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An assessment of the parameters used by Checheche farmers to determine quality and value of livestock.

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A dissertation submitted in partial fulfilment of the requirements for the Bachelors of Agricultural Science Honours Degree in Animal Health and Production Extension.

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APPROVAL FORM

The undersigned certified that they have supervised and recommended to Bindura University of Science Education for acceptance of dissertation entitled "**An assessment of the parameters used by Checheche farmers to determine quality and value of livestock.**". Submitted in partial fulfilment of the Bachelor of Agricultural Science Honours Degree in Animal Health and Production Extension.

Name of Supervisor: Mr. T.N.C. Mangwiro

Signed: …….

DECLARATION

I hereby declare that the research project entitled "**An assessment of the parameters used by Checheche farmers to determine quality and value of livestock.**" submitted to Bindura University of Science Education, Department of Animal Science is a record of an original work done by me under the guidance of my project supervisor. This work is submitted in partial fulfilment of the requirements for the award of the Bachelor of Agricultural Science Honours Degree in Animal Health and Production Extension. The results embodied in this dissertation have not been submitted to any University or Institute for the award of any degree of diploma.

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Signature: ……...

Dedication

I dedicate my dissertation work to my family and many friends.

Abstract

The main aim of this research study was to assess the parameters that are used by Checheche farmers in determining the quality and value of their livestock. The researcher used simple random sampling to select the respondents as this method eliminates bias and the researcher used 101 respondents as the sample size and SPSS was used for analysing the data and a simple linear regression model was used to determine the relationship between the parameters used by farmers in determining the value of their livestock. Analysed data was presented in the form of tables and graphs. The results showed that from the sample males participants dominated the sample, primary level of education was also dominant. Most farmers from the sample had experience of more than 11 years and also most farmers from the sample had a herd size of above 20 cattle. The results also show that farmers use better health, sex, age and breed as the parameters they use when determining the value of their cattle. The results from the linear regression model proved that the parameters mentioned that is sex, age, animal health and breed have a positive relationship with the value given to cattle. Amongst other recommendations the researcher recommended that veterinarian and extension services need to be improved.

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List of acronyms

EBV	Estimated Breeding Values
GDP	Gross Domestic Product
FAO	Food Agriculture Organisation
ICRISAT	International Crop Research Institute in Semi-Arid Tropics

Chapter 1

Introduction

1.1 Background of the study

In a world of increasing material abundance, one in five people live in extreme poverty. The greatest moral problem facing humanity today is ending global poverty, with Sub-Saharan Africa having one of the highest rates of poverty in the world while being a generally stable region that has had economic improvement in recent years (Assan, 2019). Many people who live in the area still experience hunger and poverty, despite the region's economic prosperity. The most reliable form of subsistence for the region's poorest and most vulnerable households is farming. The majority raise cattle as well as produce crops (Chiduwa, Chimonyo, Halimani, Chisambara, & Dzama, 218). Small ruminants, pigs, goats and chickens are common livestock animals, with cattle being especially valued for their hardiness and worth. Protecting and enhancing livestock productivity is therefore essential to addressing rural hunger and poverty; however, many farmers are faced with crook buyers who do not even consider giving value to their livestock (Chinogaramombe, Muchenje, & Mapiye, 2018). Livestock is often the largest source of wealth and the most significant source of income for many of these families.

The sub-Saharan African development indices frequently fall short of expectations despite years of effort. In sub-Saharan Africa, where one in three people experience chronic hunger, the rate of undernourishment is the highest in the world (FAO, 2018). The world's only region where the number of rural poor is increasing is sub-Saharan Africa, where per capita food consumption is on the fall. A total of 200 million people live in Sub-Saharan Africa, and 86% of them depend on agriculture (FAO, 2018). Since changes in this area might potentially have an influence on millions of people, it is not surprising that this sector is viewed as having solutions to the problems of chronic poverty, food insecurity, and malnutrition. For the impoverished, livestock is a useful natural resource that may be sold off as needed (Francis & Sibanda, 2015). Livestock provides money and serves as a form of emergency insurance for rural impoverished people. In light of the quality and value that farmers place on their animals, this study examines how

livestock, namely cattle, might help achieve food and nutritional security and improve social wellbeing (Gambiza & Nyama, 2014).

In Zimbabwe, cattle are a significant livestock species, and they make up around 25% of the GDP, with goats making up the remainder. Livestock ownership is widespread in southern Africa. With an estimated herd size of 5 to 6 million animals, the number of cattle in Zimbabwe is unclear (Garwe, 2015). The majority of the cattle (89%) are kept in communal areas. While exotic breeds predominate in the commercial sector, a higher percentage of cattle (88%) in the communal regions are mostly indigenous breeds or crossbreeds that are primarily of indigenous blood (Gwaze, Chimonyo, & Dzama, 2019).

For the majority of Zimbabwe's rural-based households, cattle play important economic and sociocultural significance. Food, income, asset preservation, employment, soil fertility, livelihoods, transportation, and draught are among the functions. In terms of the economy, cattle give farmers a source of money, manure, meat, and transportation (Khombe, 2014). They also provide security during difficult financial times; thus, farmers must respect their livestock and be generally risk-averse. Additionally, cattle are significant in Zimbabwean traditional events including marriage, maturation ceremonies, burials, weddings, and restitution all essential components of rural life. Some farmers retain cattle for status and enjoyment, as well as sources of respect and authority, according to (Homann & Van Rooyen, 2017).

Kusina and Nyoni, (2019) states that livestock farming provides a global role in improving the quality of human life in the 21st century and is expected to be even more important in terms of food security in the future. Maburutse, Mutibvu and Kashangura, (2014) concur in that both crop farming and livestock production play an important role in the economy of Zimbabwe, providing an income for about 75% of the population and contributing over 40% of national earnings from exports. Animals provide approximately 80% of the draught power used for communal farming in developing countries (Kusina & Nyoni, 2019). Governments and agencies concerned with agricultural production and development now recognize the importance of livestock and should look forward to passing of regulatory laws that protect communal farmers of their livestock by resuscitating government boards that will buy local cattle at reasonable prices that give quality and value to rural cattle (Maburutse, Mutibvu, & Kashangura, 2014).

In Zimbabwe, community farmers are the largest cow owners, accounting for 70% of all cattle as of 2020 (FAO, 2016). However, this dominance of cattle ownership is increasing, particularly in the beef industry as communal farmers have improved their value for animals. There is growing agreement that communal farmers consider cattle more as an intermediary input to crop production than as a primary source of income (Makoholi, 2018). According to Manyuchi, Mukaviri and Smith, (2016), the value of cow production is comprised of 50% to 70% of draft and dung, followed by milk production, sales, and slaughter. These findings are corroborated by recent research that demonstrate a significant correlation between increased herd size and increases in yields and crop areas (Manyuchi, Mukaviri, & Smith, 2016). Farmers, however, frequently hold a variety of opinions on how much to value their livestock on the market and what factors to take into account when selling the cattle (Manyawu, Chakoma, & Sibanda, 2019).

In the area the researcher is carrying out his study, he has observed that cattle production is a very fundamental project and forms part of the main local communal livelihoods. This is supported by (Manzungu & Mtali, 2017) who opines that cattle serve as an indication of one's wealth. The livestock plays an important role in families and household levels. Thus (Mapiye, 2017) argues that cattle are also useful in nutrients recycling in communal range lands. For (Marufu & Mapiye, 2019) cattle can also be loaned to neighbours to enhance kinship ties. This has prompted the researcher to make an assessment on the parameters that are used by Checheche Communal farmers to determine the quality and value of livestock.

Value and quality meat, whether it be living or corpse, pertain to the characteristics and perception of the meat, according to (Bwakura, Ndlovu, & Topps, 2014). The researcher decided to conduct a study evaluating the criteria Checheche farmers use to judge the worth of livestock in light of some of these academic arguments. More specifically, it is a grey area where more research has been conducted but less has been said regarding parameters specific to the Checheche Communal Area.

For the reason that legal cattle markets are underdeveloped and there are active black markets for the trade of cattle, smallholder agricultural households have a tough time getting their produce to market. On the other hand, because of the variations in the prices that are charged by retailers, there are frequently shortages of beef in the local markets despite an increase in the number of cattle. With particular reference to Checheche farmers in the Chipinge area of Zimbabwe's

Manicaland province, the study's main objective was to evaluate the criteria that farmers consider when determining the quality and worth of their cattle.

1.2 Statement of the problem.

Beef is one of the products that contribute significantly to the global value of agricultural output in the livestock industry. Rural communities also keep livestock for non-economic benefits such as social and cultural status. They produce livestock to enhance their income and sustain their livelihoods. The farmers encounter problems of cattle predators and lack of efficient market channels that continue to undermine the role of cattle farming in enhancing the income of small-scale farmers. Farmer have had disappointment and frustrations when the price offered for their animals is too low for what they were expecting. Some conflict therefore arises between the farmer and the abattoirs. Farmers use different parameters to value their cattle when selling them however this has not yielded any results as some of the farmers are still facing challenges in selling the cattle at their determined value and quality.

1.3 General objective.

The main objective of this study was to assess the parameters the communal farmers use to value their livestock.

1.3.1 Specific objectives

- To determine the live cattle assessment methods used by farmers.
- To analyse the parameters that are used by farmers to value their livestock
- To assess the challenges faced by farmers in cattle production in communal areas

1.4 Research questions.

- What are the cattle assessments methods used by farmers to assess their cattle?
- What are the parameters that are used by farmers to value their livestock?
- What are the challenges faced by farmers in cattle production?

1.5 Purpose of the study.

By carrying out this study the researcher tends to compare the effect of the parameters on the value of the livestock.

1.6 Significance of the study.

This study is going to benefit stakeholder in the agriculture sector and the general community of Checheche at large who are into cattle production, the business community in meat production and butcheries. The study seeks to inform policy planners as well as future researchers on what need to be unpacked and for further researches.

The vet officer and research extension officers should feel challenged to make further researches on the parameters that are used to value livestock. More often than not, there are situations that people resolve dispute using livestock to settle scores. There are times when they are not bothered about the size, breed, age or sex to settle scores. There are also times when each of the named parameter is of value paramount importance. To this end, the researcher undertakes this study in a bid to unlock the general populace's prescriptive way of doing things. It is the hope of the researcher that the study may change the mind-set of the general majority communal farmers of Checheche and stakeholders.

1.7 Delimitation of the study.

The research study may be limited in scope as it will target farmers drawn from only one locality which is Checheche communal lands. This will deal with dip tanks under Checheche communal lands.

1.7.1 Physical boundaries.

The study is confined to Checheche communal lands ward 24, 25, 26 and 28 in Chipinge district of Manicaland province.

1.7.2 Conceptual boundary.

The study focuses on the parameters that are used to determine value of livestock.

1.8 Limitation of the study.

In carrying out this study, the researcher is on block release at Bindura State University thus time restrictions can be limiting the researcher from getting the information from a wide population. The researcher will carry out research whilst teaching and assessing dip attendant full time, a situation that may further constrain time. Travelling from Checheche to Bindura University for timeouts mentorship and supervision can limit the researcher's frequent visits can provide the researcher an opportunity to get maximum help from the supervisors.

Chapter 2

Literature Review

2.1 Introduction

The chapter reviewed literature as it related to the topic that is under consideration. The undertaking of a comprehensive review of literature was guided by the need to lay a solid foundation upon which the findings from this study could be compared. In the same manner, it was understood that whilst there have been multiple studies undertaken in the area the methodologies adopted and the resultant findings differed and as such, the review of literature sought to establish the research gap that this study targeted to bridge.

2.2 Livestock production in Zimbabwe

Production of livestock has always been a crucial activity in Zimbabwe. After the East Coast Fever epidemic of 1900–06, the 1896–98 plaque that served as the Mashona breed's ancestor can be completely destroyed. Crossbreeding between Makalanga or Ngombe dzaVakaranga and Angoni cattle produced this breed (FAO, 2016). The most significant livestock species in Zimbabwe is these cattle. It is asserted that native cattle are important gene reservoirs for adaptive and economic features (Assan, 2019). The assumption made by academics is that cattle are desirable for their economic qualities, but they don't seem to discuss the criteria used to assess quality and worth, a gap that this study aims to remedy.

2.3 Importance of cattle production in communal areas

Communal cattle provide a variety of functions, including providing meat and hides as final products along with milk, dung, draught power, and a measure of one's wealth standing if given the right value. Drums, tents, and mats are all made from cattle hides. Cattle are employed as investments and status symbols in Matabeleland, according to a survey conducted by (Mashoko, Muchenje, Ndlovu, & Musemwa, 2017). Therefore, cattle provide money to community houses through the sale of the animals and the goods they produce so there is need for them to determine the quality and value for their livestock. As workers are engaged to process and sell cattle and their products at various points along the production chain, improvements in the production of

cattle and novel value additions to cattle can generate employment for humans. In socio-cultural practices like lobola payments and ancestor gratification, cattle are crucial (Masikati & Musemwa, 2020). They are helpful for recycling nutrients on shared rangelands. To strengthen ties between relatives, cattle might also be traded or loaned to neighbours. However, because the existing value methods rely on monetary standards and disregard the nonmonetary contributions of cattle to homes, such as the provision of manure, drought power, and milk, it is unclear how much of a contribution cattle actually provide at the household level (Mason & Maule, 2015). There is little information available on the true value of cattle to human food security and livelihoods. Therefore, it is essential for agro-economists to develop indices that take non-monetary contributions into account when assessing the contribution of cattle to communal livelihoods.

2.4 Cattle population and distribution in communal areas

Goats are the second-most important livestock species in Zimbabwe, behind cattle. In the majority of Southern African nations, this is the trend (FAO, 2016). More funding should be directed toward communal cattle development programs in order to improve national food security, according to the cattle population and proportions found in various agro-ecological regions of Zimbabwe communal areas. Since 89% of Zimbabwe's cattle are owned by small farmers, and the livestock sector contributes about 25% of the country's GDP, this issue needs to be addressed (Matlebyane, Ng'ambi, & Aregheore, 2019).

2.5 Cattle management system in Zimbabwe.

In Zimbabwe, there are two unique and opposing primary grazing systems: the controlled, commercial grazing practiced by commercial farmers, and the uncontrolled grazing practiced in communal farming regions. The aforementioned researcher contrasts two grazing regimes that affect animal output. Once more, this makes the study place grey and deserving of unpacking.

However, there is a mutually beneficial relationship between the cattle management system and the metrics used to assess the worth and quality of livestock. According to (Mavedzenge, Mahenehene, Murimbarimba, Scoones, & Wolmer, 2016), communal spaces lacking in controlled breeding has led to an increase in breeding. As a result, it may be said that the cattle management system affects the metrics used to assess quality. Therefore, it is important to

comprehend whether there is a positive or negative correlation between the management system and the factors that affect cattle value.

Comparing communal farming systems to commercial farming systems reveals considerable differences in cattle management and output. The justifications for maintaining cattle in communal systems are extremely varied. The most popular way of raising cattle in Zimbabwe is herding. During the day, cows are herded, and at night, they are confined. When grazing space is scarce, it is possible to treat the entire village's cattle as a single interbreeding flock with no measures to regulate mating (Mhlanga, 2017). Where there are large expanses of grazing pasture, however, herds from various houses within the same community may graze independently. When crops have been harvested, cattle herds are released to forage on crop residues until the start of the rainy season, when they must be herded (Moyo, 2019). Production is frequently restricted by the limited intake of subpar feed. The seldom addition of commercial feeds or enhanced legume fodder to communal cattle results in minimal ingestion of subpar feed, which frequently lowers animal productivity. As of the limited dietary options, cattle tend to be underweighted, have poor physical conditions, and are more susceptible to endoparasites during the dry season. During very dry seasons, depending on the spatial distribution of forage patches and the availability of water, animals wander much farther away from the homesteads (Moyo, Ndlovu, & Magwenzi, 2017).

The level of management, as evidenced by deficient infrastructure such paddocks, has an impact on the quality and breeding system of communal farmers, according to Makoholi Research Institute (2018). This is further supported by (Moyo, Swanepoel, & Rege, 2016), who note that inadequate range land management, ineffective grazing management, and fires all contribute to a reduction in the amount of fodder available. Once more, the aforementioned researcher reveals how poorly range lands are managed, failing to take into account the factors that affect the quality and worth of animals (Mpofu, 2015).

2.6 Live cattle assessment

Producers of cattle often evaluate their cattle visually. Visual assessment can be used to evaluate frame, structure, muscularity, fatness, and condition score. Some features are impossible to judge

visually. An animal's estimated breeding values (EBVs) can be used to assess its genetic worth (FAO, 2016).

2.6.1 Body condition score

A technique called the "body condition score" measures an animal's quantity of fat and muscle to gauge its energy reserves. It serves as a helpful management tool, and data obtained from condition scoring can be utilized to determine the cattle's future feed requirements. In order to maintain the breeder herd's fertility and maximize production, condition score targets must be met at crucial moments throughout the annual production cycle (Assan, 2019).

2.6.2 Frame score

The animal's maturity pattern and fattening potential are evaluated using the frame score. This is crucial when choosing animals to satisfy consumer demands and when choosing breeding stock to suit the climate and production methods (Assan, 2019). Compared to animals with smaller frame scores, those with bigger frame scores tend to grow faster, but they are leaner and lay down fat at heavier weights.

2.6.3 Muscle and fat score

Cattle farmers can benefit from knowing how to precisely calculate a cow's fat and muscle ratings. Markets for cattle frequently specify the appropriate fat range for animals coming into the market. An important tool for ensuring cattle satisfy market standards and avoiding penalties for being over- or under-fat is visual fat score assessment in cattle (Assan, 2019). Processors may provide a premium price for animals with greater muscle scores since these animals often produce more meat that is suitable for sale. Without sacrificing fertility, the breeder herd can be chosen for its muscle score (Mutambara, Jiri, Jiri, & Makiwa, 2016).

2.6.4 Estimated breeding values and nutrition

Estimated breeding values (EBV) can be used in concert with ocular evaluation to estimate an animal's prospective maturity pattern, fat content, and muscle mass. Animals' maturity patterns and their ability to reach their genetic potential for size and growth will both be influenced by nutrition (Mwale, Chikumba, & Poshiwa, 2016).

2.6.5 Dentition

In both living and dead animals, the age can be inferred from the dentition. Prior to the emergence of two adult or permanent teeth, which occur when the animal is about two years old, cattle are said to have "milk teeth" but are otherwise described as having "0 teeth." Note that breed (Bos indicus teeth later) and other factors can impact the age at which adult teeth first develop, which can vary by several months (Assan, 2019). Up to a maximum of eight permanent teeth, two more develop around every six to eight months after that. Dentition is employed in marketing, and in feedlot grids and most carcass grids, having more than two teeth carries a penalty (Ndebele, Muchenje, & Musemwa, 2017).

2.6.6 Liveweight

Liveweight estimation is challenging since it depends on several variables, including time off feed (curfew period), breed, nutrition history, muscling, fatness, sex, and frame score. Therefore, the most accurate approach to measure live weight is with electronic scales (Ngeno, Chimonyo, & Mapiye, 2016). Liveweight can be full liveweight (weighed immediately from the paddock), empty or shrunk liveweight, or some combination of the two (weighed after animals have been removed from feed and water). Empty liveweights are typically 91–94% of full liveweight, although they can be as low as 86% in stock that is suffering from a drought. Farmers should use this assessment since it helps them evaluate the true value of their animals (Assan, 2019).

2.6.7 Sex

However, because of perceived variations in muscling and thus yield, sexes are frequently segregated in processor markets, despite the fact that there is little evidence to support this claim (heifer beef is marginally superior). Due to unintended pregnancy, oestrus behaviour, and slightly slower growth rates, feeding heifers can be more difficult (Ngongoni & Mapiye, 2017).

2.7 Constraints to cattle production in communal areas

The barriers to cattle productivity in communal areas of Zimbabwe can vary depending on the agro-ecological region. For sustainable cattle improvement and production, these difficulties must be properly understood and prioritized (Nyathi, 2018). The main obstacles are a high prevalence of illnesses and parasites, inadequate management, a lack of fodder availability, and

ineffective marketing strategy and all these factors determine the value and the quality of livestock.

2.7.1 Prevalence of diseases and parasites

The majority of community regions in Zimbabwe are plagued by diseases and parasites, which pose significant obstacles to the production of communal cattle. Endo-parasites have a negative impact on reproduction mostly through elevated mortality rates and weight loss during the dry season (Muchenje, Raats, & Strydom, 2018). Given that 70% of calves are born during the dry season, poor disease control has a severe impact on both finances and output. Studies by Mugabe and Mupangwa, (2016) and others reported communal herd mortality rates as high as 18%, while Mupeta and Mwale, (2016) found that 60% of communal cow herd deaths in the Masvingo district were caused by disease. Farmers typically report blackleg, heartwater, babesiosis, anthrax, and anaplasmolis as their most prevalent illnesses (Mugabe & Mupangwa, 2016). Inadequate veterinary officials and the unavailability and high cost of medications make the problem worse. For instance, a survey conducted by (Mupeta & Mwale, 2016) revealed that the majority of cattle producers had limited access to veterinary extension services other than interactions with the dip attendants on dip days. External parasites that affect cattle can also cause heart disease and significant economic damage for the nation.

2.7.2 Level of management

Although the native cattle breeds are resilient, their growth performance is typically subpar, in part because of the high disease and parasite risks and the inadequate nutrition levels present in communal areas, which are primarily located in Zimbabwe's outlying districts (Raats, Magadlela, Fraser, & Hugo, 2014). Poor dam nutrition resulting in low milk output, inadequate calf housing structures permitting the build-up of infectious agents in dung during the rainy season, and the abundance of contaminated water sources producing scours are management variables that contribute to low cow productivity (Senda, 2018). Additionally, because there is typically only one doctor per area, most community farmers cannot afford to hire government veterinarians or buy pharmaceuticals, leading to the usage of untrained ethnoveterinary remedies. Inbreeding has resulted from uncontrolled breeding in common settings, which causes cattle to grow slowly. Because there are no organized breeding programs or necessary infrastructure, such as paddocks,

cows and bulls from unproven genetic lines coexist all year round. All of these elements have a negative impact on the livestock's quality and worth (Smith, 2015).

2.7.3 Spatio-temporal availability and quality of animal feed

The main obstacle to the production of communal livestock is a seasonal lack of feed, especially during the second half of the dry season. The following elements collectively account for the main causes of the feed challenges: (i) The use of fallow fields and grazing area by the community without any clear allocation of responsibilities for effective land management. (ii) Due to the poor soils, little rainfall, and forage species that characterize community rangelands, there is a poor quality of grazing. (iii) Inadequate and ineffective crop residue management, with a focus on low-quality cereal stover. (iv) Space pressure as farmers increase the size of their crop fields and clear additional land for habitation (Swanepoel & Setshwelo, 2015). Fodder supply in communal areas is further constrained by ineffective rangeland management, improper grazing control, and rangeland fires. In the tropics, veld quality and availability are extremely varied, with crude protein levels in mature, dry tropical grasses falling below 5%. The wet season in the sour veld is when the highest levels of crude protein are measured. The total digestibility of the grasses is decreased by the decline in grass protein content and the rise in grass lignin content over the winter. The lack of data on how seasonal changes affect feed dynamics and management in common areas makes it challenging to determine how effectively using communal rangelands has an adverse impact on the quality and worth of meat produced by communal farmers (Tavirimirwa, Manzungu, & Ncube, 2108).

2.7.4 Marketing management

The majority of communal areas have inadequate livestock marketing that is characterized by non-existent or dysfunctional marketplaces. The International Crop Research Institute in Semi-Arid Tropics (ICRISAT) conducted a baseline survey that found no organized trading of cattle in communal areas of Zimbabwe. Farmers in communal areas often use ad hoc price scales based on ocular evaluations of the cattle to market their livestock informally (FAO, 2018). The primary buyers are middlemen who buy live animals from farmers to resell at cattle auction sites and to abattoirs in towns, frequently to the benefit of these middlemen rather than the actual farmers. Farmers typically end up under-pricing their animals in emergency situations and skip using the

criteria they take into account when establishing the quality and value of their animals since, other from selling to local butcheries, they do not have available marketplaces where they may take their animals (Tessema, De Boer, Baars, & Prins, 2019).

2.8 Possible areas of research for improvement of cattle production in communal areas

Understanding community cattle production practices and creating workable plans that use cattle as vehicles for communal development would require research. Generating accurate statistics on the contribution of cattle to household economies and food security, characterizing cattle breeds at the molecular level to identify suitable genetic sources, and—most importantly—developing sustainable research programs and development projects that effectively address the challenges that communal farmers face are all aspects that require investigation (Moyo, Swanepoel, & Rege, 2016).

2.8.1 Baseline surveys and participatory rural appraisals

The majority of research on cattle has been done in laboratories with strict controls and research stations with a mandate to study sustainable livestock production; the findings are typically not transferable to communal production systems in rural areas. Therefore, it is important to identify and assess the capabilities and limitations of these communal cattle in the context of communal cattle production (Francis & Sibanda, 2015). Researchers can learn a lot about the challenges farmers confront and the opportunities that exist within their production systems by assessing the current systems for the production of cattle. It is crucial to learn about conventional methods of cattle production through baseline studies, which involve asking cow owners for information through questionnaires, focus groups, and direct observation. Participatory rural evaluations are essential in any development endeavour to make sure that the farmers, who will ultimately benefit from the technologies produced, actively engage and are thus given influence over the process (Chinogaramombe, Muchenje, & Mapiye, 2018). Monitoring changes in herd sizes and production closely will allow you to gather information on the productivity of cattle over the course of a season. Herd monitoring requires the involvement of willing farmers, makes use of local resources and knowledge, and introduces new technologies all at once. It is necessary to monitor the head for more than five years to cover all seasons and collect enough data to design effective intervention techniques. Calving weights, body weights at 200 and 400 days (measured

using weigh belts or scales placed at dipping points), herd dynamics (entries and exits from the herd and the reasons behind them), and reproductive performance, such as calving interval, which is a gauge of herd productivity, are all factors that need to be watched. Long-term analysis of the dynamics of cow herds improves understanding of the functions of cattle at the level of the individual household (Masikati & Musemwa, 2020). It is simple to collect the data by computerizing or redesigning dip recording cards to include performance records that may then be periodically accessed from the veterinary department.

2.8.2 Improving the production environment

Research is needed on the epidemiology, loads, and susceptibility of illnesses and parasites in various classes and strains of livestock as this has an effect on quality and value of livestock. It is important to look at the mechanisms underlying native cattle's resilience, tolerance, and resistance as well as the likelihood that imported and crossbred cattle would develop an immunity. Prioritizing research efforts should be done on parasites like tapeworms that have significant effects on growth and death (Matlebyane, Ng'ambi, & Aregheore, 2019). An effort should be made to repackage indigenous knowledge systems so that local farmers can use them in an informed and controlled manner. Socioeconomic study is necessary for building specialized markets for indigenous cattle and their products, as well as for determining the best marketing channels (Moyo, Swanepoel, & Rege, 2016). Market expansion is a surfier way to get farmers to understand how important it is to raise management standards, handle illnesses and parasites, and boost nutrition. Therefore, it is crucial for agricultural economists to identify challenges and opportunities for communal cattle production.

2.8.3 Characterisation of indigenous breeds

An inadequate grasp of the potential of the three indigenous cattle breeds is the result of insufficient descriptions, classifications, and evaluations of cattle. By establishing breed differences by molecular taxonomic characterization, choices relating to the conservation and advancement of these breeds can then be guided. To create effective and long-lasting breeding programs, traits of each breed must be identified and assessed. When used to examine DNA sequence and variation, microsatellites and single nucleotide polymorphisms (SNP) produce a significant selection response (Makoholi, 2018). The conservation of indigenous cattle breeds,

including the Tuli breed, Nguni breed, and Afrikaner cattle (created in South Africa), is carried out at the Matopos Research Institute using conventional techniques. Since these animals may be genetically identical, it is necessary to undertake a study in communal regions using cutting-edge technology like microsatellites to characterize cattle based on genetic diversity rather than region of origin. Microsatellites have been employed in South Africa to categorize various strains of cattle and assess the genetic diversity among native cattle (Chinogaramombe, Muchenje, & Mapiye, 2018).

2.8.4 Selection of individual cattle for breeding

Correct genotype matching with the current and prospective socio-economic and cultural settings should be taken into account, and breeding objectives should be clearly specified, in order to effectively create sustainable genetic improvement initiatives (Francis & Sibanda, 2015). To increase collective cattle production, adaptable features such as disease and parasite resistance, climate adaptation, and economic traits like calving interval, puberty age, and age at first calving should be highlighted (Mason & Maule, 2015). Since records serve as the foundation for genetic development, programs should be created to encourage farmers to retain records. Realistic performance and pedigree recording, together with active farmer involvement, are necessary for within-breed selection so that breeders can use the records to aid in choosing superior animals. When choosing individual cattle for communal herd improvement, indigenous breeds should be given priority (Masikati & Musemwa, 2020). As an illustration of the significance of choosing cattle before using them as breeding animals at the communal level, Mpofu (2015) reported a 74% calving rate for Mashona cows, which is over 20% higher than that of Sussex (56%). When compared to some exotic breeds, Mashona cattle had a higher rate of calving and weaning under poor environmental conditions typical of most community areas, according to (FAO, 2016)

2.8.5 Crossbreeding

There are instances in livestock production where the optimal animal might be a cross between a native breed that is adapted to the local environment and a big-bodied exotic breed to take advantage of cattle breed complementarity and heterosis (Moyo, 2019). To combine the high productivity of exotic breeds with the adaptability of local breeds in the smallholder dairy sector, imported and indigenous cattle breeds have been crossed. According to Mpofu, (2015), Jersey *

Nguni and Jersey *Tuli crossbred cows raised in smallholder farming settings at Matopos Research Institute produced more milk. According to Moyo, (2019), foreign breeds with greater growth potential can be used to improve the performance of the native cattle's growth rate and also boast quality and value. Brahmans are sometimes crossed with native breeds by communal farmers because they are thought to be adaptable and gentle. Due to the unrestricted breeding management that characterizes communal lands, the majority of crossbreeding programs, however, have lacked long-term strategy on how to maintain an acceptable degree of upgrading and the indigenous genetic source (Mpofu, 2015). The employment of a terminal cross system, where the offspring are intended for slaughter and cross-bred dairy heifers are continuously supplied to communal dairy farmers, is implied by this.

2.9 Chapter summary

The chapter has provided literature review with regards to the topic that is under study. The next chapter provided research methodology that is the materials and the method that was used in gathering and analysing the collected data.

CHAPTER 3

MATERIALS AND METHODS

3.1 Site description

The study was conducted in Checheche Communal Lands of Chipinge district in Manicaland province, Zimbabwe. The study area which is semi-arid savanna and is located in south eastern Zimbabwe -20.19296 latitude, 32.62044 longitude. The area experiences a hot wet season from November to April, a cool dry season from May to July and a hot dry season from August to November. Checheche is located in two natural regions 4 and 5, receives an average rainfall of 350 and 460 mm per annum (Chinogaramombe, Muchenje, & Mapiye, 2018).

The mean daily temperatures recorded over the last 20 years is 22^0C with a minimum and maximum temperature of 5 and 34^0C respectively (Manyawu, Chakoma, & Sibanda, 2019).The district has a total number of 5529 A1 farmers and 142 A2 farmers, settling on approximately 158280,9 ha and 20105,3 ha respectively (Moyo, Ndlovu, & Magwenzi, 2017). The district has around 300000 cattle, with cows occupying 33%of the total number of cattle (Mugabe & Mupangwa, 2016).

The farming in Checheche Communal areas is primarily extensive mixed crop- livestock system. A variety of food crops, including maize (Zea Mays), Rapoko (Eleusine coracana), cow peas (vigna anguiculata), cotton (Gossypium hissurtum) and ground nut (arachis hypogea) (Garwe, 2015).Farmers have opted rearing of indigenous cattle due to limited grazing lands and their tolerance to drought. The most dominant cattle breeds are Mashoma and Brahman crosses (Mason & Maule, 2015).

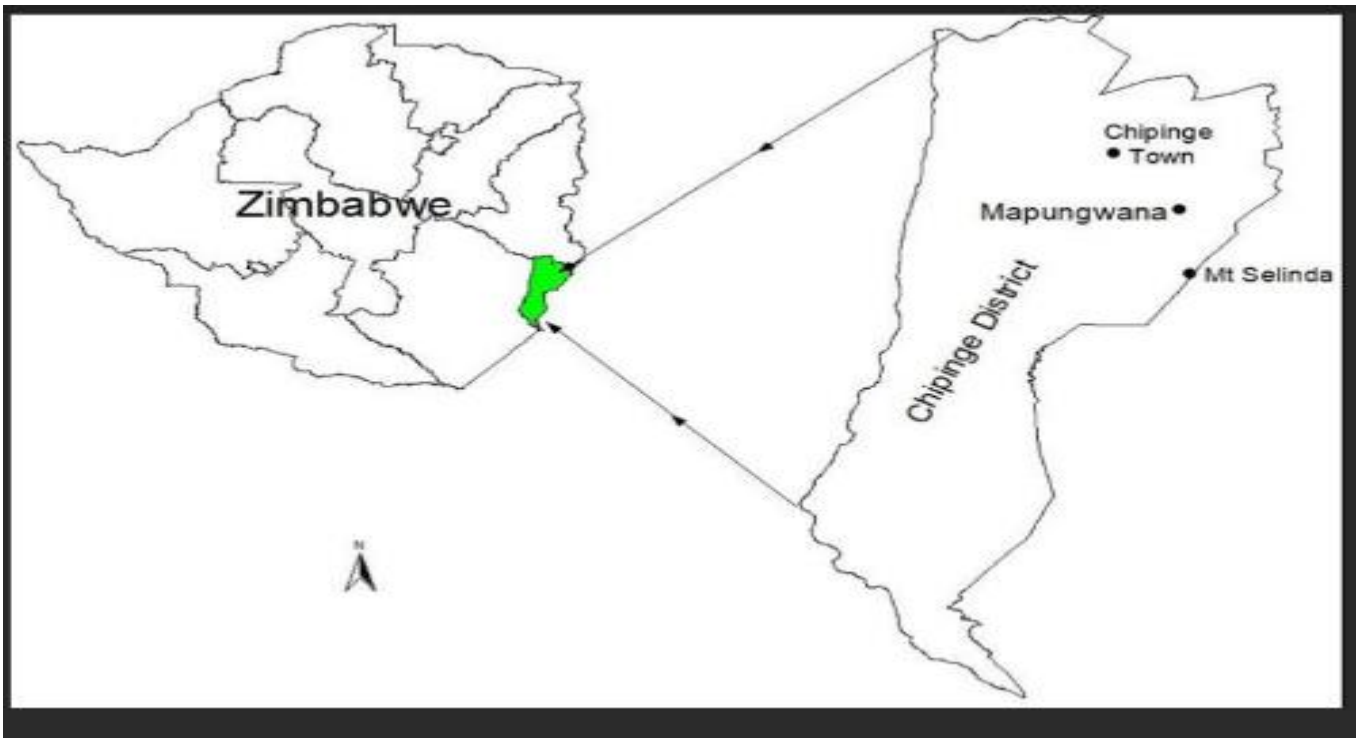

Figure 3.1 Map of Chipinge district.

3.2 Research Instruments

3.2.1 Questionnaire

A questionnaire was used to extract specific information from the respondents. The data from questionnaires allowed the researcher to get facts and opinions from the respondents about the farmer's level of understanding knowledge they use when determining the quality and value of their livestock (Bricki & Green, 2017). The questionnaire consisted of both open ended and closed questions. Closed ended questions are extremely useful for eliciting factual information, while open ended questions are for seeking opinions, attitudes and perceptions (Atzmuller & Steiner, 2018). The questions in the questionnaires of this study were based on the research questions.

3.3 Target population

The population for this research study were cattle farmers in Checheche. A total of 135 cattle farmers consists of the target population for the study. Farmers were allowed to express their thoughts and understanding according to the questions on the questionnaire on the factors they use when determining the quality and value of their livestock. The questionnaire was developed in English but was translated on site into local language to assist respondents who had challenges in reading English (Bricki & Green, 2017).

3.4 Sampling

In this research, the sample population consisted of cattle farmers that were chosen as outlined before. The researcher selected the farmer's randomly in the communal area. The sample members were cattle farmers who could provide the best information to achieve the objectives of the study (Chigwendere & Chigwendere, 2018). Almost every household in Checheche possess cattle. Atzmuller and Steiner, (2018) defines a sample size as being the total number of individuals that are selected into the sample and from whom the researcher collects primary research data.

This means that a sample size is simply the number of individuals that constitute the sample from which data is collected (Atzmuller & Steiner, 2018). In arriving at the sample size, the researcher used the Yamane formula as illustrated below.

$$n = \frac{N}{(1 + Ne^2)}$$

Where **N** = population size, and **e** = significance level (0.05)

$$n = \frac{135}{1 + (135 \times 0.05^2)}$$

$$n = \underline{101}$$

In line with the sample size computations above, it can be deduced that the sample size for this study comprised of 101 cattle farmers drawn from all the dip tanks in the Checheche communal area.

3.4.1 Sampling technique.

Sampling techniques are the methodical procedures that a researcher adopts in the selection of a representative sample from the target population (Hintze, 2015). In this study, the researcher utilised the simple random sampling technique to extract members of the population for inclusion into the sample. According to Atzmüller & Steiner (2018), simple random sampling falls under the probability sampling approaches and it is one in which all elements of the population have an equal chance of making it into the sample.

Under simple random sampling, the selection of individuals is random and not premeditated and as such, the researcher does not apply their discretion in selecting the sample (Pandey, 2016). This approach was selected because it eliminated bias in the selection of the sample and also each member of the population had an equal chance of being selected into the sample.

3.5 Ethical considerations.

Ethical consideration relates to the moral principles that the researcher is expected to observe when conducting research. The researcher sought for approval to conduct the survey from the Department of Agriculture, where authorization was granted. Throughout the study, particularly in the collection and analysis of research evidence, the researcher was compliant with the ethics of research. This entails that the researcher was mindful, at every turn, of the ethical issues with which she was supposed to be compliant. In carrying out this study, the researcher complied with various ethical issues around the conduct of the research.

The researcher interacted with respondents and as such, the concept of informed and voluntary consent needed to be complied with. In order to do so, the researcher explained to all the respondents what the study entailed and hat their participation entailed and what the research findings would be used for. Respondents were given an opportunity to decide for themselves, based on the disclosure, whether or not to participate. To do so, all data obtained in soft copy documents were preserved under encryption and as such, password protection was activated on all the files and folders containing the research data and as such, unauthorised access to the research data was guarded against.

3.6 Data analysis

Data collected using questionnaires was entered into Microsoft excel. Data was exposed to descriptive analysis using SPSS 26 and results were presented in the form of figures, charts and numerical descriptors. A linear regression analysis was performed which was aimed at finding the relationship between value of livestock and the parameters used by farmers to determine the value of their livestock.

3.7 Chapter summary

The chapter outlined, discussed and justified the research methodology as it was adopted in the collection, analysis and utilisation of research evidence. In the same manner, the researcher justified the adoption of the qualitative research strategy in the collection and analysis of research data. The study sample and the sampling techniques that were adopted along with the research instruments and methods of data analysis used were also discussed and justified. The next chapter, presented and discussed the research findings that emerged from the administration of the research instruments.

Chapter 4

Results

4.1 Demographic characteristics of respondents

4.1.1 Gender of respondents

The respondents for this study were asked to indicate their gender and the results are presented in the table below:

Table 1: Gender of respondents

Gender		
	Frequency	Percentage
Male	64	63.4
Female	37	36.6
Total	101	100.0

The table above shows that from the data set there were 64 males (63.4%) and 37 females (36.6%). This result shows that there was no equal representation of gender in the study as this is shown by the result that 63.4% were male and 36.6 were female.

4.1.2 Age of respondents

The researcher also wanted to know the age of the respondents and the results are presented in the figure below:

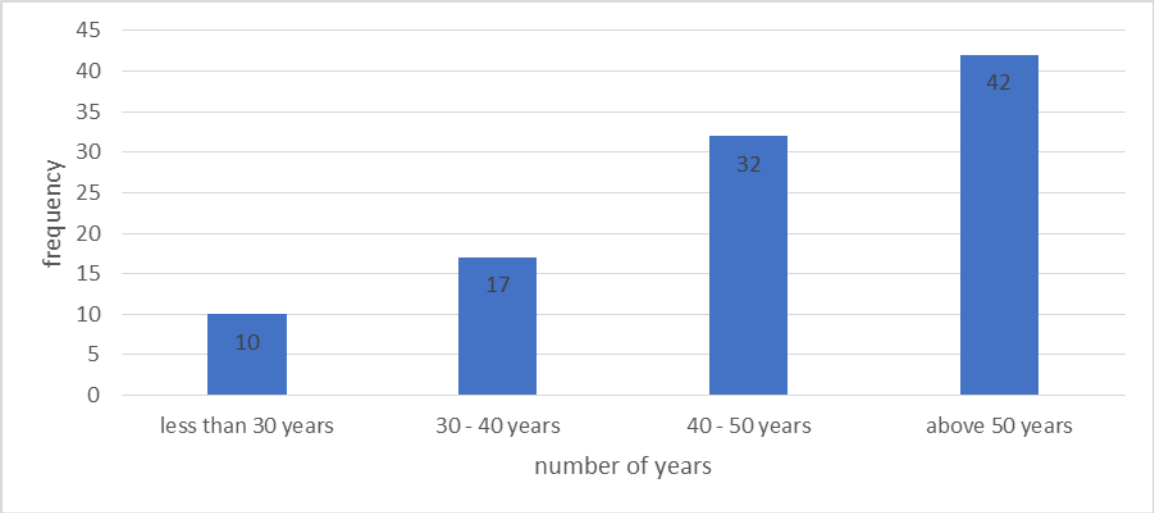

Figure 1: Age of respondents

The results from the figure above clearly shows that the age group which was most represented was the above 50years which has 42 respondents that fall within this age group. This value is good enough to generalise the results as the respondents were mature enough to respond to the questions asked. The following age group was the 40-50 years age group which had 32 respondents; followed by the 30-40 years age group which had 17 respondents and the least of them all is the age group that is less than 30 years which had 10 respondents.

4.1.3 Experience of respondents

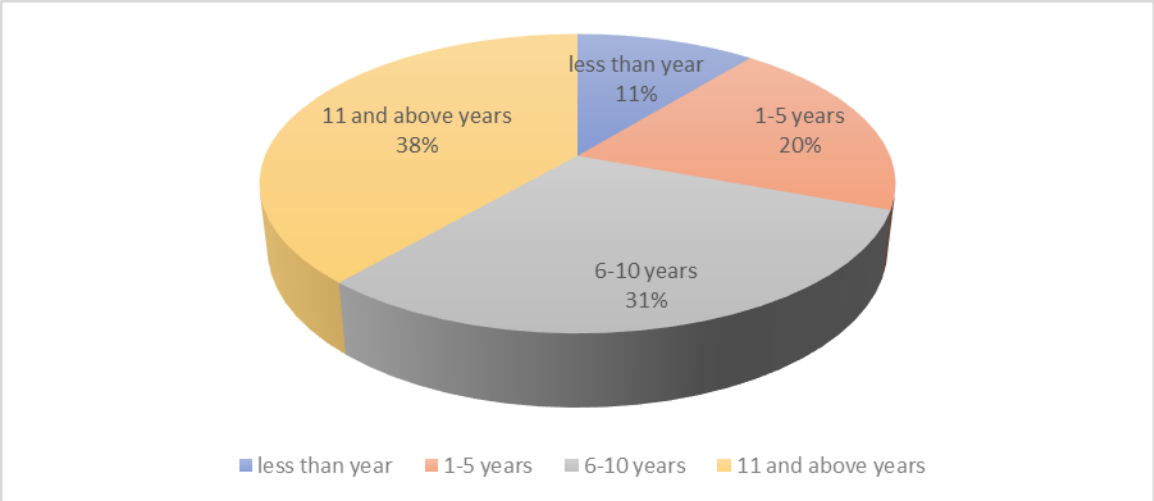

Figure 2: Experience of respondents

The fig.2 above clearly shows the number of years the respondents had in the cattle farming business. The respondents which were most represented in this study were from the 11 and above years category which had 38% of the total respondents and this figure indicate that most of the respondents had enough knowledge to answer the questions. The category 6-10years had 31% of the total respondents followed by the 1-5 years category which had 20% and lastly the less than a year category which is the least had 11% of the total respondents.

4.1.4 Level of education

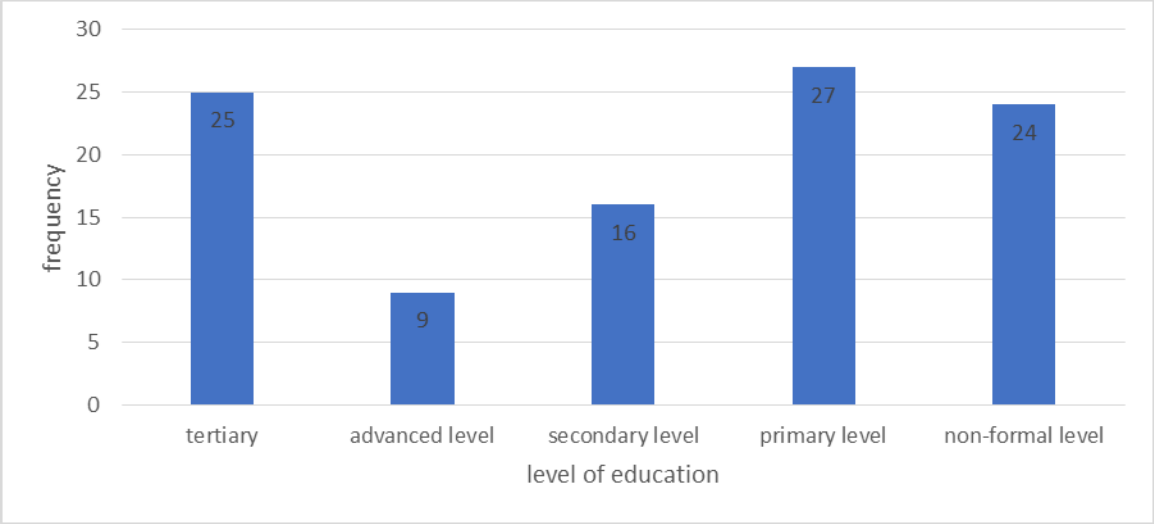

Figure 3: Level of Education

The table above clearly shows that most of the respondents went to primary school with them containing 27% of the total respondents and this clearly shows that the study was well represented as most of the respondents were able to read and write. Tertiary education was the category following with 25 % of the total respondents followed by non-formal education which had 24% secondary education had 16% as well as the advanced level category which had 9% of the total respondents. The researcher was happy with this result as all the respondents were able to read and write without any problem and this allowed for accurate results to be collected from the field.

4.1.5 Herd size of the respondents

The researcher also wated to know the herd size of the respondents and the results are presented in the figure below:

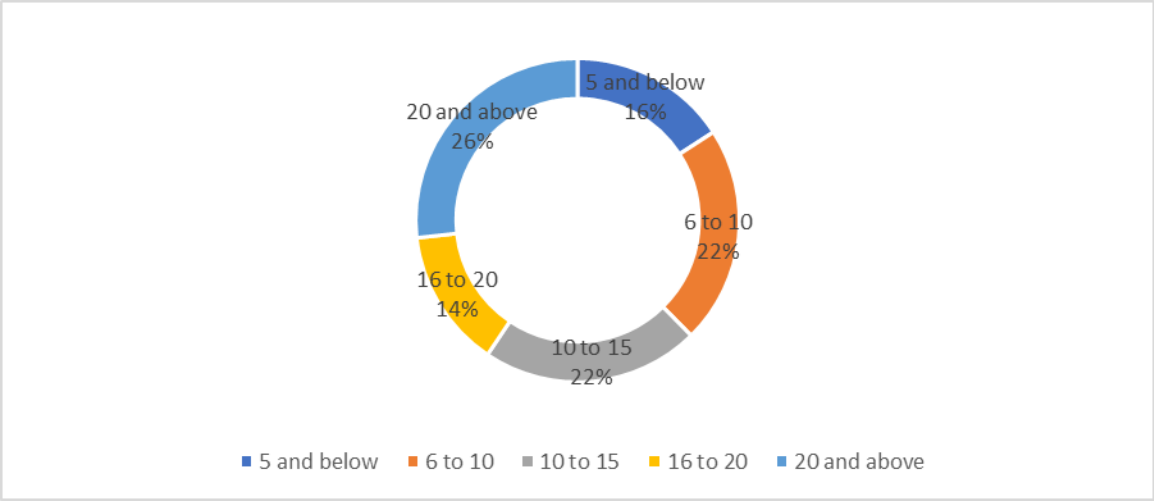

Figure 4: Herd size of the respondents

The figure above clearly shows that the category 20 and above had the most respondents in this study with a percentage of 26%. The category that follows is the 6 to 10 and the 10 to 15 which had both 22%, followed by the 5 and below category which had 14% of the total respondents. The last category from the figure above is the 16 to 20 which had 14%. These results enabled the researcher to collect accurate data as all the respondents had a herd size that allowed them to fit the research in their own perspective and give accurate information.

4.1.6 Value systems and parameters used

The researcher also wanted to know if the farmers value their livestock when selling and by this token the researcher enquired the factors that the farmers considered when found in a position of selling their cattle. The researcher also enquired if the farmers were being satisfied with the reward they are receiving after selling their cattle. Also, the researcher wanted to know the parameters that the farmers use when attaching value to their livestock and lastly the researcher wanted to know from the farmers' perspective the features that they look at from their animals when they want to sell them. The results of this enquiry are represented by the figure below:

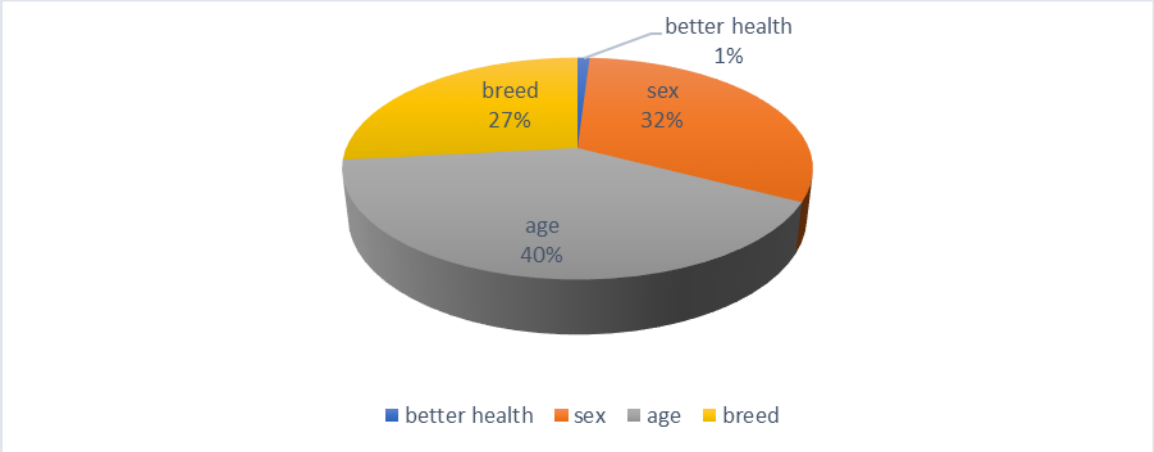

Figure 5: Parameters used by farmers to value animals

The figure above shows that 1% of the respondents used the better health parameter when giving value to their cattle, this was so as farmers indicated that they can detect if their animal is sick or not and this is so because some of the diseases cannot be detected by the eyes. It can also be noted that 27% of the farmers used the animal breed when attaching value to their animal and this was supported by many farmers as they said that Cross-breeds and Brahman breeds are given a higher value than the Mashona type. The third parameter was sex and this parameter had 32% of the total figure and for this parameter farmers indicated that male animals that were castrated are given more value than bulls and female animals. The last parameter used by farmers which had 40% was age and for this parameter farmers indicated that the younger the animal the higher the value to be attached to it. Many farmers however used the age parameter to give value to their animals and most of the farmers acknowledge to using this parameter as they cited that some of the parameters, they were finding it difficult to prove them such as the health status of the animals. However, some of the farmers were sure that if their animal is castrated, they were in a position to give the animal a good value and this helped very much when negotiating with the buyers.

4.1.7 Have you ever sold your cattle

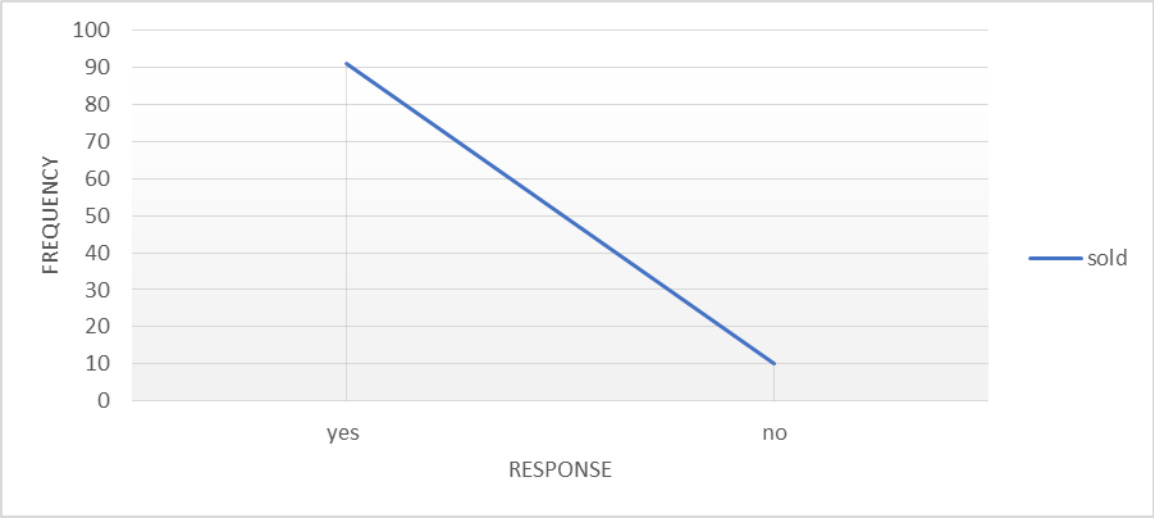

Figure 6: Have you ever sold your cattle

The figure above indicates that of the total respondents 90.1% of the them had previously sold their cattle so, this gave the study accurate results as farmers were in a position to give positive answers to all the questions. Only 9.9% of the respondents had never sold their cattle.

4.1.8 How do you rate the money or value you receive after selling the cattle

Table 2: How do you rate the value you receive after selling the cattle

		Frequency	Percent
Valid	never sold	10	9.9
	very satisfactory	7	6.9
	satisfactory	12	11.9
	Good	20	19.8
	not satisfactory	32	31.7
	very unsatisfactory	20	19.8
	Total	101	100.0

The table above shows the responses from the farmers who managed to sell their cattle and from it, it can be seen that only 10 (9.9%) farmers never sold their cattle, 7 (6.9%) farmers were satisfied with the value they got after selling their cattle, 12 (11.9%) said that the value was

satisfactory, 20 (19.8%) said that the value was good, 32 (31.7%) said that the value was not satisfactory and lastly 20 (19.8%) said the value was very unsatisfactory.

4.2 Simple Linear regression analysis of the parameters used and value charged

4.2.1 ANOVA Table

Table 3: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42873.784	1	42873.784	8.386	.005[b]
	Residual	506123.048	99	5112.354		
	Total	548996.832	100			
a. Dependent Variable: value						
b. Predictors: (Constant), parameters						

A one-way ANOVA was conducted to find out if there is a relationship between the value if livestock and the parameters used by the farmers. As per the evidence shown in Table above, the p-value is less than 5% (p-value = 0.005) and as such we shall conclude that there exists a positive relationship between the value of livestock and the parameters that are used by the farmers in determining the value of their livestock. This result is supported by the results of (Chimonyo, Kusina, Hamudikuwanda, Nyoni, & Ncube, 2016) who concluded that the value of livestock in rural areas of Zimbabwe is affected by animal health, sex, age and breed. This is also supported by (Moyo, Ndlovu, & Magwenzi, 2017) who concluded that value of cattle is affected by age and breed giving emphasis on cross breeds as producing high value meat.

4.2.2 Coefficients

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	101.524	34.889		2.910	.004
	parameters	25.228	8.711	.279	2.896	.005
a. Dependent Variable: value						

The table above validates the results attained on the ANOVA table. The results show a Beta value of 0.279 which is way below the t-value of 2.896. This is confirmation of the presence of a positive relationship between the value of livestock and the parameters that are used to determine it by farmers There is also a 95% confidence interval attributed to these results. It therefore follows that unless farmers used the parameters to determine the value of their livestock there will be no benefit for them. The positive relationship from the above table is supported by (Chimonyo, Kusina, Hamudikuwanda, Nyoni, & Ncube, 2016) who concluded that there exists a positive relationship between age, sex, animal health and breed with the value of livestock that farmers use when determining the value of their livestock.

Chapter 5

Discussion

Given that around 70% of the rural poor rely at least in part on livestock for their livelihoods while yet encountering significant obstacles, the rise in demand for livestock goods and by-products may help to boost the economy and reduce poverty. Without accounting for lost income due to weakened production and consumption links, it is estimated that animal illnesses lower yearly livestock productivity in underdeveloped nations by roughly 30%. The study outlines the parameters that farmers use when valuing the livestock.

The research results indicate that there was gender imbalance between the number of males who participated and the number of females who participated. These findings dispel the myth that men are primarily responsible for farming and that women avoid challenging tasks. The findings of (Chiduwa, Chimonyo, Halimani, Chisambara, & Dzama, 218) that men are involved in livestock and cash crop farming whereas vegetable agriculture is viewed as a female crop are supported by these data. The data could indicate that most women are leaving the sector to be cared for by men. In the literature, gender has been identified as a crucial component of communal cattle ownership and management by (Chiduwa, Chimonyo, Halimani, Chisambara, & Dzama, 218); (Chinogaramombe, Muchenje, & Mapiye, 2018); (Gambiza & Nyama, 2014) for instance. The research by (Mavedzenge, Mahenehene, Murimbarimba, Scoones, & Wolmer, 2016) demonstrates that women's participation in livestock farming can successfully enhance productivity and revenue, albeit they discovered that women's income increased more slowly than men. The gender asset gap in cattle farming is brought to light by this discovery. The results of this study demonstrate that communal cattle farming in the Checheche communal region was predominately done by men. In sub-Saharan Africa, this discovery is typical. The idea that women may own important assets like cattle is invalidated by the male bias in livestock ownership. Women typically possess small livestock like chickens, goats, and lambs. Women's mobility in terms of training and market involvement is also constrained. Given that women play a significant role in communal farming in Zimbabwe, this condition could negatively affect the productive cattle market off-take rate (Chiduwa, Chimonyo, Halimani, Chisambara, & Dzama,

218). The finding by (Mason & Maule, 2015) that gender has a detrimental impact on cattle marketing is consistent with the finding of this article.

The results indicated that most of the farmers were in the age group of above 50 years and this helped the farmers to have enough knowledge to answer the questions that were asked. This result is supported by that of (Chinogaramombe, Muchenje, & Mapiye, 2018), who concluded that age is a great teacher were as farmers that pose to be old enough in a sample provide relevant and accurate information. However, the result is against that of (Manyawu, Chakoma, & Sibanda, 2019) who postulated that due to changing technologies even young farmers have enough knowledge in the field as they are the ones who can easily adapt to the changing environments.

The result showed that most of the farmers had 11 and above years in cattle farming and this alone allowed the researcher to give credit to the results as most of the farmers had enough experience in cattle farming. The results are supported (Moyo, Swanepoel, & Rege, 2016) who asserts that experience will lead to good farming practises for farmers but however the results contradict with that of (Chinogaramombe, Muchenje, & Mapiye, 2018) who asserts that experience will only count if the farmer is utilising all the available resources and has enough knowledge of the field.

The results showed that every farmer reached primary level and this was an advantage to the researcher as every farmer was able to read and write. Level of education is an important factor as it gives farmers the power to give value to their livestock. This is supported by (Chimonyo, Kusina, Hamudikuwanda, Nyoni, & Ncube, 2016) who postulate that education is a significant variable for farmers when taking their livestock to the market. The importance of social capital in reducing transaction costs is highlighted in education (Chinogaramombe, Muchenje, & Mapiye, 2018). This claim is true since a knowledgeable farmer will probably spend less time looking for market information and will be better able to understand and use it. In the Checheche communal area, a sizable portion of the communal cattle farmers possessed some form of schooling.

The findings of the study indicated that most farmers had a herd size of above 20 and this helped the researcher as these farmers share most of the characteristics that the researcher was looking for in the study. (Matlebyane, Ng'ambi, & Aregheore, 2019) postulates that for a sample to be

significant it should consist of all the characteristics that the study tries to find out. (Francis & Sibanda, 2015) also added that a research sample should be a representative of the whole sample as this will allow for the generalisation of research results. According to (Chinogaramombe, Muchenje, & Mapiye, 2018), growing the herd size (herd accumulation) might be a profitable tactic but is also expensive. Due to negative density dependence, herd accumulation is not a viable risk management approach for communal farmers. Furthermore, (Chinogaramombe, Muchenje, & Mapiye, 2018) hypothesized that climate conditions and density have a negative impact on an animal's body mass and chances of surviving. Cattle herd size was also discovered by (Chimonyo, Kusina, Hamudikuwanda, Nyoni, & Ncube, 2016) to be a statistically significant influence in cattle marketing. According to the findings, which are in line with the researchers' initial hypotheses, the size of the cow herd in the Checheche communal area has a statistically significant negative impact on value determination of cattle at the market. The market off-take rate is expected to decrease by around 51% as the size of the cow herd increases. A large herd size is seen to signify a high social status in sub-Saharan African families, which may be the explanation for the lower market off-take rate with increasing cow herd size. In light of this, (Chinogaramombe, Muchenje, & Mapiye, 2018) contend that animal body mass and survival may be impacted by heard accumulation when they compete for grazing pasture, particularly in the winter or during a dry season. Due to this circumstance, there may be no animals available for marketing, which would lead to a low market off-take rate.

The results indicated that only 1% of the farmers use animal health as a parameter to value their livestock when they are selling them. This farmer highlighted the fact that animal health is not easily detected by a naked eye as this will only be detected after slaughtering the animal and in most cases the cattle will have been valued already. However, this result contradicts with that of (Raats, Magadlela, Fraser, & Hugo, 2014) who pinpoints animal health an important parameter when giving value to livestock. They mentioned that for an animal to be given the exact value there should be diagnosis first to see if the animal is free from diseases.

Farmers also mentioned that they use breed as a parameter they consider when determining the value of their cattle. This result is supported by the results of (Masikati & Musemwa, 2020) who mentioned that breeding is an important factor to consider when rearing cattle as some of the breeds are better than the others. (Mugabe & Mupangwa, 2016) supported the study results as

they mentioned that cross breeds and the Brahman breeds give high value cattle than Mashona type of cattle which are however resistant to diseases. (Mhlanga, 2017) supports this assertion by concluding that some meat's physicochemical characteristics and sensory attributes have improved due to cross breeding. (Van Rooyen, 2017) also adds that breed may have affected the sensory, volatile, and qualitative components of the meat production in cattle farming.

Results also indicated that sex is a parameter that farmers consider when determining the value of the cattle. Farmers highlighted that male animals that have been castrated fetch a good value better than their male counterparts which have not been castrated. Farmers mentioned that fat was a disadvantage when it comes to selling their animals. This result is supported by that of (Van Soest, 2015) who mentioned that castration is utilized for a variety of reasons, including reducing bull management costs, producing meat with superior marbling, and lessening cattle aggression.

The results also indicated age as the other parameter which farmers use to determine the value of their animal. Famers mentioned that the size of the animal and the age are also important when determining the value of an animal. Farmers indicated that tender animals ae given a fair value whereas older animals are rejected by buyers. This result is supported by that off (Ndebele, Muchenje, & Musemwa, 2017) who mentioned that young animals that are tender are preferred by many buyers who consider their meat to be tender. According to (Gambiza & Nyama, 2014), older and more seasoned farmers could efficiently coordinate market transactions. This circumstance would suggest that senior communal cattle farmers are more likely to sell their livestock at lucrative venues like auctions. However, (Garwe, 2015) claimed that a farmer's ability to market cattle becomes less effective as they get older. They explained that the cattle marketing industry drains energy, and that advancing age may affect the market's level of efficiency. The results from the linear regression model proved that the parameters mentioned that is sex, age, animal health and breed have a positive relationship with the value given to cattle.

Chapter 6

Conclusion and recommendations

6.1 Conclusion

The current research indicated that farmers had their way of determining the value of their livestock which is different from what most of their buyers are using when buying cattle. Most farmers showed knowledge of the parameters that are used when determining the value of their livestock but most of them mentioned that they often get poor value for their livestock. The researcher however concluded that this was due to the value of the local currency which most of the farmers sold their livestock using. The researcher mentioned challenges that farmers are facing when determining the value of their livestock and concluded that extension services should help farmers with workshops that will help them with enough information that will equip them for future marketing. Farmers need to be taught how to effectively raise their cattle and also be equipped with knowledge on diseases and breeding for them to be able to rear high value cattle and also for them not to be affected by diseases. The researcher concluded that farmers should form cooperatives that they will use when selling their cattle as this will help them to share ideas and avoid being robbed of their precious livestock. The productivity of cattle in communal areas is constrained by a number of factors, such as the high prevalence of illnesses, poor reproductive efficiency, the scarcity of feed, and subpar marketing. To overcome these obstacles, it is essential to create focused, coordinated, and thorough farmer training, research, and development programs.

Recognizing the country's current unequal development is a necessary foundation for developing strategies for maximizing the potential for growth in the cattle sector. The challenge for development is to take use of the potential for expansion in livestock, which necessitates developing a strategy framework for livestock sector development that would promote movement towards a wide-ranging and sustainable livestock industry, a production system focused on the market. Growing markets for beef and other cattle products present chances to raise the incomes of rural poor cattle farmers. Small-scale farmers can utilize potential like economies of scale through group participation in the form of cooperatives and different kinds of

contract farming. Smallholders who are frequently left out of high-value supply chains may be included in them through such arrangements. Along with providing genetically superior breeds, feed, advice, assistance, and a guaranteed higher end market, contract agreements frequently require for the contractor to also supply farmers.

6.2 Recommendations

Veterinarian and extension services need to be improved. To enhance their coverage in terms of the number of farmers they reach, extension officers should be widely dispersed and well-equipped with the appropriate tools. Extension agents should provide prompt and expert advice on general management techniques that will help farmers to both their standard of life and livestock activities are improved.

Every cattle bought from rural farmers should receive incentives from the government. It is also important to implement distribution rules that will guarantee the success of all smallholder cattle farmers at the local level. This should make it easier for small-scale cattle farmers to manage the significant transaction costs related to selling their animals.

Communal farmers should also be trained on how to rear good breeds that will help them benefit when valuing their livestock. Farmers should also be equipped with the required information on the market before engaging any buyers. The business sector, producer organizations, and the government must all work together to strongly emphasize formal markets. When this occurs, cattle might sell for more money in the market. Government extension services must to be improved to aid communal livestock farmers in adopting a commercially oriented strategy by supplying market data. In order to improve the condition of cattle for marketing, planned community rangeland management should be performed because communal farmers are unwilling to provide supplemental food. Improved handling and transportation facilities, such abattoirs, may prevent losses in the health of agricultural cattle. The construction and upkeep of communal abattoirs might be facilitated by the government and other parties. To address the issue of high transportation costs, group marketing may be investigated as a form of collective action. The intricate dynamics of cooperative livestock selling require further study. The incorporation of additional factors, such as institutional and marketing policies not covered in this work, is also possible.

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List of appendices

Appendices 1: Questionnaire

My name is **Muperi Saddock. I** am a student at Bindura University of Science and Education (BUSE) studying for a degree in Animal Health and Production Extension. I am conducting a study on the topic entitled "An assessment of the parameters used by Checheche farmers to determine the quality and value of livestock." I kindly ask you to fill in this questionnaire. This research tool is purely for academic purpose and information acquired shall be treated with confidentiality. Ethical considerations of privacy are honoured and guarantee of anonymity of respondents is assured. Your willingness to help me in my study will be highly regarded.

GENERAL INSTRUCTIONS.

Kindly attempt all questions and complete the questionnaire by filling in the blanks or placing a tick against your selection.

SECTION A: DEMOGRAPHIC INFORMATION.

(Please tick where applicable)

1. Male. ☐ Female ☐

2. Age

a) Less than 30 years. ☐

b) Between 30 years and 40 years ☐

c) Between 40 years and 50 years ☐

d) Above 50 years ☐

3. How long have you been in cattle farming?

a) Less than a year. ☐

b) 1 - 5 years ☐

c) 6 - 10 years ☐

d) 11years + ☐

4. Farmer's level of education.

a) Tertiary level ☐

b) Advanced level ☐

c) Secondary level ☐

d) Primary level ☐

e) Non formal education ☐

5. State your herd size

a) 5 and below ☐

b) 6 - 10 ☐

c) 10 - 15 ☐

d) 16 - 20 ☐

e) Above 20 ☐

SECTION B: VALUE SYSTEM AND PARAMETERS USED

1a) Have you ever sold or barter trade any of your cattle?

YES ☐ NO ☐

b) If YES, how many?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

c) How would you rate the money/ value you got after selling your cattle under the following sub headings?

Very satisfactory	Satisfactory	Good	Not satisfactory	Very unsatisfactory

Give reasons for the above response.

.....

VALUE SYSTEM IS PARAMOUNT IN LIVESTOCK.

YES. ☐ NO ☐

List 5 parameters you use to value in your animals?

a) .....

b) .....

c) .....

d) .....

e) .....

What do you look at when selecting an animal to buy or sell?

a) .....

b) .....

c) .....

Appendices 2: SPSS Results for ANOVA and Coefficients

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42873.784	1	42873.784	8.386	.005[b]
	Residual	506123.048	99	5112.354		
	Total	548996.832	100			

a. Dependent Variable: value

b. Predictors: (Constant), parameters

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	101.524	34.889		2.910	.004
	parameters	25.228	8.711	.279	2.896	.005

a. Dependent Variable: value