Bindura University of Science Education

Faculty of Agriculture and Environmental Science

Department of Agricultural Economics, Education and Extension

ECONOMIC ANALYSIS OF GOAT BREEDING PROJECT: A CASE STUDY OF THE BINDURA UNIVERSITY OF SCIENCE EDUCATION

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

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DECLARATION

I hereby declare that the research project entitled **"Economic analysis of the goat breeding project."** submitted to Bindura University of Science Education, Department of Agricultural Economics, Education and Extension is a record of an original work done by me under the guidance and supervision of Dr Lovemore Musemwa and this work is submitted in partial fulfilment of the requirements for the award of a Bachelor of Science Degree in Agricultural Economics and Management. The results obtained in this thesis have not been submitted to any University or Institute for the award of any degree or diploma.

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DEDICATION

I dedicate this project to my family for their unwavering support and for always seeing the best version on me.

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I would like to thank my supervisor, Dr, L Musemwa, for his mentorship and guidance throughout the course of this research study. Special thanks go to my father, younger brother and sister, as well as all of my friends. I also want to thank God for making this entire thesis a success.

ABSTRACT

Goats play a pivotal role in improving the livelihoods of the rural poor. They are used both as a source of income, for consumption and they also carry a very substantial cultural significance. This study takes a look into the economic analysis of goats focusing on the goat breeding project at the Bindura University of Science Education. The main objective of the study is to make an economic analysis of the goat breeding project whilst the specific objectives focus on ascertaining the start-up cost of a small scale goat project, analyse the profitability of a goat breeding project and evaluate the challenges faced in goat breeding. For determining start-up capital and profitability analysis, the research used a case study analysis approach and secondary data from BUSE goat enterprise records. Inferential and descriptive statistics namely means, frequencies, and range was used in the descriptive and inferential statistics were used to analyse the data. Gross margin analysis was done to determine the profitability of the goat breeding project. The Likert scale technique was used to analyse the problems faced by farmers practising goat breeding. The study's goat breeding effort had a start-up cost of $4, 005 USD for the mixed breeds and $15, 315 USD for the pure breeds. For the mixed breed, the results reveal a gross margin of $764, a benefit-cost ratio of 1.7% and an average rate of return of 0.63 of the goat carcass. The results also reveal a total profit of $9 600 being recognised in the breeding of pure breeds. These demonstrate the economic viability and profitability of goat breeding in Zimbabwe. The study's findings indicate that poor grazing land, expensive artificial insemination, the expensive certification process for pure breeds, difficulty in obtaining a police clearance, difficulty in obtaining a stock movement permit, low market prices, high levels of competition, and high market prices for pure breeds were the major challenges that the project faced. In order to maximize their profits and ensure their own food security, the study advises farmers to explore producing pure goat breeds rather than growing them for meat. However, the start-up costs for producing pure breeds are quite substantial in Zimbabwe, hence it is necessary to offer farmers loans with low-interest rates.

Keywords: Goat, fixed costs, gross margin, productivity, profitability

LIST OF ACRONYMS AND ABBREVIATONS

FAO: Food Agriculture Organisation

BUSE: Bindura University of Science Education

GMA: Gross Margin Analysis

GM: Gross Margin

FC: Fixed Costs

TR: Total Revenue

TC: Total Costs

NGOs: Non- Governmental Organisations

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CHAPTER 1
INTRODUCTION

1.1 Background of the study

Globally there is a huge crisis as the rapid population growth is not being matched by the increase in production (Molotoks et al., 2021). Many developing countries whose economies are still dependent on agriculture can no longer draw on large tracts of unused land (Boserup et al., 2014). In research on how economic population growth affects economic performance, some researcher's stress that population growth reduces the natural resources and capital per worker while other researchers stress how greater population size and density affect productivity. Agricultural development is critically important to improving nutrition and food security (Grafton et al., 2015). Its roles include increasing the quantity and diversity of food, driving economic transformation and providing the primary source of income for many of the world's poorest people.

Livestock production remains one of the world's most important sectors concerning economy, food security and the livelihoods of people (Golub et al., 2013). That is, it plays an important role as an enterprise in agriculture. Globally, livestock contribute about 40% of agricultural gross domestic product (GDP) and provide livelihoods and incomes for at least 1.3 billion people (Guthiga et al., 2021). However, despite their economic importance, livestock receive just a small fraction of official development assistance to agriculture. With more investment, livestock production can be the economic driver for millions of people in low—and middle-income countries (Sulis et al., 2022). Livestock is key for smallholders as an important source of income and as labour-saving productive asset. Livestock also contributes to nutrition as animals sourced food is important, especially to reduce child stunting in developing countries (Neumann et al., 2002). The most common livestock species in Africa include among others. Cattle, goats, ship and pigs. However in the past five decades, goat production has witnessed a rapid growth of approximately 240% globally, while other livestock species have maintained or decreased their populations (Monteiro et al., 2017). Currently, there are about 1 billion goats around the world (Pandey et al., 2022). More than 90% are located in Asia and Africa, and only 1.8% in Europe (Capote et al., 2016). In Africa and in most particular in Zimbabwe, goat farming has been on the rise mostly due to low production cost and resistance to drought, pests and diseases. Goats are easy to keep and are very profitable since the feed costs are low due to the fact that they eat a variety of foods. However, the commercialisation of goat production in Zimbabwe is still very low. In Zimbabwe, at least 97% of the national goat herd is owned

by smallholder indigenous farmers. The farmers rarely breed the goats for commercial purposes despite the fact that the country has potential to export goat products. Common breeds in Zimbabwe include the Matabele goats, Mashona goats, Boer goats and the Kalahari goats. With this diversity of the goats' population, there is need to move from subsistence to commercial production. The vulnerable resource constrained farmers who keep goats in Zimbabwe are likely to benefit in terms of nutrition and economic security from the goat business. Though there are a number of opportunities available within the enterprise which among other include the increasing demand for goat meat.

Goat production is currently being promoted at a global scale by the International Goat Association in addition to other organisations (Miller et al., 2019). The government's research and extension offices, universities, non-governmental organizations (NGO's), and farmers associations have all actively supported goat production in Zimbabwe. Recently, several parties have been paying close attention to the goat industry in Zimbabwe, with organizations like ZimTrade offering to assist farmers in exporting goat meat to lucrative markets like Angola and the Middle East (Mukarumbwa et al., 2019). The second round assessment report **2021-23 April 2021**, goat numbers increased from **391 622** in 2019 to **396 369 2020/21** season. Since goats are not economically valued in Zimbabwe, goat production is rarely on the map of goat-producing countries (Chokoe et al., 2016). According to the statistics included in the Zimbabwe Vulnerability Assessment Committee (ZimVac 2021) 2021 Rural Livelihoods Assessment Report, the proportion of households which owned goats nationally was 44%. Matabeleland South had the highest proportion (64%) of households which owned goats. Mash-central in which Bindura University of Science Education is located had 37% of households owning goats. In Mashonaland Central Privince of Zimbabe, most farmers keep local and mixed breeds and most of them are prone to diseases and have small body frames which makes them valued at very low prices in the market and hence this has resulted in most farmers keeping goats for subsistence. It is against this background that promoted Bindura University of Science Education to establish a National Goat Breeding Centre of Excellence in 20……..aimed at improving the goat breeds in Zimbabwe. However, since the initiation of the project no evaluation has been done to analyse the economic contribution of the goat breeding project.

1.2 Problem Statement

A major downfall in the livestock production in Zimbabwe has been noticed ever since there where export issues raised due to safety standard on meat exports (Jaffe et al., 2018). In most cases, goat production is lower than any other livestock. Commercialisation of goat production

is very still very low in Zimbabwe while is market for goat meat and other bi-products is on the rise nationally, regionally and globally. Most farmers shun away goat production because goats are not recognised as assets so they are being sold at low prices of as low as USD25.00 per goat according to the 2nd round assessment report 2021. Hence they don't contribute much to the economy, unlike other countries. The marketing of goats via the abattoir decreased from 4% in 2019 to 2% in 2020 (Khaleel at al., 2020).

Goats perform an important financial function, but many farmers are often unaware of the benefits of goat production. There is no official market for goats. Access to infrastructure and market information is underdeveloped and this has resulted in farmers selling their goats at farm gate to mostly middlemen who in most cases offer very low prices. (Ojango et al., 2018). Therefore, they have very little incentive to invest in goat production. The productivity of goats under the prevailing traditional extensive production system is low (Kumar, Shalander et al., 2010) mainly because of feed scarcity and lack of adoption of improved technologies and management practices. The immediate impact of COVID-19 was a wave of panic buying by the public (O'Connell et al., 2021). This pandemic affected markets of the livestock products and the disposable income of consumers reduced. The main concern within the goat industry is that there is little education and research available on goats (Miller et al., 2019). Hence this project focuses on the economic performance of goat farming.

1.3 Objectives of the study

1.3.1 Main objective

The main objective of the study is to evaluate the economic performance of goat breeding project at the Bindura University of Science Education.

1.3.2 Specific objectives

- To establish the cost of setting up a small scale goat breeding project.
- To determine the profitability of the goat breeding project being carried out at Bindura University of Science Education.
- To establish challenges faced by Bindura University of Science Education goat breeding project.

1.4 Research questions

- What is the cost of setting up a small scale goat breeding project?

- What is the profitability of the goat breeding project?
- What are the challenges faced at Bindura University of Science Education goat breeding project?

1.5 Hypothesis

- The Bindura University of Science Education goat breeding project is profitable.

1.6 Justification

A lot of farmers have no adequate information on goat production (Islam et al., 2018). As a result there has been a decline in goat production in Zimbabwe resulting in falling of goat production by most commercial farmers. This research will address the knowledge hole unearthing the ability of goat farming in increasing economic growth. Moreover the research via its findings shall add to existing body of knowledge on the economics of goat breeding in Zimbabwe. The information generated shall be of value to goat farmers and producer organisation, academia, researchers and other stakeholder involved in goat production and marketing. The recommendation from the study shall be used to inform policy aimed at enhancing the uptake and profitability of goat production in Zimbabwe. The study shall ensure that scarce resources are allocated efficiently and investment into the goat project brings economic benefits to Zimbabwe and improves the welfare of goat breeders in Zimbabwe.

1.7 Scope/ delimitations and limitations of study

The project mainly focused on the economic benefits of a goat breeding project and the Bindura University of Science Education goat breeding project was used as a case study.

1.8 Outline of the Thesis

The thesis is divided into six chapters. The study's introduction, background, aims and hypothesis are in Chapter 1. The study's delimitation and justification are also presented in Chapter 1. The literature review, as well as the study's theoretical and conceptual framework, are in Chapter 2. The description of study area, sampling, data collection and analysis methods are covered in Chapter 3 It also includes the study's data gathering and analysis methodologies. A detailed description of the study results and discussion are presented in Chapter 4. The study's conclusion and recommendations are presented in Chapter five.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

According to (Alabi et al., 2013) goats play an important role in improving African livelihoods and food security. Indigenous and locally developed types have a wide range of phenotypic diversity, but they are typically well adapted to the harsh environment in which they must survive and produce (Matavea et al., 2021). They serve a variety of purpose in developing country communities, ranging from providing food security to serving as a liquid form of currency and participating in ceremonial events. This chapter will focus on the review of literature of the study. It also contains the definition of key terms, goat production trends, goat breeding systems adopted in Zimbabwe, importance of goat breeding. It also contains the theoretical framework and the conceptual framework together with the empirical framework.

2.1.1 Definition of key terms

Small holder farmer

A smallholder farmer is the one that relies primarily on family labour and has a tiny piece of land (FAO, 2014). Smallholders typically have restricted access to land. However, many additional characteristics of smallness, such as minimal capital (including animals), scattered holdings and restricted access in inputs, are crucial to defining resource-poor small farmers in the developing world. We should also keep in mind that resource-poor livestock keepers are a heterogeneous group according to (Radolf., et al 2022). A small-scale in any part in a developing country is defined as one who owns less than 5 hectares.

Economic analysis

Evaluation of costs and benefits is essentially what economic analysis includes. In order to facilitate better resource allocation, it brings by evaluation projects according to their economic viability (Gigli et al., 2019). Its goal is to evaluate how a project affect wellbeing of beneficiaries.

2.2 Goat production trend in Sub-Saharan Africa

There are approximately one billion goats on the planet, and the global goat population has more than doubled over the last four decades (Miller et al., 2019). According to the Food and Agriculture Organization, developing countries are home to more than 90% of the world's goat population; Asia has the largest proportion of the world's goat population, followed by Africa

(Skapetas et al., 2016). According to (FAOSTAT 34), during the last decade there was an increase in goat production globally and currently there are more than 1 billion goats, with Africa contributing 36.2%, Asia 58.2%, Americas 3.5%, Europe 1.7% and Oceania 0.4%. In Sub-Saharan Africa, goats are the second most important livestock species after cattle. Approximately 96% of the world's goat population is kept in developing countries, of which 64% are found in rural arid (38%) and semi-arid (26%) agro-ecological zones. The top-ten countries producing goat meat are all from Asia and Africa; indicating the importance of goat meat to people in resource-poor areas.

In Africa, goat meat production has increased from 1.1 million tons in 2008 to 1.3 million tons in 2017 ; of which the majority is produced and consumed locally (within households).The Southern African goat population currently consists of approximately 38 million goats (Mataveia et al.,2021). Southern Africa has a variety of goat breeds, of which the Mashona, Matabele, Tswana., Nguni, Landim and Pafuri are the domi-nant ones. The goat populations in Southern Africa vary between countries. Tanzania has the highest number with 18.9 million goats while Botswana has the smallest goat population (1.4m) in Southern Africa. FAO also reported that there is approximately 576 goat breeds currently distributed across the world, with 17% of these in Africa. Although goats are found in all types of ecological zones, they are mainly concentrated in tropical, dry zones.

2.2.1 Goat production trend in Zimbabwe

In Zimbabwe, an increasing number of farmers are raising goats for commercial purposes (Ndlovu, Christopher et al., 2020), this is because goat farming is a very profitable business to run. Goat meat is becoming more popular. People want to experiment with meat that isn't chicken, beef, or pork. Goats are easy to keep and very profitable because their feed costs are low because they eat a variety of foods (Ghosh et al., 2020). Due to the high profits from goat farming, an increasing number of farmers in Zimbabwe are keeping goats. Demand for goat meat is high, and the market has a lot of room to expand (Guimarães, Vinícius Pereira, et al., 2022)

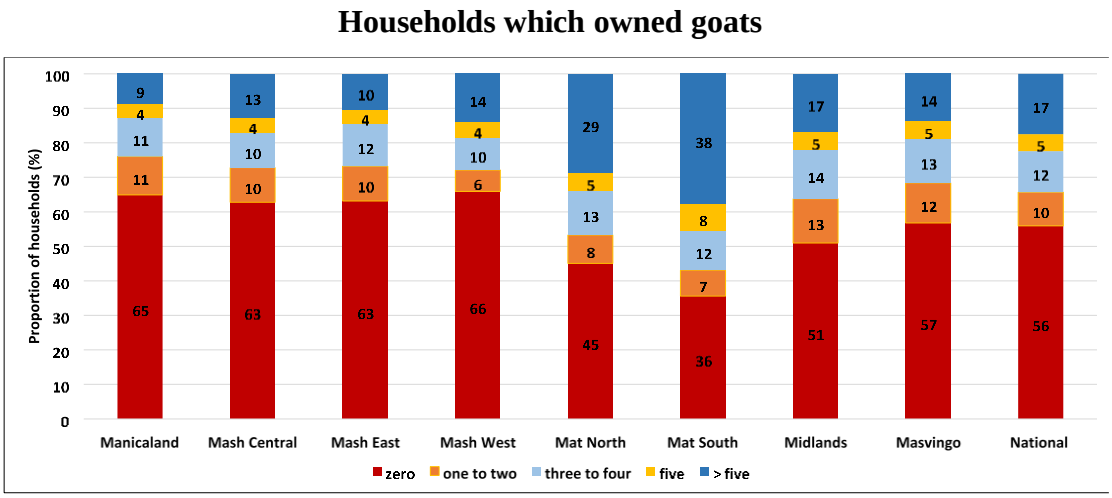


Figure 1: Households which owned goat (ZimVac, 2021)

According to ZimVac (2021), 56% of households in Zimbabwe do not own goats. Mashonaland West (66%) and Manicaland (65%) had the highest proportion of households without goats. Matabeleland South had the highest proportion (64 %) of goat-owning households. Matabeleland South had the highest proportion of households with 5 or more goats (38%), while Manicaland had the lowest (9%).

According to (ZimVac,2021) goat prices ranged from USD 16 to USD 45. With the highest goat prices being recorded in Zvishavane while the lowest was recorded in Rushinga and Mbire.

2.3 Goat breeding in Sub-Saharan Africa

The goat population in Southern Africa exceeds 35 million animals, the majority of which are kept in small-scale traditional production systems in communal areas (Mataveia et al., 2021). These traditional production systems are distinguished by informal, low-skilled labour, small animal populations, and limited resources. The majority of goats are raised in mixed crop-livestock systems, in which different livestock species and crop farming complement one another. These animals' productivity and off take are relatively low.

Some goats are used in agro pastoral production systems, which require slightly more management and resources (Garambois, Nadege et al., 2020). Both of these systems rely on a high degree of variability, with keepers/farmers able to exploit various resources as needed. Goats have a variety of adaptive mechanisms that allow them to thrive in harsh and challenging environments, making them an ideal species for use in these production systems (Mataveia et al., 2021).

Small-scale farmers have benefited from the use of communal grazing in goat raising because feed is easily accessible (Mataveia et al., 2021). However, in order to boost nutritional levels, goats also need goat feed. The simplest and most typical method of breeding goats is natural mating. Due to the variety of breeds and bloodlines, most hobby operations have a low buck: doe ratio (1:5). Bucks have a powerful libido and can spawn up to 50 times as many does as this, though as they age and particularly in the off-season, they become less productive. According to (Mohammed ,A 2018), artificial insemination enables the spread of desirable genetics and the management of STDs, hence it is being utilized more frequently by goat farmers. However, many small-scale farmers in Sub-Saharan Africa lack the capacity to perform artificial insemination. As a result, some farmers choose to remain with natural mating, which will lessen the likelihood that new varieties will be introduced.

2.3.1 Goat breeding in Zimbabwe

There is also a current frenzy surrounding the crossbreeding of local goat breeds with foreign breeds such as Boer, Red Kalahari, and Savannah, among others (Amundson et al., 2020). While there are no fundamental issues with cross breeding, it is presented as a quick fix. It does not, however, address the underlying cause of why the local Mashona and Matabele breeds have progressively shrunk due to inbreeding. Despite their proclivity and adaptability, high reproductive wastage under traditional management systems remains a barrier to increased local goat productivity (Vaintrub et al., 2021). This decrease in output has been attributed to a number of constraints, including poor nutrition, inadequate health care, and insufficient management input. In Zimbabwe, farmers are allowed to import exotic breeds, however they are required to obtain an import permit prior to importation (Msalya et al., 2020).

However the continuous importation of exotic breeds has a high risk of eradicating the hardier, tastier, and more adaptable local breeds in the name of increasing carcass weight through cross breeding.

2.3.2 Goat production systems in Zimbabwe

The livestock sectors productivity in Zimbabwe's semi-arid regions is low, mirroring the situation in most of southern Africa (Macheka et al., 2021). Poor infrastructure, underdeveloped markets, insufficient information, and a failure to adopt new technologies are some of the factors that contribute to poor performance. As stated by (Gassner et al., 2019), the livestock sector has enormous potential for generating income and ensuring food security, particularly for the rural poor farmers. Despite this potential, little effort has been made to

comprehend and improve it. Livestock production systems must be defined, described, and placed in a geographic context in order to incorporate interactions between livestock and the environment into a system (FAO, 1995). Different authors used different criteria to classify livestock/small ruminant production systems. The contribution of the livestock sector to total household revenue (income and food), the type and level of crop agriculture practiced, the types of livestock species kept, and mobility and duration of movement could all be used to identify livestock production systems (Solomon et al., 2010).

In Zimbabwe, goat production is an integral and important component of the smallholder farming system. In accord with (Ndlovu et al., 2020) over 97 percent of Zimbabwe's 4.7 million goats are raised by smallholder farmers. The majority of smallholder farmers live in agro-ecological regions IV and V, which only allow for limited cropping activities. In such arid and semi-arid regions, livestock production, particularly goat production predominates.

Herding

Herding is the most common traditional extensive system, in which goats are either tethered or herded according to pasture availability, and the mixed crop-livestock system (Manirakidza, et al., 2020). A goat attendant guides the grazing goats to preferred grazing areas in this type of production system. The attendant also prevents goats from entering crop fields, vegetable gardens, or areas where harvested crops or thatch grass are being preserved. Herded goats, on the other hand, have more options for plants and pods than tethered goats.

Tethering

This is the practice of restricting goat movement by tying them to pegs or trees with ropes or chains, especially during the rainy season.

Free range

Free ranging is defined as (livestock, particularly poultry) kept in natural conditions with freedom of movement. The goats are free to roam the veld forage and crop residues in the morning. During the dry season, after crops have been harvested and stored in secure locations, this system is mostly used. Although the goats have more access to feed, the forages are of poor quality at this time of year. In addition to poor nutrition, free-roaming goats are more valuable to predators.

2.4 Importance of goat production

Small-scale farmers in developing countries rely heavily on goats for a living (Dhakal, Alok, et al., 2021). They contribute to food security and can reduce seasonal food variability and availability, both directly and indirectly through milk and meat production and cash earned from the sale of their products. Smallholder farming systems are prevalent in developing countries and are distinguished by a lack of resources such as land and capital, a low income, inadequate food security, and mixed crop livestock systems with labour provided by family members. Goats are kept in these communities for meat, milk, skins and manure. Mats, water or grain containers, tents, and drums can all be made from goat skins. Goat manure is occasionally used in low- input gardens to supplement the mixed crop livestock systems that characterize smallholder farming systems. Smallholder farmers believe goat manure is nutrient-dense. As stated by (Susanti et al., 2020), when applied to the field under the same conditions as cattle manure, goat manure was found to be of higher quality for the macronutrients nitrogen, phosphorus, and potassium. Goats are also used to supplement household food requirements and are sold to purchase food and fund educational and health expenses.

Goats play traditional roles in smallholder farming systems in addition to providing livestock products (Mataveia et al., 2021). They are used to settle debts (dowry, loans, and fines), as well as to represent savings, wealth, and protection against risk and uncertainty. Goats are also able to use marginal land, which is typical of most small-holder farming systems, and have been reported to be useful in controlling bush encroachment in these areas due to their hardiness. Although goats have many direct and indirect uses in small holder farming systems (Gwaze et al., 2008) reported that the actual contribution of goats at the household level is not well known because current evaluation systems based on monetary standards frequently ignore the non-monetary contributions of goats to households, such as acting as a buffer against shocks such as crop failure.

2.5 Goat breeds kept in Zimbabwe

In Zimbabwe, various breeds of goats are used for commercial goat farming, including the Boer, Mashona (indigenous breeds), Matabele (indigenous breed), and Kalahari. According to (Sejan, Veerasamy, et al 2021), the Boer goat is the superior breed because it grows quickly, has a good bone structure, is heavily, has a large body size, and can adapt to a variety of pastures. However, because Boer goats are expensive to buy and maintain, many farmers in

Zimbabwe cross breed them with indigenous breeds. Cross breeding of local goats with Boer and Kalahari breeds is encouraged in order to improve quality and maintain disease resistance. There is also a current frenzy surrounding the crossbreeding of local goat breeds with foreign breeds such as Boer, Red Kalahari, and Savannah, among others. While there are no fundamental issues with cross breeding, it is presented as a quick fix to poor goat productivity.

2.6 Challenges affecting goat breeding

Although goat production in rural areas has the potential to contribute to food security and commercial development, it faces a number of challenges (Kim et al., 2022). Poor management is one of them. As stated by (Khairallah 2020) goats in smallholder systems are frequently mistreated and subjected to harsh weather conditions. Furthermore, they do not receive supplementary feed and rely solely on natural veld. The harsh conditions under which the goats are kept can result in severe feed shortages. Herding and tethering systems also result in a high parasite infestation and disease prevalence. Most of these farmers in Zimbabwe lack access to veterinary care, resulting in high mortality rates, low reproductive rates, and subclinical diseases. Poor or ineffective grazing management is impeding goat productivity. Seasonal nourishment is common in animals, and there is no supplementary feeding. Severe water scarcity is also not uncommon. To address these challenges, (Visser and Van Marle-Koster 2015) recommended that attention be paid to "range management, feeding systems and herd health management, efficiency of production, and use of unconventional feeds" through government extension programs and other farmer development programs.

2.7 Start-up requirements for a goat breeding project

In accord with (Islam et al., 2018), before starting a goat farming business, a farmer must have sufficient knowledge and key information. You must decide how many goats you want to keep, where you will keep them, and who your target market will be. The number of goats you keep will be determined by the amount of land and capital you have available, as well as the size of your target market.

There should be enough land, a large enough area for erecting the necessary goat pens and grazing. Grazing pasture is required for goats. The pasture should be divided into sections. And, if at all possible, rotate the pastures where your goats graze to avoid overuse and overgrowth of less desirable forage (that means, allow your goats to graze on a pasture while

other rests). The pasture should contain a variety of pasture plants or grasses. This will increase the food value and help to meet all of the goat's nutritional needs (Mohammed et al., 2020).
To be successful in the goat farming business, you must have adequate housing. Goats are adaptable animals that don't require expensive housing. Your goats housing should have a dry floor and adequate ventilation. The enclosure should shield your goats from the sun and ran. The goat housing should be well-ventilated and simple to clean. Poor ventilation can be harmful to the health and performance of goats. Harmful gases and dust can cause respiratory problems in goats, while extreme temperatures can reduce poverty.

To begin your goat farming business, you will need goat breeding stock. These are bucks (male goats) and does (female goats). When selecting breeding stock for goat production, it is critical to consider the goat's history. Buy your breeding stock from goat farmers with a good reputation in the goat farming industry. You should always choose goats that are strong and appear to be in good health. Feed is the most expensive aspect of the goat farming business. Pasture and browse are typically the primary and most cost-effective sources of nutrients, particularly for meat goats, and in some cases, pasture and browse are all that goats require to meet their nutritional needs (Dida, Mulisa Faj, 2021). Goats are active, inquisitive, and adaptable in their feeding habits. You will also need money to build the goat housing, purchase breeding stock, feed, and so on. As a result, the scope of your goat farming project will be determined by the amount of capital available to you and adequate financial planning.

2.8 Description of the Bindura University of Science Education Goat Breeding Project

The Bindura University of Science Education Goat Breeding Project began in February 2020 with a stock of 233 goats made up of pure and native breeds. The Mashona, Matebele, Red Kalahari, and Boar types were among the pure breed lines. The project's primary goal is to raise the quality of native goat breeds through artificial insemination with locally produced buck sperm and crossbreeding with superior exotic and indigenous breeds.

2.9 Empirical review

Empirical research generates knowledge from actual experience rather than from theory or belief since it is based on observed and measured phenomena (Barasa et al., 2018).

2.9.1 Profitability

Profitability is a major goal of any agriculture activity, and the majority of farmers strive to achieve it. However, there is a significant need to transform a large number of small-holder farmers from non-profitable production to a more profit-oriented production (Abegunde et al., 2019). There are several methods for determining the profitability of an agricultural enterprise. (Engle 2010) emphasizes that this is dependent on the chosen time frame, data availability, and scope of the chosen activity. The most important types of financial records from which data required for profitability analysis can be derived are cash flow budgets, enterprise budgets, balance sheets, and income statements. The enterprise budget provides an overall picture of an enterprises costs and returns over a given time period, whereas the cash flow budget demonstrates and enterprise's ability to make payments when they are due. The balance sheet summarizes the enterprise's solvency and capital position, while the income statements shows the enterprises profit or loss over a given time period (Mantey, 2019).

According to (Nemeth et al., 2004), the most important income resource in Hungary was milk and milk products, which accounted for 75-80% of total farm income. In this study, the income ratio from selling kids for slaughter did not exceed 18-20%, with feedstuff and labour being the most expensive costs. According to the balance ratios, goat breeding and production were only profitable in the smallest categories studied in terms of the number of does owned by a farmer and above the 50-head classes. Only negative outcomes could be expected if the farmer produced for market. Cost factors and profitability were not as important if the production was only for family consumption. The current study examined goat production profitability using an enterprise budget with gross margin and rate of return as critical performance indicators. Enterprise budgets provide a summary of costs and revenue associated with a business over a specified time period for a specific production unit (Engle, 2012), which is a useful method of determining the profitability of a technology or an enterprise. One production cycle can be to develop an enterprise budget (Engle and Neira, 2005).

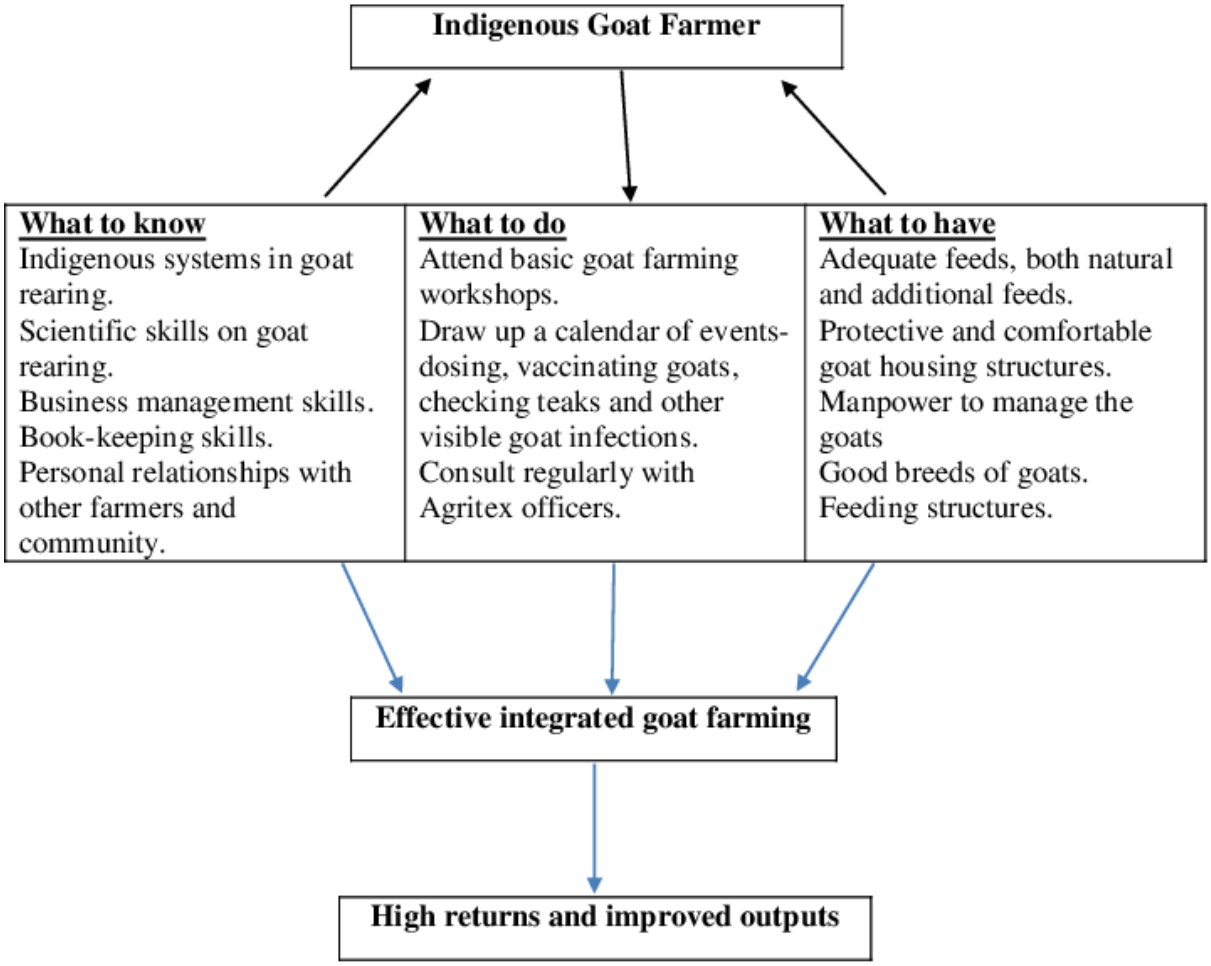
2.9.2 Gross margin analysis

Gross profit on goat production is measured by subtracting the cost of the goat sold from the selling price. The cost of goats sold includes all costs associated with the production of goods and services sold by farmers. Gross profit margin s obtained by dividing gross profit by sales.

2.9.3 Rate of return

Rate of return is the net profit or loss of an investment over a period of time and s expressed as a percentage of the original cost of the investment.

2.10 Conceptual framework



Adopted from (Ndlovu et al 2020)

2.11 Chapter summary

This chapter presented literature on the goat production trend and state of goat breeding in Sub Saharan Africa and Zimbabwe. Challenges faced by goat farmers are also highlighted. The empirical methods for measuring the viability of goat breeding are also presented. A conceptual framework affirming how farmers can remain profitable and increase goat production in high-risk contexts such as economic instability was presented towards the end of the Chapter.

CHAPTER 3
METHODOLOGY

3.1 Introduction

This chapter focuses on the study's methodology. This chapter includes a description of the research area, the research design, and the study's sampling technique, as well as the data gathering and data analysis procedures used in the study. It also includes the ethical consideration employed in the study.

3.2 Description of study site

The research was carried out at the Bindura University Farm. This Farm in Glen Avillin is set to become a separate Strategic Business Unit from Bindura University of Science Education (SBU). Glen Avillin Farm, which covers roughly 534 hectares (ha), is located in Agro-ecological Region II b, which receives 750-1000 mm of annual rainfall and has a well-defined dry season from November to March. The area is ideal for intensive crop and livestock production on a large scale. However, rainfall distribution patterns can be variable, and seasonal drought spells can have a negative impact on dry land cultivation. The proximity and availability of a perennial source of water from the Pote River at Glen Avillin Farm, on the other hand, allows irrigation to be done all year. As a result, the farm is well-positioned for both sustainable intensive and innovative crop and animal production systems, allowing for the most efficient use of resources. Bindura University Farm, as a university farm in one of the country's most important farming districts, it has the potential to become a centre for practical, commercial farming, where all current farming procedure and concepts can be evaluated and used.

The arable area of Bindura University Farm is roughly 300 hectares (of which approximately 140 ha is irrigable) and is suited for crops such as maize, sorghum, wheat, barley, soya bean, or horticulture. Wet grassland and hills cover the remaining 240 hectares of land, which could support intensive dairy, beef, sheep, pig, and poultry operations. In addition, the University Farm has set aside 50-hectare block for the Faculty of Agriculture and Environmental Science to support suitable teaching, learning, and research activities (FAES). The farm grew maize (46ha), sorghum (60 ha), and used 5 hectares for teaching and learning by the University's teaching departments during the 2014-2015 farming season. The farm's operations include a 3 000 broiler unit, an 8 sow pig unit, and a 45 beef herd. A fisheries project, which has 200 m^2 ponds that can accommodate up to 1500 tilapia fish. There is also a goat project on the farm on

which this research is based. Currently, the agricultural enterprises are being grown up to become a productive and profitable farm.

3.3 Research Design

A case study research design and a mixed strategy were used in the research, which include both quantitative and qualitative approaches. A mixed research technique is crucial because it entails collecting both forms of data at the same time as evaluating information from various sources and individually analysing the data, which allows for a side-by-side comparison and quality conclusions about the phenomenon. (Glasow, 2005). The study focuses on data from the goat farming enterprise at Bindura University. A case study is a research method for gaining a comprehensive, multi-faceted understanding for a complicated subject in its real-world setting. It is a well-established research strategy that is widely employed across many fields, especially in the social sciences (Nassaji, 2015). A structured questionnaire was utilized to collect data on the enterprise's capital requirements.

3.4 Sampling procedure

Bindura University of Science Education was chosen for this study using purposive sampling because it has a running project and the required data for the study was easily accessible. Purposive sampling has several advantages in relation to the study at hand, the most important of which is that it allows the researcher to make generalizations based on the sample under study. Furthermore, it provides a wide range of nonprobability sampling techniques for the researcher to use. For example, critical case sampling may be used to determine whether a phenomenon warrants further investigation before employing an expert sampling approach to investigate specific issues (Sharma, 2017).

3.5 Data collection methods

Data was collected from the Bindura University of Science Education (BUSE) farm. We used surveys to collect data from companies, focusing not only on the catch and seed capital generated by the project, but also on costs and returns. Interviews with key informants to the project's workers and managers were also conducted to understand the day-to-day operation for the project.

3.5.1 Questionnaire

A questionnaire is a research tool made up of a list of questions used to collect data from respondents during a survey or statistical analysis (Sileyew et al., 2019). The questionnaire that

was used for gathering data for the study had both open and closed end questions and gathered information related to the goat breeds kept, management practices, flock dynamics, production and operational costs, goat marketing and.

3.5.2 Key informant

Individuals who assist researchers in entering an area by placing their trust in them; sometimes known as gatekeepers (Sullivan et al., 2020). The goat herd man, technician and manager at the farm were the key informants

3.5.3 Observation

A technique for gathering information through observation of individuals, situations, or physical qualities as they are occurring naturally (Akinyode et al., 2018).The researcher observed a number of variables which include condition of grazing land, infrastructure and goats among others.

3.6 Data analysis methods

Survey of data was done using Microsoft Excel 2013. The data was analysed using means, percentages and was presented in tables. Descriptive statistics using frequencies and means was used to analyse the data on the start-up capital and profits incurred. A 5-point Likert scale was also used on the severity of the challenges being faced by the Bindura Unversity of Science goat breeding project. The challenges where ranked according to severity, i.e. insignificant, minor, moderate, major and catastrophic. The profitability of the goat breeding project was determined using gross margin analysis.

3.6.1 Profitability of goat farming

According to (Teshome et al., 2020), gross margin (GM) is used as a substitute for profitability in this study in order to show the true viability for a business enterprise. The calculations to establish the GM are:

GM=TR – TVC

TVC=AVC *Qty

TR=ATR*Qty

ATR=TR/Qty

AVC=TVC/Qty

BCR=TR/TC

ARR=GM/TVC

Where, GM=Gross Margin, TVC= Total Variable Cost, TR= Total Revenue, AVC= Average Variable Coat, ATC= Average Variable Cost, ATC=Average Total Cost, ATR= Average Total Revenue, BCR= Benefit Cost Ratio, ARR= Average Rate of Return, P=price of the product per Quintal and Q=Volume of product in Quintal.

3.7 Ethical considerations

The researcher observed research ethics when the study was conducted. Permission was sought from the institution as well as local authority and community leadership to legitimise the study. The researcher clearly explained to the respondents issues on confidentiality issues and also on the purpose of the study and they were asked to acknowledge as a sign of consent by signing a confidentiality indemnity form.

3.8 Chapter Summary

The study employed a case study survey research study focusing on the goat project by Bindura University of Science Education. Secondary data was used for analysis, which is data on start-up costs, running costs and revenue generated from the project. Ethical considerations were also followed, with the researcher seeking authority from the University as well as the farm to carry out the research.

CHAPTER 4

Results Presentation and Discussion

4.1 Introduction

The results and discussion generated from the study are presented in this Chapter. The presentation of the results follows the order of the objectives and they sufficiently answer the research questions established in the study.

4.2 Results

4.2.1 Start-up for goat breeding

The first objective of the study sought to establish the cost of setting up a small-scale goat breeding project. Table 4.1 shows the investment cost for Bindura University's goat breeding project for their 120m2 goat pen, which can house approximately 30 goats and was used in the study.

Table 4.1 Start-up Capital for a 30 pen goat breeding project (Mixed breed)

Item	Unit	Quantity	Unit cost $USD	Total $USD	% of the total cost
Sitting cost	Unit	1	US$150.00	US$150.00	3.7
Pen construction				US$1,750.00	43.7
Fence	m2	150	US$2.20	US$330.00	8.2
Labour	man-days	8	US$15.00	US$120.00	3.0
Water troughs	unit	4	US$20.00	US$80.00	2.0
Feed troughs	unit	6	US$25.00	US$150.00	3.7
Breeding Stock	unit	30	US$23.00	US$690.00	17.2
Feed	kgs	800		US$735.00	18.4
Total Start-up Capital				**US$4,005.00**	**100**

According to the table, much of the cost is for pen construction which account for **43.7%** of the total cost. This was followed by feed which according to the results presented above accounted for **18.4%** and goat kids which constituted **17.2%** of the total cost of setting up a small-scale goat breeding project. Water trough equipment accounts for the smallest proportion of the initial investment which is **2%.**

Table 4.2 Start-up Capital for a 30 pen goat breeding project (Pure breeds)

Item	Unit	Quantity	Unit cost $USD	Total $USD	% of the total cost
Sitting cost	Unit	1	US$150.00	US$150.00	1.0
Pen construction				US$1,750.00	11.4
Fence	m2	150	US$2.20	US$330.00	2.2
Labour	man-days	8	US$15.00	US$120.00	0.8
Water troughs	unit	4	US$20.00	US$80.00	0.5
Feed troughs	unit	6	US$25.00	US$150.00	1.0
Breeding Stock	unit	30	US$400.00	US$12,000.00	78.4
Feed	kgs	800		US$735.00	4.8
Total Start-up Capital				**US$15,315.00**	**100**

Unlike the start-up cost for mixed breed which is mainly known as the normal breed for goats, pure breed start-up cost is higher. This is due to the fact that breeding stock for pure breeds is expensive. Hence much of the cost is for breeding stock which accounts for **78.4%** of the total cost. Followed by pen construction which accounted for **11.4%** and then feed which accounted for **4.8%.** The other expenses are almost none existing due to the high cost of pure breeds breeding stock.

4.2.2 Profitability Analysis of the 30 pen goat breeding project

The second objective of the study sought to determine the profitability of the goat breeding project being carried out in the study area. To achieve the object, the profitability of goat production was calculated using data from Bindura University's enterprise. The revenue, costs (divided into variable and fixed costs), and profitability analysis are the main components of the analysis. The profitability analysis for the goat breeding project is shown in Table 4.3.

4.2.2.1 Revenue

The goats had a 98 percent survival rate, resulting in more goat kids, and they weighed an average of 20kgs. A number of Kalahari reds had weights close to 100kgs. The selling price for the goats was based on the breed. Mashona and Matebele estimated the bucks at USD$50, the does at USD$20, and the kids at USD$20. While Kalahari Red and Boer breeds were priced at USD$650 for bucks, USD$600 for does, and USD$250 for kids. The market for goats was the university dining, lectures, students, abattoirs, and the general public, so these goats had a ready market, making the smooth running of the project.

Table 4.3: Goat meat profitability analysis

Item	Unit	Quantity	Unit cost	Total $
Total Revenue				
Goats carcass	kgs	529.145	US$3.50	**US$1,852.01**
Total Expenditure				
Fixed Costs				
Goat shed repairs and construction	Unit	1	US$35.00	US$35.00
Other fixed costs	Unit	1	US$15.00	US$15.00
Total fixed costs				**US$50.00**
Varable costs				
Feed	kgs	800		US$735.00
Transport				US$90.00
Labour	man-days	8	US$15.00	US$120.00
Security	man	2	US$35.00	US$70.00
Other varable costs				US$53.00
Total variable costs (TVC)				**US$1,068.00**
Gross Profit Margin (GPM)				**US$784.01**
Total Cost (TC)				**US$1,118.00**
Net Goat Carcass Income				**US$734.01**
Gross Profit Margin Ratio (GPMR)				**42.4%**
Benefit Cost Ration (BCR)				**1.7**
Average Rate of Return (ARR)				**$ 0.66**

Assuming that the breaded goats are sold as carcass, the above table shows the profitability of slaughtering the goats and selling them to the abattoirs or the university dining hall for consumption purposes. It indicates that the farm sold a total of 529.145kgs of goat carcass and had a gross profit margin of USD $784.01.

Pure breeds goat breeding profitability analysis

Assumptions:-

- Assume all prices are in USD
- Goat breeding cost and profit may vary from breed to breed, region to region and market to market.
- Assume it is semi intensive where goats stay in shed for some time and roam (graze) outside as well.
- Assume that the birth rate is almost 40% for the females and 60% for the males at a ratio of 40:60.
- Let's assume one is planning to buy 30 goats for breeding and the rate is 1:29

Total number of female goats (does)	29
Total number of male goats (bucks)	1
Average weight of female goats	25
Average weight of male goats	35

The following is about feed consumption calculation- Cost of feed

- Assume there is 85% birth rate.
- Assuming there are two deliveries per year since the average gestation period for some goats lasts 150days.
- Assuming some does gives birth to twins

Feed consumed by goat kids per kg weight gain	3kg
Number of goat kids born	70
Weight target of baby goats in 4 months period	16kg

Total feed consumed for all baby goats to achieve target weight in 4 months = 3 x 70 x16

= **3 360kg**

Feed cost per kg = $0. 70

Total feed cost = 3 360kg x $0.70

= **$2 352**

Feed transport cost = $500

Hence Total cost = Total fixed cost + transport cost

= $2 352 + $500

= **$ 2852**

Feed consumed by each adult goat/ day = 0.2kg

Total feed consumed by all 30 adult goats = 30 x 0.2kg

= 6kgs

If total feed consumed per day in year = 2 340kg

Then feed cost for adult goats = 2 340kg x $0.70

= **$1 638**

Total feed cost for all goats (adults and baby goats) = $1 638+ $2 352

= **$3 990**

Returns

Assuming Number of goat kids in a year per batch = 32

Each baby goat weight in 4 months = 16kg

Total weight gain = 70 x 16 = 512kgs

Average pure breed live goats cost = $450

Total returns (gross profit) = $450 x 32

= $14 400

Running cost per batch = $4 800

Total profit = $14 400 - $4 800

= $9 600

From the study above it is shown that pure breed goats have a larger profit than mixed breeds. Pure breeds have a profit $9 600 whilst mixed breeds have a profit of $784. Hence it is advisable to breed pure breeds like boer in order to maximise profits however a larger capital is also needed since breeding stock for pure breeds is also high.

4.2.2.2 Total costs

Total cost is the combination of the expenses that an enterprise spends to operate the business and provide products or services (Chen, Min, et al., 2020). Total costs expenses are divided into two categories: fixed costs and variable costs. The total cost of the goat breeding project amounted to **$1 118**.

4.2.2.3 Fixed costs

These are project costs that remain constant regardless of whether production capacity increases or decreases. In other words, fixed costs are costs that do not change with the number of goods or services produced or sold (De Ridder, M .,2019). They are expenses that must be paid by an enterprise regardless of its specific business activities. The total fixed costs were **$50-00**.

4.2.2.4 Variable costs

Variable costs are costs that vary with the volume of output (Edmond et al., 2018). These are ongoing costs whose value varies depending on factors such as sales revenue. **USD $1,068.00** was the total variable cost.

4.2.2.5 Profitability Analysis

The project has a net goat meat income of **$734** and a positive Gross Margin of **$784**. The benefit-cost ratio in the study was **1.7**, which is greater than one, implying that the project returns on investment. This is higher than the BCR of **1.11** reported by (Mukta et al., 2019). The results also show a Gross Profit Margin Ratio (GPMR) of **42.4** percent, indicating that the project is in good shape in terms of having enough liquidity to pay other indirect and fixed costs while remaining viable.

However this study has reviewed that when doing goat breeding it is advisable to sell live goats specifically pure breeds unlike to sell mixed breeds or as carcass (goat meat) because pure breeds increase profitability. In the study pure breeds have a net income of **$18 382** and a gross price of **$18 432**, since pure breeds are tagged on a very high price. These results are supported through a journal by (Browning Jr R., 2020) which states that different breeds of meat goats in the United States are priced according to their breed type.

4.2.3 Challenges affecting goat production

A 4-point Likert scale was used to analyse the production, institutional and marketing challenges currently faced by the Bindura University of Science Education goat breeding project. The BUSE manager and the technical team also provided information on the severity of these challenges according to figure 4.1, 4.2 and 4.3 to follow.

4.2.3.1 Production challenges

Figure 4.1: Production challenges (Source: Field survey 2022)

The most disastrous challenges faced, according to Figure 4.1, were a lack of capital to purchase commercial feeds, poor grazing land, and the high cost of artificial insemination.

Poor working conditions, lack of motivation due to poor salaries, high stuff turnoff, high cost of vaccines and drugs, poor wages, lack of adequate knowledge, labour intensive, diseases and pests and unavailability of high genetic potential breeds of goats where the major challenges faced. To add up, the moderate challenges being faced where few watering ponds in the paddock, vandalism of infrastructure and lack of standard pens for goat breeding. Minor and insignificant challenges affecting goat production at BUSE farm included a lack of drugs, predator attacks, and stock theft.

4.2.3.2 Institutional challenges

Figure 4.2: Institutional challenges (Source: field survey 2022)

According to the data survey conducted at the Bindura University of Science Education goat breeding enterprise, all institutional challenges were ranked 4 and 5, indicating that they were very detrimental and major challenges to the project. Difficulty in obtaining a stock movement permit, difficulty in obtaining a police clearance and certification process for pure goats is costly where very detrimental. While lack of access to finance, lack of organised market and lack of vet services where the major challenges faced.

4.2.3.3 Marketing challenges

Figure 4.3: Marketing challenges (Source: Field survey 2022)

As shown in figure 4.3, the BUSE technical advisor provided information on how frequently the marketing challenges affected the enterprise. Low market prices, high levels of competition, and high market prices of pure breeds were the most detrimental challenges faced. High cost of transportation, Covid-19 triggered supply and demand challenges, lack of transportation resources, long distance to the market, lack of market infrastructure and few number of buyers

where the major challenges. Minor challenges affecting the goat enterprise included a low volume or number of goats and low consumer purchasing power.

4.3 Discussion of results

4.3.1 Start-up cost

The results obtained from the study corroborate findings by (Dida et al. 2021) who discovered that pen construction, goat breeding stock and feeds account for the most of costs associated with starting up a goat breeding project. Also in support of the study findings is (Islam et al., 2018) who found out that the cost of establishing a goat breeding project is associated with the number of goats the farmer wants to keep and according to the authors high costs incurred involve setting up a breeding space, obtaining the breeding stock as well as the feeds required to sustain the stock as well as labour.

4.3.2 Profitability of goat production

The results obtained from the study indicates that pure breeds are more profitable than mixed breeds and it is advisable to sell goats instead of goat carcass in order to maximise profit. This is supported by (Ahmad , 2019) who stated in an article "Hedonic pricing of goat characteristics at the market level: the case of Pakistan", that main breeds of goats found in the market where profitable that the other mixed breeds in the market.

Goats breeding was also discovered to be profitable among smallholder farmers in a research by (Kaumbata 2020) in Malawi to be helping to the betterment of rural communities with annual gross margins of over US $529 observed. According to research by (Sahinli 2020) in the Turkish province of Ankara, goat production is profitable. For every $1 invested in goat production, $1.28 in Angora goat breeding and $1.41 in regular goat breeding are generated, with regular goat breeding generating the highest relative profitability for the farms.

4.3.3 Challenges faced by goat producers.

The findings from the production challenges at BUSE goat breeding project are in sync with (Abebe 2022) who also discovered that constraints to goat crossbreeding involve a lack of baseline production data, poorly managed institutional synergies, and little or no consideration of smallholder farmers' needs, opinions, active participation, decisions, and local practices. In addition, insufficient and poor-quality feeds and forages, the termination and weakness of goat genetic improvement projects, disease and parasite incidence, poor veterinary services, and a

lack of infrastructure were also discovered to be constraints to the success of cross breeding projects by smallholder farmers. Moreover, the findings also corroborate findings obtained by (Kahi et al., 2019) who found out that goat breeding and production are associated with challenges related to capital to start up and sustain the project, grazing land, labour, expertise and diseases as well as theft.

The institutional study findings are supported by (Nampanzira et al., 2015) whose study revealed that goat production constraint include diseases, shortage of land, inadequate pastures, theft, lack of vet services, poor breeds, predators, shortage of water, labour intensive, poor shelter, poor transport, laws and regulations regarding clearance and movement of stock and poor management. In addition, the findings are also in sync with (Ferede Abebe 2022) who also found out that most small-scale projects face challenges associated with lack of access to finance, organised and profitable markets as well as vet services.

These findings from the marketing challenges corroborate findings by (Ghosh et al., 2020) whose study revealed that livestock breeding, and production are associated with a plethora of challenges and according to the authors these include unfavourable market conditions for output including prices, transportation, demand and competition. Also in support of these findings is (Lu et al., 2019) who also articulated that farmers and institutions face challenges related to high competition, access to profitable markets and low market prices.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The summary, conclusion, and recommendations of the study are the focus of this chapter. It also includes the research's policy implications and areas for future research. The study's findings form the basis for the study's conclusions and recommendations.

5.2 Summary

The improvement of the rural poor's quality of life is greatly aided by goats. They have major cultural value in addition to being used as a means of income generation and for consumption. This research examines the economics of goats with a particular focus on the goat breeding program at the Bindura University of Science Education. The study's main objective is to conduct an economic analysis of the goat breeding project, while its specific goals centre on determining the start-up costs for a small-scale goat project, examining the project's profitability, and assessing the challenges associated with goat breeding.

The study employed a case study analysis approach and secondary data obtained from the project records were used to determine the start-up capital and profitability of the project. Means, frequencies, and range were employed in the descriptive and inferential statistics, which were used to analyse the data. To ascertain whether the goat breeding project was profitable, a gross margin was performed. The 4-point Likert scale method was used to analyse the challenges farmers who practice goat rearing encountered ranking challenges from insignificant (1) to catastrophic (2). The start-up cost for the study's mixed goat breeding program was $4 005 and that for the pure breed was $15 315.

For the mixed breed, the results reveal a gross margin of $764, a benefit-cost ratio of 1.7% and an average rate of return of 0.63 of the goat carcass. The results also reveal a total profit of $9 600 being recognised in the breeding of pure breeds. These show how profitable and economically viable goat breeding is in Zimbabwe. According to the study's findings, the project's main challenges included poor grazing land, expensive artificial insemination, the pricey certification process for pure breeds, difficulty getting a police clearance, difficulty getting a stock movement permit, low market prices, high levels of competition, and high market prices for pure breeds. According to the research, farmers should consider producing pure goat breeds rather than raising them for meat in order to increase their profitability and assure their own food security. However, Zimbabwe's high start-up expenses for breeding pure breed animals make it vital to provide farmers with low-interest loans.

5.2 Conclusions

The goat breeding project is profitable and has a high start-up cost with infrastructure significantly contributing to the start-up cost. The major constraints faced by the Bindura University of Science Education goat production enterprise include lack of capital to purchase commercial feeds, poor grazing land, high cost of artificial insemination, certification process for pure breeds is costly, difficulty in obtaining a police clearance, difficulty in obtaining a stock movement permit, low market prices, high levels of competition, and high market prices of pure breeds. The study therefore recommend farmers to venture into breeding of pure goat breeds as compared to breeding goats for meat so as to maximise their returns thereby making the farmers income and food secure. However the start-up cost associated with breeding pure breeds is relatively high in Zimbabwe hence there is need for provision of loans with low interest rate to the farmers.

5.3 Recommendations

- The study's findings suggest that goat breeding be implemented due to its profitability and economic performance.
- It is also recommended that the government and those planning to venture into goat breeding devise ways to limit the price of pen construction, make feed readily available, and inject into these enterprises.
- It also suggested that there is need for availing capital to those that want to venture into goat breeding because the initial investment is quite high in Zimbabwe.
- There is also a need for the government to provide farmers and those looking to start their own goat farming businesses with capacity building, particularly in the area of feed formulation, as well as education on more productive goat breeding methods in order to maximize profit and reduce the severity of the production, institutional and marketing challenges being faced by the farmers.

Reference List

Abegunde, Victor O., Melusi S, and Ajuruchukwu O (2019). "Determinants of the adoption of climate-smart agricultural practices by small-scale farming households in King Cetshwayo District Municipality, South Africa." *Sustainability* 12.1 : 195.

Ahmad, W., Ahmed, T., & Ahmad, B. (2019). Hedonic pricing of goat characteristics at the market level: the case of Pakistan. *International Food and Agribusiness Management Review*, *22*(4), 483-497.

Akinyode, Babatunde F, and Tareef H.K (2018). "Step by step approach for qualitative data analysis." International Journal of built environment and sustainability 5.3 .

Alabi, Olushola J, Jones N, and David N (2013). "Role of goats in food security, poverty alleviation and prosperity with special reference to Sub-Saharan Africa: A review." .

Amundson, Carol A (2019). *How to Raise Goats: Everything You Need to Know: Breeds, Housing, Health and Diet, Dairy and Meat, Kid Care*. Voyageur Press,.

Barasa, Edwine, Rahab M, and Lucy G (2018). "What is resilience and how can it be nurtured? A systematic review of empirical literature on organizational resilience." International journal of health policy and management 7.6: 491.

Baumol, William J., and Robert D. (1981). "Fixed costs, sunk costs, entry barriers, and sustainability of monopoly." *The Quarterly Journal of Economics* 96.3 : 405-431.

Boserup, Ester, and Robert C (2014). *The conditions of agricultural growth: The economics of agrarian change under population pressure*. Routledge,.

Browning Jr, R., & Leite-Browning, M. L. (2020). Comparison of Productivity of Different Breeds of Meat Goats Under Low-to-Moderate-Input Systems in the United States. *Professional Agricultural Workers Journal*, *6*(3), 19.

Capote Juan (2016). "Environments and goats around the world: importance of genetic and management factors." *Sustainable Goat Breeding and Goat Farming in Central and Eastern European Countries. S. Kukovics, Ed. Food and Agriculture Organization of the United Nations, Rome, Italy* : 1-6.

Chen, Min, et al (2020). "Environmental cost control system of manufacturing enterprises using artificial intelligence based on value chain of circular economy." *Enterprise Information Systems* : 1-20.

Chokoe, Tlou Caswell, et al (2020). "Genetic diversity of south african indigenous goat population from four provinces using genome-wide SNP data." *Sustainability* 12.24 : 10361.

De Ridder, M. (2019). Market power and innovation in the intangible economy.

Deininger, Klaus, and Derek B (2011). *Rising global interest in farmland: can it yield sustainable and equitable benefits?* World Bank Publications,.

Dhakal, Alok, et al (2021). "Features of small holder goat farming from Chitwan district of Bagmati province in Nepal." *Archives of Agriculture and Environmental Science* 6.2 : 186-193.

Dida, Mulisa F (2021). "Strategies for Goat Feeding and Management during Drought." *Goat Science-Environment, Health and Economy*. IntechOpen.

Duguma, Belay, and Geert PJ Janssens (2021). "Assessment of Livestock Feed Resources and Coping Strategies with Dry Season Feed Scarcity in Mixed Crop–Livestock Farming Systems around the Gilgel Gibe Catchment, Southwest Ethiopia." *Sustainability* 13.19 : 10713.

Edmond, Chris, Virgiliu M, and Daniel Y.X (2018). How costly are markups?. No. w24800. National Bureau of Economic Research.

Engle, Dolapo, et al (2010). "Supporting sustainable expansion of livestock production in South Asia and Sub-Saharan Africa: Scenario analysis of investment options." *Global food security* 20 : 114-121.

Fainshmidt, Stav, et al(2019). "When do dynamic capabilities lead to competitive advantage? The importance of strategic fit." *Journal of Management Studies* 56.4 : 758-787.

Ferede Abebe, A., Bizzotto Molina, P., & Woolfrey, S. (2022). *AgrInvest-Food Systems Project: Increasing sustainable investment in the Ethiopian dairy value chain: Bottlenecks and investment opportunities in Central Oromia*. Food & Agriculture Org..

Garambois, Nadège, et al (2020). "The limits of coexistence: the development of “frugal” systems in agro-pastoral regions." *Review of Agricultural, Food and Environmental Studies* 101.2 : 311-337.

Gassner, Anja, et al (2019). "Poverty eradication and food security through agriculture in Africa: Rethinking objectives and entry points." *Outlook on Agriculture* 48.4 : 309-315.

Ghosh, C. P., S. Datta, A. K. Das, D. C. Roy, A. Roy, and N. K. Tudu (2020). "Sustainable broiler goat rearing: An overview."

.

Gibson-Miller, Jilly, et al (2022). "A network approach to understanding social distancing behaviour during the first UK lockdown of the COVID-19 pandemic." *Psychology & Health* : 1-19.

Gigli, S, Daniele L, and Michele G (2019). "Cost-benefit analysis of a circular economy project: A study on a recycling system for end-of-life tyres." *Journal of Cleaner Production* 229 : 680-694.

Giller, Ken E., et al (2021). "The future of farming: Who will produce our food?." *Food Security* 13.5: 1073-1099.

Glasow, P. A. (2005). Fundamentals of Survey Research methodology. 549. https://doi.org/10.1108/EDI-01-2019-0038

Golub, Alla A., Benjamin B. Henderson, Thomas W. Hertel, Pierre J. Gerber, Steven K. Rose, and Brent S (2013). "Global climate policy impacts on livestock, land use, livelihoods, and food security." *Proceedings of the National Academy of Sciences* 110, no. 52: 20894-20899.

Gortázar, Christian, et al (2021). "The role of wildlife in the epidemiology and control of Foot-and-mouth-disease And Similar Transboundary (FAST) animal diseases: a review." *Transboundary and Emerging Diseases* .

Grafton, R. Quentin, Carsten Daugbjerg, and M. Ejaz Qureshi (2015). "Towards food security by 2050." *Food Security* 7.2 179-183.

Guimarães, Vinícius Pereira, et al (2022). "The future of small ruminants in Brazil: Lessons from the recent period and scenarios for the next decade." *Small Ruminant Research* 209 : 106651.

Guo, Shu, Tsan-Ming C, and Bin S (2020). "Green product development under competition: A study of the fashion apparel industry." *European Journal of Operational Research* 280.2 : 523-538.

Guthiga, Paul, Joseph Karugia, and Leonard K (2021). "Criteria for country-level prioritization of Africa's livestock sector for increased public and private sector engagement and investment." *ILRI Research Brief* .

Hasanaj, Petrit, and Beke K (2019). "Analysis of financial statements." *Humanities and Social Science Research* 2.2 : p17-p17.

Haynes, Gary (2018). "Hwange National Park: The forest with a desert heart." *Ms. in the author's possession: University of Nevada, Reno* .

Henry, B. K., R. J. Eckard, and K. A. Beauchemin (2018). "Adaptation of ruminant livestock production systems to climate changes." *Animal* 12.s2 : s445-s456.

Herrero, M., Henderson, B., Havlík, P., Thornton, P. K., Conant, R. T., Smith, P., & Stehfest, E. (2016). Greenhouse gas mitigation potentials in the livestock sector. *Nature Climate Change*, *6*(5), 452-461.

Isbell, Carina, Daniel T, and Travis R (2021). "Motivations for maintaining crop diversity: Evidence from Vermont's seed systems." *Ecological Economics* 189 : 107138.

Islam, M. A., Hossain, M. N., Chokraborti, S. S., Rahman, S., Tasnim, A., & Al Zabir, A. (2018). Socio-economic Profile of Goat Rearing Farmers and Their Management Practices in Sylhet, Bangladesh. *Journal of Agriculture and Ecology Research International*, *15*(4), 1-10.

Islam, Md Ariful, et al (2018). "Socio-economic Profile of Goat Rearing Farmers and Their Management Practices in Sylhet, Bangladesh." *Journal of Agriculture and Ecology Research International* 15.4 : 1-10.

Jacobi, Johanna, et al (2018). "Operationalizing food system resilience: An indicator-based assessment in agroindustrial, smallholder farming, and agroecological contexts in Bolivia and Kenya." *Land use policy* 79 : 433-446.

Jaffee, Steven, et al (2018). *The safe food imperative: Accelerating progress in low-and middle-income countries*. World Bank Publications.

Kahi, Alexander K., and Chrilukovian B. Wasike (2019). "Dairy goat production in sub-Saharan Africa: current status, constraints and prospects for research and development." *Asian-Australasian journal of animal sciences* 32.8 : 1266.

Kaumbata, W., Banda, L., Mészáros, G., Gondwe, T., Woodward-Greene, M. J., Rosen, B. D., ... & Wurzinger, M. (2020). Tangible and intangible benefits of local goats rearing in smallholder farms in Malawi. *Small Ruminant Research*, *187*, 106095.

Keiningham, Timothy, et al (2020). "Customer experience driven business model innovation." *Journal of Business Research* 116 : 431-440.

Khairallah, L. (2020). *ROLE OF MICROFINANCE ON SMALL-SCALE FARMERS AND DAIRY PROCESSORS: A CASE STUDY ON THE GOAT SECTOR IN WEST BEKAA AND SHOUF AREAS IN LEBANON* (Doctoral dissertation).

Khaleel, Aliyu Garba, et al (2020). "Abattoirs–A Hidden Centre for Livestock Genetic Resources Loss in Nigeria." *Malaysian Journal of Applied Sciences* 5.2 : 1-16.

Kim, Sung Kyu, Fiona Marshall, and Neil M. Dawson (2022). "Revisiting Rwanda's agricultural intensification policy: benefits of embracing farmer heterogeneity and crop-livestock integration strategies." *Food Security* : 1-20.

Kumar, Shalander, et al (2010). "Role of goats in livelihood security of rural poor in the less favoured environments." *Indian journal of agricultural economics* 65.902-2016-66767

Leal Filho, Walter, et al (2020). "Introducing experiences from African pastoralist communities to cope with climate change risks, hazards and extremes: Fostering poverty reduction." *International Journal of Disaster Risk Reduction* 50: 101738.

Liang, Juan B, and Pramote P (2019). "Current status, challenges and the way forward for dairy goat production in Asia–conference summary of dairy goats in Asia." *Asian-Australasian journal of animal sciences* 32.8 : 1233.

Lu, Christopher D., and Beth A. Miller (2019). "Current status, challenges and prospects for dairy goat production in the Americas." *Asian-Australasian journal of animal sciences* 32, no. 8 : 1244.

Macheka, Mavis T, Pranitha M, and Divane N (2021). "Choosing between environmental conservation and survival: Exploring the link between livelihoods and the natural environment in rural Zimbabwe." *South African Geographical Journal* 103.3 : 358-373.

Manirakiza, Josiane, et al (2020). "Characteristics of smallholders' goat production systems and effect of Boer crossbreeding on body measurements of goats in Burundi." *Pastoralism* 10.1 : 1-11.

Mare, Frikkie, Yonas T. Bahta, and Walter Van N (2018). "The impact of drought on commercial livestock farmers in South Africa." *Development in Practice* 28.7 : 884-898.

Mataveia, Gracinda A, Carina V, and Alcides S (2021). "Smallholder Goat Production in Southern Africa: A Review." *Goat Science-Environment, Health and Economy* .

Menghistu, Habtamu Taddele, et al (2021). "Socio-economic determinants of smallholder mixed crop-livestock farmers' choice of climate change adaptation in the drylands of Northern Ethiopia." *International Journal of Climate Change Strategies and Management* .

Miller, Beth A., and Christopher D. Lu (2019). "Current status of global dairy goat production: an overview." *Asian-Australasian journal of animal sciences* 32.8: 1219.

Mohammed, A. S., et al (2020). "Grazing behavior, dietary value and performance of sheep, goats, cattle and camels co-grazing range with mixed species of grazing and browsing plants." *Veterinary and Animal Science* 10 : 100154.

Mohammed, A. (2018). Artificial Insemination and its Economical Significancy in Dairy Cattle. *Int J Res Stud Microbiol Biotechnol*, *4*(1).

Molotoks, Amy, Pete S, and Terence P. Dawson (2021). "Impacts of land use, population, and climate change on global food security." *Food and Energy Security* 10.1 e261.

Monteiro, António, José Manuel Costa, and Maria J L (201). "Goat system productions: Advantages and disadvantages to the animal, environment and farmer." *Goat science* : 351-366.

Msalya, G., et al (2020). "The Need for Farmer Support and Record Keeping to Enhance Sustainable Dairy Goat Breeding in Tanzania and Malawi." *Climate Impacts on Agricultural and Natural Resource Sustainability in Africa*. Springer, Cham, . 287-299.

Mukarumbwa, P (2017). *Determinants of Smallholder Vegetable Farmers' Participation on Post-harvest Practices and Market Access: Evidence from Mashonaland East Province of Zimbabwe*. Diss. University of Fort Hare, .

Nampanzira, D. K., Kabasa, J. D., Nalule, S. A., Nakalembe, I., & Tabuti, J. R. S. (2015). Characterization of the goat feeding system among rural small holder farmers in the semi-arid regions of Uganda. *SpringerPlus*, *4*(1), 1-8.

Nassaji, H. (2015). Qualitative and descriptive research: Data type versus data analysis. Language Teaching Research, 19(2), 129–132. https://doi.org/10.1177/1362168815572747

Ndlovu C, Mayimele R, Wutete O, Ndudzo (2020). Breeding of goats: An indigenous approach to enhancing opportunities for smallholder farmers in Inyathi, Zimbabwe. International Journal of Livestock Production 11 (8): 91-101. Doi10.5897/IJLP2019.0586.

Ndlovu, Christopher, et al (2020). "Breeding of goats: An indigenous approach to enhancing opportunities for smallholder farmers in Inyathi, Zimbabwe." *International Journal of Livestock Production* 11.3 : 91-101.

Neumann, Charlotte, Diane M. Harris, and Lisa M. Rogers (2002). "Contribution of animal source foods in improving diet quality and function in children in the developing world." *Nutrition research* 22.1-2 : 193-220.

O'Connell, M., De Paula, Á., & Smith, K. (2021). Preparing for a pandemic: Spending dynamics and panic buying during the COVID-19 first wave. *Fiscal Studies*, *42*(2), 249-264.

Ojango, Julie MK, et al (2018). "Assessing actors in rural markets of sheep and goats in the Nyando Basin of Western Kenya : a key to improving productivity from smallholder farms." *Tropical animal health and production* 50.8 1871-1879.

Pandey, Hari Om, and Deepak U (2022). "Global livestock production systems: Classification, status, and future trends." *Emerging Issues in Climate Smart Livestock Production*. Academic Press, . 47-70.

Pulina, G., et al (2018). "Invited review: Current production trends, farm structures, and economics of the dairy sheep and goat sectors." *Journal of dairy science* 101.8 : 6715-6729.

Rahimi, Jaber, et al (2021). "Heat stress will detrimentally impact future livestock production in East Africa." *Nature Food* 2.2 : 88-96.

Rota, A, and Ilaria U (2021). *IFAD Advantage Series: The small livestock advantage: A sustainable entry point for addressing SDGs in rural areas*. No. 2356-2021-577.

Şahinli, M. A., Özçelik, A., & Güldal, H. T. (2020). Determination of Economic and Structural Factors Affecting Angora Goat Breeding: The Case of Ankara. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, *20*(2), 409-418.

Sejian, V., Silpa, M. V., Reshma Nair, M. R., Devaraj, C., Krishnan, G., Bagath, M., ... & Bhatta, R. (2021). Heat stress and goat welfare: Adaptation and production considerations. *Animals*, *11*(4), 1021.

Serdeczny, Olivia, et al (2017). "Climate change impacts in Sub-Saharan Africa: from physical changes to their social repercussions." *Regional Environmental Change* 17.6 : 1585-1600.

Shahudin, M. S., et al (2018). "The Necessity of a Herd Health Management Programme for Dairy Goat Farms in Malaysia." *Pertanika journal of tropical agricultural science* 41.1 .

Sharma, G. (2017). Pros and cons of different sampling techniques. International Journal of 32

Sileyew, Kassu J (2019). Research design and methodology. Rijeka: IntechOpen, 2019.

Skapetas, B., and V. Bampidis (2016). "Goat production in the World: present situation and trends." *Livest Res Rural Dev* 28.11: 200.

Stamalevi, J. (2015). The Importance of Payback Method in Capital Budgeting Decisions Article by Jones Stamalevi. South American Journal of Management, 1(2), 1–6.

Sudiardhita, Ketut IR, et al (2018). "The effect of compensation, motivation of employee and work satisfaction to employee performance Pt. Bank Xyz (Persero) Tbk." *Academy of Strategic Management Journal* 17.4: 1-14.

Sulis, Giorgia, Sena Sayood, and Sumanth G (2022). "Antimicrobial resistance in low-and middle-income countries: current status and future directions." *Expert review of anti-infective therapy* 20.2 : 147-160.

Sullivan, Corrinne T (2020). "Who holds the key? Negotiating gatekeepers, community politics, and the “right” to research in Indigenous spaces." Geographical Research 58.4 : 344-354.

Susanti, R, Afriani A, and Fitra S .H (2020). "Crop Production Growth Response Green Mustard (Brassica juncea L) Against Granting Urea Fertilizer and Manure Goat On Overseas Land Ultisol In District South." *International Journal of Science, Technology & Management* 1.3 : 155-161.

Tesema, Z., Alemayehu, K., Kebede, D., Getachew, T., Deribe, B., Taye, M., ... & Yizengaw, L. (2020). Genetic analysis of survival potential of Boer x Central Highland goats under semi-intensive management. *Small Ruminant Research*, *193*, 106253.

Tesfaye A, Regasa D, and Getinet B (2021). "Characterization and Dynamism of the Pastoral and Agro-Pastoral Farming Systems of Ethiopia." (2021).

Teshome, A., Hailu, S., Habte, E., Deribe, Y., & Amsalu, B. (2020). Factors Affecting the Profitability of Smallholder Common Bean Producers in Central Rift Valley of Ethiopia. Ethiopian Journal of Agricultural Science, 30(3), 99–118.

Vaintrub, M. Odintsov, et al (2021). "Precision livestock farming, automats and new technologies: possible applications in extensive dairy sheep farming." *Animal* 15.3 : 100143.

Vetter, S., V. L. Goodall, and R. Alcock (2020). "Effect of drought on communal livestock farmers in KwaZulu-Natal, South Africa." *African Journal of Range & Forage Science* 37.1 : 93-106.

Wuta, M., and P. Nyamugafata (2012). "Management of cattle and goat manure in Wedza smallholder farming area, Zimbabwe." *African journal of agricultural Research* 7.26 : 3853-3859.

Appendices

Annex 1: Survey Questionnaire

QUESTIONNAIRE FOR ANALYSIS OF THE PROFITABILITY OF GOAT FARMING.

Good day Sir. I am Grace Rufurwokuda a BSc Agricultural Economics and Management student doing a research into the economics of goat breeding a case study of Bindura University of Science Education goat farming project. I would kindly ask for information from your records on the following provided guides. Your positive response and feedback is greatly appreciated.

General information

Size of grazing land ……m^2

Area under perimeter fence ……m^2

Dimension of structure ……...m^2

Size of paddock which is fenced ……m^2

Size of paddock which is not fenced ……m^2

Number of herders……

Working hours per day……..

Working days per week…….

Off days offered per month……How long? …….

Average salaries of permanent employees……..USD

Average salaries of contract employees …….USD

Is there a manager in charge of the goat project? YES NO

Is there a foreman? YES NO

Number of permanent employees ……..Males …… Females

Number of contract employees. ……Males ……. Females

Highest education level qualifications of employees …….

Lowest education level qualifications of employees ……..

Production information

Area under goat project……..……acres

Number of goats in the project ……..

Number of pens in the project ……

Average pen dimensions …… m^2

Number of catering water ponds available ……..

<u>Table of breeds</u>

Breed		**Number**	**Average weight (kgs)**	**Average market price (USD)**	**Average goats sold in the last 12 months**
Mashona(cross)	Bucks				
	Doe's				
	Kids				
Red Kalahari	Bucks				
	Doe's				
	Kids				
Matebele	Bucks				
	Doe's				
	Kids				
Boer	Bucks				
	Doe's				
	Kids				

Challenges being faced in the goat farming project (rank/tick box according to severity)

		Insignificant	Minor	Moderate	Major	Catastrophic
Production	Unavailability of high genetic potential breeds of goats					
	Diseases and pests					
	Labour intensive					
	Lack of capital to purchase commercial feeds.					
	Lack of adequate knowledge					
	Lack of standard pens for goat breeding					
	Stock theft					
	Vandalism of infrastructure					

	Poor grazing land					
	Few watering ponds in the paddock					
	Poor wages					
	High cost of artificial insemination					
	Predators (snakes, and other wild animals)					
	High costs of vaccines and drugs					
	High stuff turnoff					
	Lack of motivation due to poor salaries					
	Poor working conditions					

	Unavailability of drugs					
Institutional	Certification process for pure goats is costly					
	Lack of vet services					
	Lack of organised market					
	Lack of access to finance					
	Difficulty in obtaining a police clearance					
	Difficulty in obtaining a stock movement permit					
Marketing	Few number of buyers					
	Lack of marketing infrastructure					
	Low market prices					
	Long distance to the market					
	Lack of transportation resources					

	High levels of competition					
	Covid-19 triggered supply and demand challenges					
	Low volume/ few number of goats					
	Low purchasing power of consumers					
	High cost of transportation					
	High market prices of pure breeds					

COST INVOLVED IN CONSTRUCTION OF A 30 GOAT PEN

ACTIVITY	**UNIT COST (USD)**	**TOTAL COST(USD)**
Siting of a 30 goat project		
Construction		
Labour man days		
Wheelbarrow		
Hoe/ Pick		
Perimeter fencing		
Paddocks perimeter fencing		
Designing of the structure		
Water troughs		
Feed troughs		
Other		

1. Production related costs in the last 12 months

Production Cost	**Quantity**	**Unit Cost (USD)**	**Total**
Start-up cost			
Labour			
5kvA Solar System			
Security			
Feed (Goat-nut)			
Vaccines - Papilloma - Glenvac 3 - Chlamysure - Multivac P			
Drugs - Anti-biotic - Amox-inject - Limoxine - Penstriep - Ivmerctin			

- Benvet			

Any other comments

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Thank you very much for your cooperation.