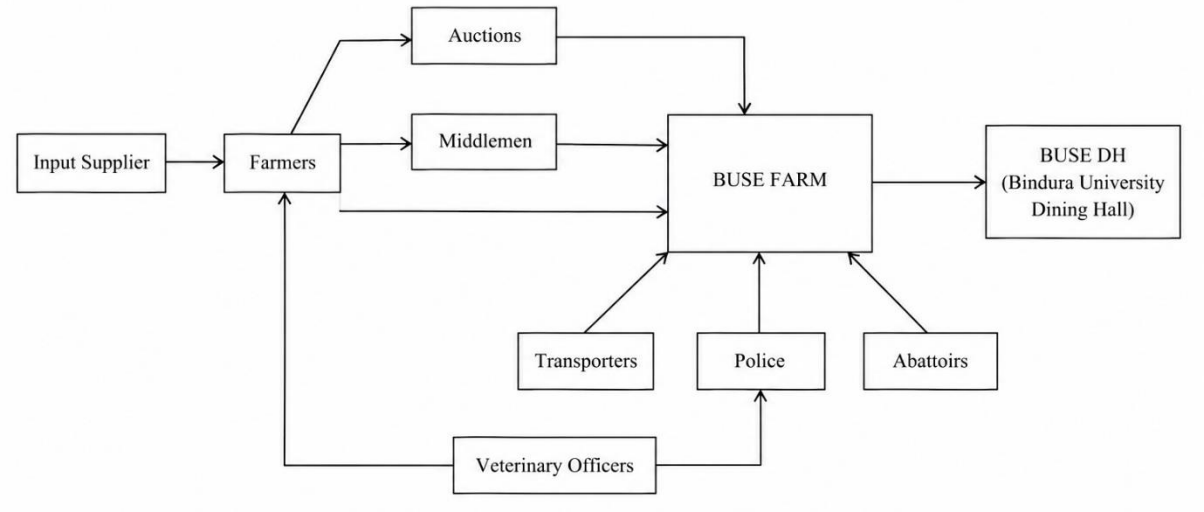


Figure 14.2.1Actors Involved in the Village to Market Project

Figure 4.2.1 shows the major players and connections involved in the value chain of the Bindura University Village-to-Market Beef Project. Input suppliers are the starting point of the value chain and involve supplying necessary inputs for production including feeds, breeding materials, veterinary products and agricultural machinery to the farmers. Farmers are the main producers and supply cattle directly or indirectly via middlemen and auctions to the BUSE farm. As evident in the figure below, auctions and middlemen act as marketing intermediaries aggregating cattle from different farmers before supplying them to the BUSE farm. The findings are supported by the findings made by Mapiye et al. (2011) who noted that producers, traders and market intermediaries are some of the major players in moving cattle from production sites to formal markets in Zimbabwe.

BUSE Farm acts as the main coordinating player in the value chain. BUSE Farm receives cattle from farmers, auctions and middlemen and performs functions like feeding, fattening, quality control and documentation before supplying beef to the Bindura University Dining Hall (BUSE DH)Such an important role underpins the Global Value Chain Theory put forth by Gereffi et al. (2005), which holds that the defining characteristic of value chains is the interdependence of activities performed by different actors to create value in the process of production before distribution of products to consumers. Similar results were found by Rich and Perry (2011), who indicated that commercial farms and feedlots act as coordinating organizations in livestock value chains.

The chart also shows how transporters, veterinary officers, police and abattoirs contribute to the functioning of the value chain. Transporters help move cattle to the BUSE farm while veterinary officers provide health care services, disease prevention and technical advice to both farmers and BUSE farm. Involvement of veterinary services is in line with findings by Scoones et al. (2013) who stressed the importance of animal health management for increasing the efficiency of livestock in Southern African beef systems. In the same way, police ensure security during the transportation and sales of cattle. This is especially important in the light of challenges related to cattle theft reported in Zimbabwean livestock systems (Mavedzenge et al., 2008).

In addition, the chart indicates that the abattoirs are part of the value chain since they help process the cattle into beef products, which can be used by the BUSE Farm when needed. The last link in the value chain is the BUSE Dining Hall, which acts as the final consumer of the beef generated from the project. This result confirms the statement by Kaplinsky & Morris (2001) who assert that value chains must be evaluated from the point of input provision up to final consumption of the product as the distribution of value takes place amongst different actors who interact along the chain. In summary, the chart indicates an interlinked set of primary, intermediary, and support actors.

4.3 To identify challenges affecting Bindura University's small-scale village to market beef project.

The following are some of the problems faced by the Bindura University small-scale beef from village to market project as identified through the key informant interviews. Some of the main problems include; high cost of transport, problems in accessing cattle, disease outbreak, lack of own transport means to transport cattle, pest and diseases, delay in fund release for cattle procurement, lack of means to access cattle, poor slaughtering facilities, poor animal genetics and poor stakeholder coordination.

An informant said that:

*"Transport is expensive, and we do not have our own truck, which makes both sourcing and moving cattle very difficult." (**Key Informant**)*

The key informant explained:

*"Sometimes we fail to source good cattle on time because of transport problems and delays in funding**." (Key Informant)***

Another Key informant emphasized:

"Even when we manage to get cattle, diseases and pests affect productivity, and slaughtering facilities are not well equipped." ***(Key Informant)***

Another key informant highlighted that:

*"There is also poor coordination management level sometimes with regards to providing all resources on time, which affects planning and slows down operations." (**Key Informant**)*

It is clear from the results of interviews with the key informants that the Bindura University small-scale village-to-market beef project is affected by various interconnected issues, such as high transport costs, problems with sourcing, diseases, lack of own transport for moving cattle, pests, delayed funding for purchasing cattle, lack of transport for sourcing cattle, low quality of slaughtering services, poor genetics of animals, and poor stakeholder coordination. The above-mentioned factors are not isolated, as they complement each other and create a system of inefficiencies that affect all stages of the beef production and distribution process.

Problems with transport were frequently mentioned by the interviewees as an important obstacle to efficient work. Lack of own transport for moving cattle together with high transport costs and the absence of transport for sourcing cattle makes it difficult to move cattle efficiently. This is supported by Mapiye et al. (2011) who found out that the lack of proper transport infrastructure in smallholder livestock farming in Zimbabwe results in high costs incurred in paying for transport services and limits the involvement of farmers in markets. In addition, the World Bank (2018) suggests that poor rural transport infrastructure in agricultural value chains increases the transaction costs and reduces competitiveness. Based on the Transaction Cost Theory, this inefficiency increases both search cost and logistics cost thus increasing the transaction costs of market engagement.

Sourcing has also been identified as another problem in cattle trading in relation to transport inadequacy and delay in payments. The informants have noted that there are instances whereby

there are enough cattle in the markets yet the project is unable to purchase them due to logistical and monetary challenges. This means that the project misses some chances of buying cattle and experiences irregular purchasing cycles. This is similar to what FAO (2019) says whereby in developing countries, livestock farmers experience problems in accessing the supply chain due to limited market integration and resource constraints.

Financial limitations tend to further compound the issues of sourcing. It was found that one of the most significant concerns in terms of cattle sourcing was the delay in releasing money for purchasing cattle. In particular, informants mentioned that once the funds are released, the price for the cattle is already raised, thus reducing its profitability. This idea resonates with the statements of the World Bank (2018) and ZimVAC (2021) according to which delayed agricultural funding affects the efficiency of operation in livestock projects in Zimbabwe negatively. In terms of the GVC theory, such a situation may be regarded as poor governance and lack of coordination in resources.

As for biological constraints in terms of livestock production, informants have indicated that diseases and pest infestations pose the greatest threat to the productivity of the organization. These factors decrease the quality of herd, increase the risks of mortality and veterinary expenses. This conclusion agrees with the statement of the Food and Agriculture Organization (2017) that diseases and pests greatly decrease the efficiency of livestock production in developing countries.

Genetics of the animals were identified as one of the factors limiting growth rates and the value of the market. According to the information gathered, some of the purchased cattle have low genetics, which limit the productivity and body weight. This corresponds to the findings by Dzama (2002) that genetic makeup is a critical factor influencing livestock productivity and profitability. In terms of GVC, low genetics affect the potential for upgrading the products, thus limiting producer access to the high-value market.

Weak processing infrastructure was also mentioned as a limitation. As informants explained, poor processing infrastructure affects speed of processing, hygiene level and the ability to meet formal market requirements. These results coincide with those of Mapiye et al. (2009) who found out that weak slaughtering infrastructure in Zimbabwe limits smallholder access to formal beef markets. Concerning GVC, weak processing infrastructure limits value addition.

Lastly, inadequate stakeholder coordination was found as one of the systemic issues faced by the planning and operations process of the value chain. There is inadequate coordination among the stakeholders and this causes delay, redundancy and poor communication in the process. It agrees with the findings of Kaplinsky and Morris (2001) as they highlight that value chains can only be successful if there is adequate coordination and governance among the stakeholders. According to GVC Theory, poor coordination implies poor chain governance whereas according to Transaction Cost Theory, poor coordination means high coordination costs.

It can be seen from the above analysis that the issues faced by the value chain are interrelated to each other. Inefficiency in transportation increases the problem of sourcing; financial delays exacerbate the problem of procurement; disease outbreak and genetic weakness affect productivity while poor coordination and infrastructural inadequacies affect the efficiency of the whole process. It proves the theories of GVC theory, Transaction Cost Theory, and Production Economics Theory that coordination, proper use of resources and lower transaction costs are crucial for value chains.

4.4 Profitability analysis of the Bindura University beef project during the planning phase

4.4.1 Start-up capital structure

Table 24.4.1 Expected Revenue and Expenditure Activity for the Beef Sale For 5 Cattle

Initial Capital	**Expenditure**	**Expected meat from 5 cattle**	**Least expected revenue to generated in USD**	**Net profit**
2275.00	Diesel = 120litres @$ 1.67=$100 Cattle purchase = 5 cattle averaging 300Kgs live weight@$350 each= $1750 Vet fee= $10 Police clearance=$10 Food= $30 Abattoir=$125 Transport=$50per beast=$250	Carcass weight=135Kgs*5=675Kgs Selling @ $4PER Kg Offal=145Kgs Selling @$2.50 per Kg Liver= 30Kgs @$4 per Kg 5 Heads= selling @ $10=$50 20 Hooves=selling @$1 each=$20	$2700 $362.50 $120 $50 $20 $3232.50	Revenue – Expenditure= Net profit $3232.50-$2275= $ 977.50per 10 to 14 days

Table 4.4.1 reveals that there is a need for initial capital investment of USD 2,275 which will be used in purchasing five cattle and covering operations cost. The first cost component is the cattle purchases which involve purchasing five cattle valued at about USD 350 each, which makes a total of USD 1,750. Other cost components include diesel for transport cost (USD 100), vet cost (USD 10), police clearance cost (USD 10), food cost (USD 30), abattoir cost (USD 125) and transport cost (USD 250).

The estimated output from five cattle includes both meat and by-products. The estimated carcass weight is 675 kg (135 kg x 5 cattle). If the beef is sold at USD 4 per kilogram, there will be beef sales of USD 2,700. The estimated offal was 145 kg and their sales at USD 2.50 per kilogram is USD 362.50. There will also be liver sales worth USD 120 and cattle head sales of USD 50. Sales of hooves (intestine by-product) worth approximately USD 20.

The total estimated income is thus around USD 3,252.50. Through deducting the total cost amount of USD 2,275 from this, the organization earns a profit of about USD 977.50. It is therefore evident that the business venture is indeed profitable, providing high returns on investment in a very short marketing period of about 10-14 days.

Table 34.4.2Descriptive Statistics for Profitability Indicators in the Bindura Unversity Beef Value Chain

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Carcass weight	65	52	233	110.98	36.780
Carcass price	65	5	5	5.00	.000
Offal weight	65	19	69	34.91	9.416
Offal price	65	2	2	2.50	.000
Liver weight	65	1	7	3.11	1.029
Liver price	65	4	4	4.00	.000
Head price	65	10	10	10.00	.000
Hooves price	65	4	4	4.00	.000
Total revenue	65	10	98	55.25	19.291

Buying price	65	180	630	355.60	103.496
Transport cost	65	50	50	50.00	.000
Police vet costs	65	2	2	1.84	.294
Runner fee	65	13	21	15.24	2.358
Slaughter fee	65	10	16	11.54	1.794
Total costs	65	26	71	42.86	10.376
Profit	65	38	702	234.37	127.643
Valid N (list-wise)	65				

Table 4.4.2 below provides the descriptive statistics of the profitability variables of the Bindura University beef value chain. From the table, the average weight of the carcass after slaughter was found to be 110.98 kg, with the range of the carcass weight being 52 kg and 233 kg. In the case of carcass price remaining fixed at US$5.00 per kilogram, the carcass weight was the main factor in determining revenue generation from selling meat.

The average weight of the offal was found to be 34.91 kg, with the range of the offal weight being 19 kg and 69 kg. Liver weight was found to average 3.11 kg. This offal contributed to the revenue generation in the enterprise, hence improving profitability.

Further analysis of the data revealed that the average revenue generated per animal was US$55.25, with the revenue range being between US$10 and US$98. Revenue variations are due to differences in carcass and offal weight among animals. Value chain theory suggests that value addition through the sale of multiple by-products improves revenue generation and enterprise performance.

In terms of cost, the mean purchasing price for cattle was US$355.60. Prices of cattle ranged between US$180 and US$630. There was a great variance in cost of buying the animals probably because of differences in size, breeds, conditions, and market prices. On the other hand, transport cost remained steady at US$50.00 per animal. Meanwhile, the average costs of police and veterinary were US$1.84. Average running costs were US$15.24 while the slaughter costs were US$11.54. Total mean costs incurred amounted to US$42.86 per animal. Costs varied from US$26 to US$71.

In terms of profitability, the enterprise yielded a mean profit of US$234.37 per animal. Profits for different animals varied from US$38 to US$702. The relatively high standard deviation of US$127.64 implies that there is great variability in terms of profit from the enterprise. This is due to variation in carcass weight, offal production and prices paid for the cattle. Positive mean profit implies economic viability of the beef value chain enterprise.

The results obtained from this study are in agreement with the findings of other studies conducted by Rich et al., who concluded that profitability in beef enterprises is primarily driven by animal weights, efficient use of by-products, and cost control. This study also provides evidence for the Global Value Chain Theory, which posits that profit making happens when inputs are converted to outputs with higher value, thus creating value for chain actors. In the case of the Bindura University beef value chain, value was created through carcass and by-products sales, but profitability was made through cost control.

4.5 To determine factors affecting the profitability of Bindura University's small-scale village to market beef project

Table 4 4.4.3 Model Summary

Model Summary				
Model	R	R Square	Adjusted R-Square	Std. Error of the Estimate
1	.999[a]	.999	.999	4.230

The model summary in Table 4.4.3 displays the findings obtained from the multiple regression analysis of the factors determining profitability in the Bindura University beef value chain. It is evident that there is a very strong positive correlation (R = 0.999) between the predictor variables (carcass weight, offal weight, and buying price) and profit. This means that the predictor variables change correspondingly to changes in profit.

The coefficient of determination ($R^2 = 0.999$) shows that 99.9% of the variance in profit is explained by the independent variables used in the model. Also, the adjusted $R^2 = 0.999$ further supports the above findings in that it shows the robustness of the model even when adjusted for the predictors. From the above findings, one can conclude that carcass weight, offal weight, and buying price are the main factors determining the profitability of the beef value chain. The

remaining 0.1% of variance in profit is determined by other factors apart from those considered in the regression analysis.

Also, the standard error of the estimate is 4.230, which is comparatively small. This shows that the predicted profit figures produced by the regression model have great proximity with the observed profit figures, indicating a very good level of prediction. Therefore, the model can be used reliably to explain profitability in the firm.

The findings above are in line with the predictions of the Global Value Chain Theory, which stipulates that value creation and profitability are significantly dependent on the relationship between value-generating outputs and production costs in the value chain. In terms of the Bindura University beef value chain, carcass weight and offal weight are some of the outputs whose value addition helps in the generation of income, while buying price is one of the significant costs associated with the profitability of the business. Literature on value chain analysis also contends that profitability is highly dependent on the maximization of value from outputs and minimization of inputs costs.

Additionally, the results are consistent with research on the profitableness of livestock farming, which has found out that animal body weight, carcass percentage, and cost of procurement are some of the most important determinants of financial performance in cattle ranches. Research has proved that higher carcass percentages normally result into higher profits while higher procurement costs decrease profitability.

Table 5 4.4.4 Analysis of Variance (Anova) for Factors Affecting Profitability

ANOVA[b]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1041641.839	3	347213.946	1.940E4	.000[a]
	Residual	1091.567	61	17.895		
	Total	1042733.406	64			
a. Predictors: (Constant), Buying price, Carcass weight, Offal weight						
b. Dependent Variable: Profit						

Table 4.4.4 below is the analysis of variance (ANOVA) result of the regression model applied to assess the factors determining profitability of the Bindura University beef value chain. The ANOVA test was performed in order to establish if the independent variables (carcass weight, offal weight, and buying price) jointly had any statistical significance influence on the dependent variable (profitability).

It can be seen from the above table that the regression model explained a sum of squares of 1,041,641.839 which means that the independent variables explained a large percentage of the variability in profitability. On the other hand, the residual sum of squares is 1,091.567 meaning that a small amount of variability in profitability remains unexplained. It is therefore clear that the regression model explains the profitability factor quite well.

The F value for the model was 19,400 (F= 1.940E4) with the significance level being p = 0.000. This shows that the significance value is lower than the standard threshold level of 0.05 and therefore the null hypothesis that carcass weight, offal weight, and buying price do not affect profitability is rejected. This shows that the independent variables considered in the model have a statistically significant impact on profitability in the Bindura University beef value chain.

This high F-value also shows that the variation accounted for by the model is much larger compared to the unexplained variation. This practically shows that profitability is mainly dependent on the factors considered and is not by chance. The implications of this are that increasing the carcass weight and offal production alongside efficient management of the cost of purchasing cattle will greatly improve the profitability of the business.

These results are supported by the tenets of the Global Value Chain Theory which states that financial performance depends on the effectiveness of transformation of inputs to outputs along the value chain. Outputs of greater value, such as carcass output and by-products, help boost income, whereas input expenses, especially cattle costs, affect the bottom line. In this regard, the major findings from the ANOVA analysis indicate the significance of the two value chain elements in profitability of the enterprises.

The results are also in line with earlier literature on the profitability of livestock and agribusiness, where production factors and input expenses have been noted as having a significant impact on the profitability of beef enterprises. Efficient use of production inputs

and good cost management have been considered as the main determinants of profitability within livestock value chains (Porter, 1985; Kaplinsky & Morris, 2001; Rich et al., 2011).

Table 64.4.5Regression Coefficientfor Factors Affecting Profitability

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-65.547	2.050		-31.975	.000
	Carcass weight	5.137	.031	1.480	163.261	.000
	Offal weight	2.111	.149	.156	14.126	.000
	Buying price	-.967	.013	-.784	-72.790	.000
a. Dependent Variable: Profit						

Table 4.4.5 below shows the regression coefficients of the individual contributions of carcass weight, offal weight and buying price to the profitability of the beef value chain at Bindura University. Coefficient values give information regarding the nature and strength of the relationship between the predictors and profit after controlling for other variables.

From Table 4.4.5 above, carcass weight was positively and significantly associated with profitability (B=5.137, p=0.000). It means that for every additional one kilogram of carcass weight, the profit increases by US$ 5.14. This is because increased carcass weight results in increased profits due to higher earnings. In addition, carcass weight had the highest standardized coefficient (β=1.480). It shows that carcass weight had the greatest influence on profit compared to other predictor variables in the model. Thus, efforts should be made to improve cattle production and carcass yields.

Offal weight, on the other hand, was positively and statistically significant on profitability (B = 2.111, p = 0.000). It means that an increase in offal weight by one unit increases profit margin by roughly US$2.11, everything else being constant. Offal weight is one of the important

factors showing the economic significance of by-products in the beef value chain since the revenues generated from selling by-products and carcass contribute a lot to the profit margin.

The negative and statistically significant relationship between buying price and profitability (B = -0.967, p = 0.000) suggests that an increase of one dollar in the buying price reduces the profit margin by approximately US$0.97, holding all other variables constant. Since the negative coefficient shows the direct effects of buying prices on profit margin, an increase in procurement cost of cattle decreases the profit margin unless accompanied by an increase in revenue generated from sales. Buying price has a high influence on profitability as seen by the standardized coefficient ($\beta = -0.784$), second only to carcass weight.

The coefficient of the constant -65.547 indicates the estimated profit when all the independent variables are set to zero. While this figure may not have much practical application in the analysis since it is impractical to have carcass weight, offal weight, and buying price equal to zero, it forms the point from which the impact of the independent variables can be compared.

The statistical significance of all the three independent variables is lower than 0.05 ($p<0.001$), which means that the carcass weight, offal weight, and buying price are significant predictors of profitability in the Bindura University beef value chain. This shows that profitability will be improved by raising the yields of the carcasses and offals while reducing the costs of procuring the cattle.

These findings are consistent with the theory of Global Value Chains, which states that profitability arises due to the value creation at various stages in the production and marketing processes. In this case, carcass weight and offal weight are the value creation outputs while buying price is an important cost input that determines the profitability of the value chain players.

These results agree with past researches where carcass weight, usage of byproducts, and cost of inputs were noted as the primary factors in determining profitability in livestock businesses. Studies have continuously established that increased carcass weight and usage of byproducts increase profit generation while cost of procurement decreases profit margin (Porter, 1985; Kaplinsky & Morris, 2001; Rich et al., 2011). The results also correlate with previous research on cattle production systems, which noted that productivity of the animals and cost of inputs are essential factors for profitability and competitiveness.

4.6 Effect of seasonality on profitability

Key informants indicated during the interviews that the profitability of the project varies according to seasonality. Further analysis was subsequently undertaken to assess the validity of this claim.

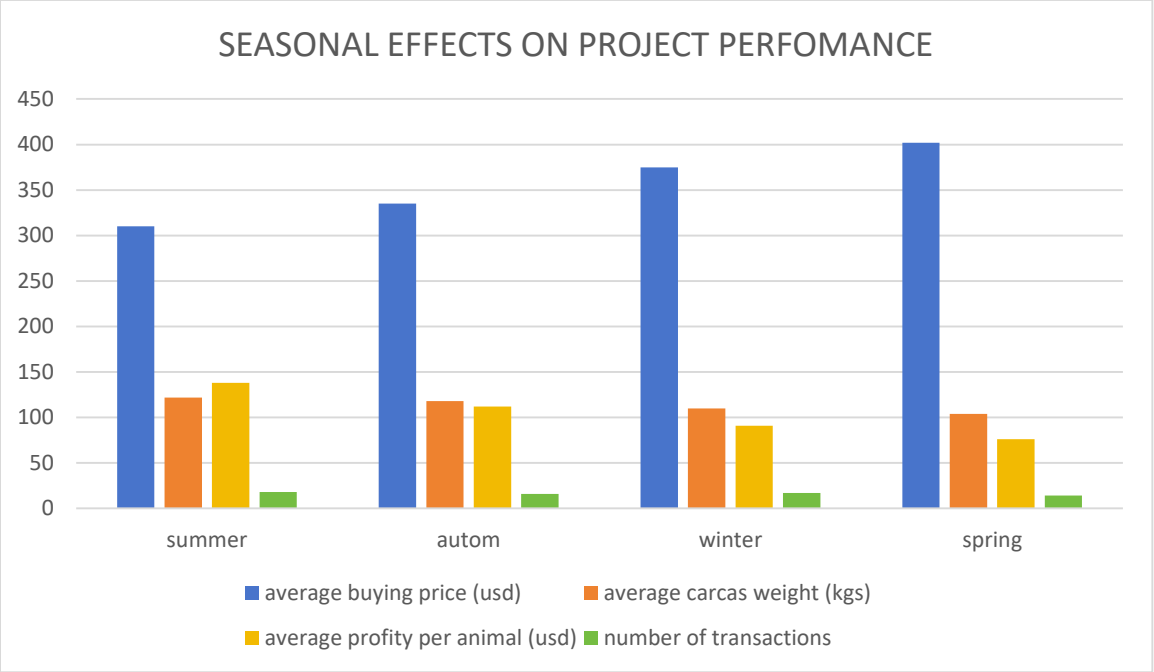


Figure 24.4.6 Seasonal Effects on Project Performance

As can be observed from the graph presented above, profit peaks in the early wet season (November to January), where profit stands at $138 per animal, but it reduces consistently until the end of the dry season when profit falls to $76 per animal in August to October. The $62 difference per animal indicates that seasonality is a major contributor to variability in profits, thus being a critical factor of performance. In addition, studies by Mpofu et al. (2021) indicate similar trends in Zimbabwe where profit differences due to seasonality have been found to be more than 40% between the best and the poorest seasons.

Price of purchase increases from $310 in the early wet season to $402 in the late dry season, representing a 29.7% increase. During the dry season, cattle are few in number as the farmers prefer to retain them for draught power or as reserves. Moreover, the condition of the cattle is poor, hence the need for higher price. Price of purchase:From $310 at the beginning of wet season to $402 towards the end of dry season, which is a 29.7% rise. In dry season, there are fewer cattle for sale since they are kept by farmers for use as draught power or retained and the quality of the carcass is poor hence higher prices are expected (Nkomo et al., 2015).

4.7 Chapter Summary

This chapter has discussed the results of the study carried out on the profitability of the Bindura University Small-Scale Village-to-Market Beef Project. This chapter has looked at the objectives of the study which were to examine the value chain of the project, identify the challenges affecting the project performance, evaluate profitability and determine the factors affecting profitability.

From the value chain analysis conducted it was found that there are many actors in the project who play different roles in ensuring that the process of production, processing and distribution of the cattle is carried out. These actors include input suppliers, farmers, middlemen, auction market, transporters, veterinary officers, police, abattoir, BUSE farm and the Bindura University Dining Hall. These actors form an important part of the whole process.

There are various challenges in the operation of the project which are affecting the performance of the project. These include high transport costs, sourcing challenges, outbreak of disease, infestation of pests, delay in release of funds to buy cattle, lack of transport, poor slaughtering facilities, poor genetic makeup of the animals and lack of stakeholders' coordination.

Profitability analysis showed that the project is viable in terms of finances. According to start-up capital analysis, an investment of USD 2,275 would yield an estimated net profit of approximately USD 977.50 per production cycle. Also, from descriptive statistics, the project recorded an average profit of USD 234.37 per animal, reflecting its economic feasibility as a beef enterprise. The main source of income for this business was carcasses and offal by-products like liver, head, and hooves.

Regression analysis found that carcass weight, offal weight, and buying price were key drivers of profitability. The first two variables have a positive relationship with profit while the latter has a negative one, implying that increased yield in carcasses and offal improves profit margin whereas high cost of cattle acquisition reduces profit margin. The model can explain 99.9% of variability in profitability.

Moreover, the results of the study suggest that seasonality affects the profitability of the beef enterprise. Highest profits were recorded during the early wet season while the lowest profit

was observed in the late dry season. Availability and condition of cattle together with their purchasing prices varied by season which accounted for profit variability.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter contains a synopsis of the study findings, conclusions derived from the study findings, recommendations that stem from the study findings and future recommendations for further research. This study was conducted on Value Chain Mapping and Profitability Analysis of the Bindura University Small-Scale Village-to-Market Beef Project. This chapter concludes the study by providing a connection between the study findings and objectives.

5.2 Summary

One of the objectives of the study was to profile the beef value chain of the Bindura University Small-Scale Village-to-Market Beef Project. The study revealed that there are many important actors in the beef value chain, among them cattle suppliers, transporters, veterinary personnel, abattoir personnel, butcheries, retailers and lastly consumers of the beef. The project is a village-to-market beef chain whereby cattle is acquired from villages, slaughtered at the abattoir and then sold as beef to the Bindura University dining hall. The study revealed that profit making was done by adding value to the cattle by selling their offals, heads, liver and hooves.

Another objective of the study was to identify problems facing the beef project. Some of the problems identified were the high costs of acquiring cattle, high costs of transportation, seasonality, low yield from the carcasses which negatively affect the profits made from the business. Some of the costs involved include veterinary costs, slaughter cost which increases the costs of production. Seasonal scarcity of feeds results in poor body conditions and reduced weights of carcass which affect profits.

The third aim of the study was to measure the profitability of the project. According to the results obtained, the project is profitable. It was estimated that there is net profit of about USD 977.50 after selling of five cows during a marketing cycle period of 10 to 14 days. The average net profit obtained from each cow is about USD 104.28. This implies that the business is profitable.

The fourth aim of the study was to find out the factors influencing profitability. According to the results obtained, the factors that influence the profitability include buying price, carcass

weight, offal weight and seasonality. Carcass weight and offal weight influence revenue positively while high cost of purchasing the cattle lowers the profitability. Seasonal variations influence the price of cattle as well as carcass weight.

5.3 Conclusions

From the results of the research conducted, it is evident that the Bindura University Small Scale Village to Market Beef Project is a viable business venture that can bring profit. This is made possible due to the value added through the sales of meat and byproducts, which enhances income. The research shows that the factors that determine profitability include cattle buying price, carcass weight, offals produced, and seasons. Cattle bought at cheaper prices and producing higher carcass weights are more profitable. Seasons play a vital role in affecting the condition of cattle, market prices, and performance of the enterprise. It has been shown that though the enterprise is profitable, there is potential for enhancing its performance through improved sourcing practices, animal selection, feed programs, and managing seasons.

5.4 Recommendations

According to the results obtained from the research, there is need for recommendation that will solve the problem raised and help increase profit of the village to market beef project:

- First of all, the strategy of sourcing cattle should be improved. In other words, there is need for Bindura University Farm to develop a system of sourcing cattle in which the farm purchases the cattle during times when prices are low. It will help the enterprise to reduce the cost of acquiring cattle.
- Additionally, there is need for selection of cattle whose yield is high. There is need for more emphasis to be placed on selection of cattle that have high body condition and carcass weight as well as higher yield of offal.

- Furthermore, it is important for Bindura University to improve value addition processes so that the enterprise will be able to earn money from by-products such as offal, livers, heads, and hooves.
- In addition, there is need for development of seasonal strategies of marketing the enterprise's products. In other words, there is need to make sure that cattle are purchased during low price times and sold during high demand time.
- Finally, there is need to keep financial and production records..

5.5 Areas for Further Study

Further investigations could include the effect of breed selection on the profitability of university beef enterprises. Further investigations could also be made about the effect of feed supplementing methods, climatic changes, and integration into the market on the effectiveness of small-scale beef value chains in Zimbabwe. Comparisons between university farms and private beef enterprises could give more insights about the optimal ways to boost profitability.

5.6 Chapter Summary

The chapter provided a discussion about the summary of findings, conclusion, recommendation, and further areas of investigation. The study has shown that Bindura University Small-Scale Village to Market Beef Project is a profitable and sustainable venture. The main factors affecting profitability include cattle purchase price, carcass weight, offal percentage, and season. Recommendations have been made to improve the sourcing, handling, value addition, and marketing processes for enhancing profitability and sustainability of the project.

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APPENDIX

Appendix1: Key Informant Guide

My name is Mangwanda Runyararo a student at Bindura University of Education pursuing a BSc Honours Degree in Agricultural Economics and Management. I am carrying out a research on the value chain mapping and profitability analysis of the Bindura University small scale village to market project. All information provided by the respondents will be kept **CONFIDENTIAL** and will serve no other purpose besides academic. Your co-operation is valuable in the process. Thank you for your assistance.

SECTION A: DEMOGRAPHIC CHARACTERISTICS

Please tick (✓) the option that best describes your situation.

1. What is your gender?

1	Male	
2	Female	

2. What is your age in years…….

3. What are your years of experience in beef production …….

4. What your role at Bindura University farm

1	Farm Manager	
2	Lecturer	
3	Farm Worker	
4	Student	
5	Other (specify)	

5. What is your highest level of education?

1	Primary	
2	Secondary	
3	Certificate	
4	Diploma	
5	Degree	
6	Postgraduate	
7	Informal	
8	None	

SECTION B: VALUE CHAIN QUESTIONS

Please tick (✓) in the box below

6. Which activities are involved in the beef value chain at Bindura University Farm?	
Cattle production	
Feeding	
Veterinary Services	
Transport	
Marketing	
Slaughtering	
Beef marketing	
Cattle purchasing	

Feed formulation	
Processing	
Pen fattening	

7. Who are the main actors in the beef value chain?	
Vet input producers	
Feed input producers	
Input suppliers (shops)	
Cattle producers (farmers)	
Vet services suppliers	
Extension services	
Transporters	
Middleman	
Abattoirs	
Butcheries	
Restaurants/ Kitchen/ Bindura DH	
Students/ staff	
Other	

SECTION C: PRODUCTION AND COST QUESTIONS

8.What is the average buying price of cattle per animal in USD	
9. What is the average carcass weight per animal in Kgs	
10. What is the T and S and runner fee in USD	
11. What are the transportation cost in USD	
12. What are the clearance cost(vet and police)	
13.What are the labour cost in USD	
14. What is the slaughter fee in USD	
15. Other	

SECTION D: REVENUE

16.What is the average price of reselling per cattle in USD	
17.What is the average quantity of meat produced per beast in Kgs	
18.What is the average meat selling price in USD per Kg	
19. What is the average weight of offal's in Kgs per animal	
20. What is the average weight of hides in Kgs per animal	

21. What is the average weight of a head in Kgs per animal	

SECTION E: PRODUCTION, MARKERTING AND ISTITUTIONAL CHALLENGES

Tick in the box all that applies

PRODUCTION CHALLENGES	
22. Poor animal genetics	
23. Disease and pest outbreak	
24. Inadequate feed and water	
25. Low reproductive performance	
26. Poor husbandry practices	
27.Land constrains	
MARKETING CHALLENGES	
28. Unfavourable price fluctuations	
29. Limited market access	
30. Weak market information systems	
31. Presence of middleman	
32. Limited processing facilities	
33.Restrictive trade regulations	
INSTISTUTIONAL CHALLENGES	
34. Inadequate extension services	
35. Weak research and development	
36. Limited access to finance	
37.Unfavourable policy and regulatory	

38. Poor infrastructure	
39. Weak stakeholder coordination	

SECTION F: FACTORS AFFECTING PROFITABILITY

Fill the table below

Cattle	Buying price	Distance	Seasonality (summer, winter)	Carcass weight	Sourcing cost	Price of beef	Profit

Thank you