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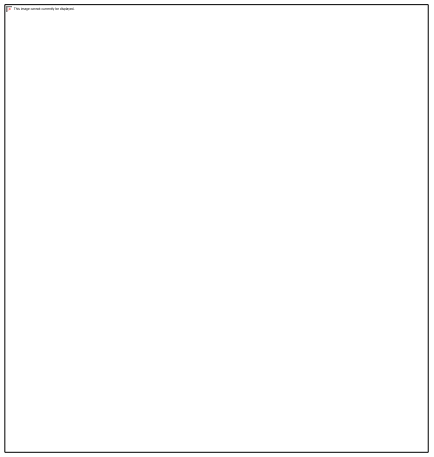

Faculty of Agriculture and Environmental Science Department of Agricultural Economics, Education and Extension

Coffee farming practices and sustainability in Honde Valley. A study of farmer knowledge, training and agricultural techniques.

NAME: MUSHAIKWA TRISH-LEE

REG NUMBER: B211413B

A Dissertation Submitted in Partial Fulfillment of the Requirements of the Bachelor of Science Honors Degree in Agricultural Economics and Management

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AUTHOR: MUSHAIKWA TRISH-LEE

REG NUMBER: B211413B

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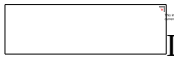
SUPERVISOR  Date10/10/2025

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DECLARATION

I, Trish-Lee Mushaikwa, declare that this dissertation titled "Coffee farming practices and sustainability in Honde Valley. A study of farmer knowledge, training and agricultural techniques" is my original work and has not been submitted elsewhere for any degree or qualification. I acknowledge that I have received guidance and support from my supervisor, Dr V. Munyati , and other academic staff during this research, but the intellectual content and presentation of this dissertation are entirely my own. I have followed the guidelines and regulations of the Bindura University of Science Education regarding plagiarism and academic integrity, and I have properly cited and referenced all sources of information used in this dissertation.

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Signed:  Date_____10/10/25_____

DEDICATION

This study is dedicated to my family, friends, and mentors, whose constant support and encouragement have been instrumental throughout this journey.

ABSTRACT

The study investigates coffee farming practices and sustainability in Honde Valley, focusing on the knowledge, training, and agricultural techniques of smallholder farmers. Coffee plays an important role in the socio-economic landscape of the region; however, farmers face significant challenges, including low productivity, limited access to training, and inadequate extension services. The research employs a mixed-methods approach, combining qualitative and quantitative data to assess farmers' knowledge levels, identify commonly used agricultural practices, and evaluate the barriers to adopting sustainable methodologies. Findings reveal that while farmers possess substantial experiential knowledge, formal training on sustainable practices remains minimal, leading to reliance on traditional methods. Key challenges include the impacts of climate change, financial constraints, and inadequate access to credit. The study underscores the necessity for targeted training and support systems to enhance farmers' capacities and promote sustainable coffee production. Recommendations for farmers and policymakers highlight the importance of cooperative learning, climate-resilient practices, and improved access to financial resources, aiming to foster long-term sustainability and economic viability in the coffee sector of Honde Valley.

Keywords: Sustainable agricultural practices, Extension services, Livelihoods, Farmer knowledge, Small holder farmers.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFC - Agricultural Finance Corporation

AIS - Agricultural Innovation Systems

CSA - Climate-Smart Agriculture

FAO - Food and Agriculture Organization

IPM - Integrated Pest Management

NFIS - National Financial Inclusion Strategy

NGOs - Non-Governmental Organizations

SAPs - Sustainable Agricultural Practices

SLF - Sustainable Livelihoods Framework

USD - United States Dollar

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY.

Coffee is not merely a popular beverage; it is a part of the lives and economies of many countries. Historically referred to as the "elixir of life," coffee is consumed by millions of individuals worldwide, with Mlandu (2017) estimating that many people can't start their day without it. Ranking as the second most traded commodity globally, after petroleum, coffee plays a crucial role in the economies of developing nations, where it acts as a significant cash crop (Krishnan, 2017). With over seventy countries involved in coffee production, this crop generates considerable revenue, contributing more than US$70 billion annually to the global retail market. Zimbabwe's connection to coffee dates back to the mid-19th century. Smith (1985) describes how Chief Sekeletu presented coffee beans to explorer David Livingstone in 1853 in a bid to expand trade opportunities. Large-scale commercial farmers dominated the growth of coffee plantations, especially in Chipinge district, for some decades. Coffee farming was only introduced into Honde Valley around 1982 when smallholder farmers became involved in the industry.

The trend of Zimbabwe's coffee industry follows world patterns, evolving from a largely commercial to a subsistence farm-based system. The latest trends show increased emphasis on commercial farming (Hidalgo et al., 2023). This development is critical not only for economic sustainability but also for environmental sustainability. Coffee production is quite stressful environmentally, with erosion of the land and loss of forest cover being areas of concern for stakeholders (Bianco, 2020). As a response to such challenges,

organic coffee has been a welcome approach to environmental conservation and social justice (Roda, 2022).But it is not simple to make the transition to organic farming. Economic limitations, barriers in the market, and inadequate farmers' training typically hinder the advancement of sustainable farming (Wright et al., 2014). Also, the difference in how organic coffee affects sustainability like unpredictable yields and certification fees makes it difficult to assess its effectiveness and scalability (Hidalgo et al., 2023).

Sustaining coffee supply chains is important to achieve long-term coffee production sustainability, particularly for areas like Honde Valley, where people highly depend on such a crop to maintain their livelihood (Hidalgo et al., 2023). Bashiri et al. (2021) call for enhancing agricultural productivity and the application of decision-making tools in addressing the challenges in the industry. Synergies among the stakeholders will be expected to promote sustainability practices, although Bitzer et al. (2008) note that in some cases such coalitions are most likely to produce alternative arrangements rather than conventional supply chains. Technological advancements are also contributing to helping in enhancing sustainability in the coffee industry. For instance, Anand et al. (2024) outline edible cups that have been designed to eliminate plastic waste, whereas Querejeta et al. (2018) detail spent coffee grounds application for the absorption of carbon dioxide. Not only does it minimize environmental effects, but it also meets the sustainability targets everywhere globally (Tian et al., 2022).The Honde Valley's natural environment offers challenges and opportunities to coffee production. The area has good-quality alluvial soils and a good climate with an average annual rainfall of 1,200 mm that is ideal for coffee production. Yet the long dry season from May to November necessitates effective irrigation facilities to sustain coffee production (Mugandani et al., 2012).

While such benefits exist, Honde Valley small farmers encounter a broad number of challenges. According to Scoones (2014), most of them lack capabilities and knowledge needed in commercial production due to poor extension services. This is further supplemented by the international market prices for coffee, which are usually below costs (Wernau and Whelan, 2018). In order to survive, the farmers have to acquire a range of skills as varied as crop choice, sound management, pest control, and handling post-harvest. On the

whole, coffee production practices in Honde Valley are very much interrelated with wider economic, environmental, and social elements. Desiring to address the challenges of smallholder farmers through sustainable farm practices and focused training is a crucial aspect to enhance the viability of coffee production as well as to promote long-term sustainability in the coffee industry. It has the potential to improve farmers' livelihoods in Honde Valley, which derives a considerable percentage of its revenues from agriculture.

1.2. STATEMENT OF THE PROBLEM

This research is driven by the problems confronting small-scale coffee farmers in Honde Valley, where low training, poor knowledge, and conventional farming techniques lead to low productivity of only 300 kg of green coffee per hectare, much lower compared to the commercial level of 2000 kg (Technoserve, 2017). This knowledge gap hinders economic viability and uptake of sustainable agriculture, that is organic production, which increasingly becomes more vital in responding to world issues around environmental degradation, loss of biodiversity, and social justice (Krishnan, 2017; Bianco, 2020).Despite organic production having promising potential around improving soil quality, chemical reduction, and long-term productivity (Schader et al., 2021; Rosati et al., 2021), its uptake in Honde Valley is hindered by technical capacity development, weak extension services, and weak researcher-farmer linkages. Besides, market access, certification issues, and financial limitations also are reasons for the complication of adoption of sustainable practices (Hidalgo et al., 2023). These can be addressed by conducting a targeted study on farmer knowledge, training, and currently available farm practices. While attempts by the government and stakeholders such as the Technoserve and the Nespresso to improve

training are being experienced, it is still necessary to trial their effectiveness and determine how to improve farmer capacity for sustainable coffee production in Honde Valley

1.3 RESEARCH QUESTIONS

1. What is the current level of knowledge among coffee farmers in Honde Valley regarding sustainable farming practices?

2. What are the primary agricultural techniques employed by coffee farmers in Honde Valley?

3. What are the key challenges faced by coffee farmers in Honde Valley when trying to adopt sustainable farming practices?

1.4. MAIN OBJECTIVE

To empower coffee farmers in Honde Valley by understanding their knowledge, practices, and challenges, ultimately enhancing their livelihoods and promoting sustainable coffee farming.

1.4.1. Specific objectives.

1. To assess the current level of knowledge available to coffee farmers in Honde Valley.

2. To identify the agricultural practices commonly used by coffee farmers in Honde Valley.

3. To investigate the challenges faced by coffee farmers in implementing sustainable farming practices in Honde Valley.

1.5. HYPOTHESIS

1. Null Hypothesis (H_0). The current level of knowledge regarding sustainable farming practices among coffee farmers in Honde Valley is inadequate.

Alternative Hypothesis (H_1).Coffee farmers in Honde Valley possess adequate knowledge of sustainable farming practices

2. Null Hypothesis (H_0). Coffee farmers in Honde Valley primarily employ traditional, non-sustainable agricultural techniques rather than modern sustainable practices.

Alternative Hypothesis (H_1). Coffee farmers in Honde Valley have successfully integrated modern sustainable agricultural techniques alongside traditional practices.

3. Null Hypothesis (H_0) Coffee farmers in Honde Valley face significant challenges (economic, technical, financial, or environmental) in implementing sustainable farming practices effectively.

Alternative Hypothesis (H_1). Coffee farmers in Honde Valley face minimal barriers and can readily implement sustainable farming practices when provided with appropriate support and resources.

1.6. JUSTIFICATION

Coffee farming practices and sustainability in Honde Valley is important to the livelihoods of smallholder farmers, who face challenges in adopting sustainable agricultural techniques. This study explores the knowledge, training, and practices of coffee farmers in Honde Valley, aiming to identify gaps and opportunities for improvement. Coffee farming is a vital livelihood in Honde Valley, it is a primary source of income for many smallholder farmers. However, they face challenges such as economic constraints, limited access to training, and market information, limiting their ability to adopt sustainable farming practices. By exploring the existing knowledge, training, and agricultural techniques used by coffee farmers in Honde Valley, this study seeks to identify the root causes of these challenges and provide practical, community-focused solutions. The project will benefit smallholder farmers by identifying affordable, sustainable practices that can improve crop yield and quality, enhancing their incomes and economic stability. This is significance for the government, as coffee is a key cash crop, contributing to national economic development through increased exports and foreign currency earnings. It also supports the government's broader goals of rural development, food security, and

environmental conservation. For companies operating in and around Honde Valley such as Technoserve and Nespresso this research offers valuable insights into building stronger partnerships with local farmers. Sustainable farming practices can ensure a consistent and higher-quality supply of coffee, enhancing companies' reputations as socially responsible and environmentally conscious actors in the global marketplace. The project aims to build sustainable coffee farming in Honde Valley, balancing economic growth with environmental care and social equity. Training and education enable farmers to grow high quality yields, boosting their income and stimulating the local economy, creating long term opportunities for sustained growth and success.

1.7. SCOPE OF THE STUDY

The research scope investigates coffee cultivation practices and sustainability in Honde Valley and how it relates to smallholder farmer's knowledge, training, and agriculture practice. Research encompasses three general themes which include, evaluating knowledge initiatives, investigating agricultural practice and methods, and highlighting challenges and opportunities. By demystifying such dynamics, this research seeks to inform the design of particular interventions and counsel that improve the livelihoods of smallholder coffee farmers, support sustainable agriculture, and enhance food security outcomes in the region.

1.8. LIMITATIONS OF THE STUDY

The study recognizes that there could be limitations in Honde Valley results such as sample size and representativeness, which could limit extrapolation to the population. That is, proper sampling methods need to be used to make the sample representative. The study is based on self-reported data, and hence, there could be biases or inaccuracies present. The one point data collection and cross-sectional study design are also limitations because they cannot catch long- or seasonal-term changes in the coffee farm practice. And also, the fact that the study is only on smallholder farmers can't be extrapolated to commercial or large-scale coffee farmers.

CHAPTER TWO

LITERATURE REVIEW

2.1. INTRODUCTION

Coffee production is the pillar of most rural economies, such as Honde Valley, since it offers a living to various small-scale farmers. In an era faced with degradation of the environment, economic volatility and changing consumer values, sustainability of coffee production is an issue that cannot be ignored. During the last decades, coffee production has faced a variety of challenges like climate change and soil erosion to market fluctuations and shifting consumers' tastes (Bianco, 2020; Hidalgo et al., 2023). During these circumstances, it is essential to conduct research on the intricate relationship between coffee production methods, sustainability, and livelihoods of smallholder farmers. This literature review takes off on the principal areas of coffee farm practice and sustainability in Honde Valley, that is, the areas of farmer skill, training, and cultivation practice. Drawing together previous research, this chapter strives to attempt a discussion of the contemporary status of coffee farming in Honde Valley, the areas of knowledge gaps, and lead sustainable coffee farm practices that are environmentally and farmer friendly.

2.2 CONCEPTUALISATION OF KEY TERMS

2.2.1 Sustainable Agricultural Practices.

Sustainable agricultural practices is a system of agribusiness that delivers food at periodic intervals with benefits to the broader society for an eternity (Gold, 2016). SAPs seek to harmonize environmental sustainability, social responsibility, and economic sustainability. In environmental terms, SAPs seek to mitigate the environmental influence of agriculture. Socially, they seek to enhance social development among farmers and rural livelihood. Economically, SAPs seek to enhance farm productivity efficiency and climate change adaptation (Corbeels et al., 2014). Despite SAPs' advantages, their application among smallholder farmers is low (Grover and

Gruver, 2017). Through the principles and practices of SAPs, farmers and other players are in a position to collaborate towards sustainable agriculture and a food-secure future.

2.2.2 Extension Services

Extension services form part of the realization of the mission of state technological institutions with special attention on relevance and effectiveness of programs (Quimbo, 2013). They include education programs, workshops, and training to enhance skills and knowledge in a particular area, for example agriculture, engineering, and technology (Quimbo, 2013). Extension services act as a critical intermediary between research institutions and society to facilitate the transfer and utilization of knowledge enhancements (Ike, 2024).Extension in agriculture aims at enhancing farming methods and animal welfare, resulting in increased productivity and sustainability (Ike, 2024). Extension services greatly enhance farm operations through advisory services and innovative training schemes, including workshops and websites (Raji et al., 2024).Extension services are also crucial in policy enforcement, especially in agriculture, where they enable the dissemination of best practices and policy compliance (Ike, 2024).

2.2.3 Livelihoods

A sustainable livelihood refers to a livelihood that withstands shock and stress without losing or reducing its resources and capabilities in the process (Rakodi, 2014).Even as the livelihoods concept is placed under emphasis to refer to economic activities and resource management, it is also significant to note the socio-political concerns that affect access to these resources. Issues like gender balance and social norms have a crucial function to perform in shaping livelihood opportunity and outcomes, especially in patriarchal societies (Das, 2025) (Nunan, 2022).Livelihood means and activities refer to the apparatus employed by individuals to acquire fundamental needs such as food, water, shelter, and clothing. Livelihood brings together resources like human, material, and social capital to form a sustainable living style. Livelihoods are not singular, with a single source of income, but instead a complex array of activities, especially in rural settings where farm and non-farm activities can be engaged in to generate risk management and resilience (Rai, 2023) (Rakodi, 2014) (Mikhail, 2022).

2.2.4 Farmer knowledge

Farmer knowledge refers to the knowledge and experience farmers have about farming practice, crop care, and taking care of the environment. It is also a determining factor that drives their choice and uptake of sustainable practices. It is not only obtained through conventional learning but also experience learning and social interaction. Technical knowledge, encompasses learning soil fertility, pest control, and crop rotation. For example, soil competence at the local level exhibited by Madagascar farmers was considerable, which agreed with scientific categorizations(Ravonjiarison et al., 2023).In the same way Practical Skills, the practical skills of farmers in applying knowledge, for example, application of organic manures, were satisfactory in some areas, supporting a linear association between practice and knowledge(Rahmah et al., 2023).

2.2.5 Small holder farmers

Smallholder farmers are individuals who farm small areas of land, usually on the basis of family effort and scarce resources, for commercial production of food for domestic and local markets. Their farming is based on low levels of output and input, and thereby susceptible to economic and environmental shocks. Smallholder farmers usually own less than 2 hectares of land (Mapiye & Dzama, 2024). They are susceptible to resource limitation, including access constraint in markets, credit, and technology (Mapiye & Dzama, 2024). They possess agro-pastoral farming systems that involve livestock and crop production and play a critical role in food security for most regions (Wakweya et al., 2024).

2.3.1. Empirical review on assessing the current level of knowledge available to coffee farmers in Honde Valley.

A persistent lack of access to agricultural knowledge and best practices continues to limit productivity among Zimbabwe's smallholder farmers, with coffee growers in Honde Valley facing particularly steep challenges (FAO, 2023). The technical and environmental limitations of coffee production require a certain set of skills that many farmers in the immediate area find difficult to attain because of training deficiencies and poor extension services. In addition to hindering productivity, these shortages also limit

coffee production's potential as a viable and sustainable economic activity in Honde Valley. Research always points out the importance of sharing knowledge and specific training in fostering sustainable agriculture. Agricultural know-how, Mwakalile and Mugisha (2019) think, is the harmonization of theoretical expertise and practical skills. Systematic training is important if farmers are to implement effectively modern means and environmentally friendly means. However, it indicates that most coffee farmers in the Honde Valley have not had such benefits. Research by Kufakwaturi et al. (2020) defined that domestic farmers received any type of formal training in coffee production only to the extent of 30%, which was inadequate for capacity building activities. Not only is one of the main issues insufficient available training but also the content and quality. Farmers learn the most through experiences in working in commercial farms, family inheritance, or learning from colleagues. Although this exposure teaches the elementary farming methods, it hardly crosses over to more technical areas such as varietal selection, nursery production, pest and disease management, processing practices, grading requirements, or marketing strategy. Without such detailed knowledge, farmers remain extremely dependent on commercial buyers and middlemen, which keeps them non independent and decreasing their revenues.

Special training courses are scarce in coffee cultivation. There is no specialized institution dealing with coffee production in Zimbabwe, and training by NGOs or government institutions is patchy and irregular. Mhlanga et al. (2022) point out that limited funding and coordination among agricultural institutions have largely decreased the coverage and impact of extension services. Smith (2019) continues to say that although extension services exist, they are inadequately resourced and aimed at the mainstream crops, as opposed to specialty crops such as coffee, which need a more sophisticated approach. The indigenous knowledge is nonetheless the chief source of advice among most farmers in Honde Valley. While that is useful, it is frequently not adequate to manage contemporary issues like climatic change, pest infestations, and volatile market prices. Njoroge et al. (2019) point out that traditional knowledge, although useful in some instances, in most cases does not educate farmers on managing increasing complexity in farm production. Likewise, Mwakalile and Mugisha (2019) observe that there is still low awareness of the sustainable methods like integrated pest management or organic farming among coffee farmers, which lends credence to improved training.

There are numerous benefits of successful training, such as Makoni et al. (2021) discovered that farmers who underwent climate smart agriculture training realized 15% more yields and improved capacity to withstand weather uncertainty. Lee et al. (2021) also determined that training enhanced decision making in terms of the utilization of resources, particularly where the soil and water are concerned. Tsegaye and Wortmann (2018) observe that formal training exposure exposed farmers to the trial of new methods and crop varieties, increasing confidence and adaptability. With the high mobile telephone penetration in Zimbabwe reported at 98.5% by DataReportal (2021), there are very few coffee farmers within Honde Valley without access to digital training resources. The digital divide is an actual hindrance, maintained due to low digital literacy, language limitations, and insufficient knowledge of resources on hand. It bars most from access to the increasing stock of online agricultural knowledge that otherwise can provide them with reinforcement to their learning.

There is increasing consensus between the practitioners and the researchers that training models of today must change. There must be a more organized, participatory, and practical one that is sensitive to farmers' actual on ground conditions and equips them with end to end competencies in producing coffee. Establishing an organized curriculum that addresses the entire value chain from nursery management to post harvest processing and marketing would be a big measure, not only would this reduce dependency on intermediaries, but it would also empower farmers to capture a greater share of the value from their produce. It is important to recognize that some of the current challenges have historical roots. Muwaniki et al. (2022) argue that Zimbabwe’s agricultural extension system was originally designed to serve large scale commercial farmers, a legacy of colonial and post-independence policy frameworks. These institutional challenges have kept the smallholder farmers in obscurity for decades and continue to hamper rural agricultural diversification and modernization efforts.

The access to knowledge and training capacity among coffee farmers in Honde Valley is still low for supporting the needs of modern, sustainable coffee production. The available evidence suggests a significant shortage of skills, supported by weak extension systems, limited training opportunities, and under-leveraged digital platforms. Solving these problems will need multi-faceted approaches to the

establishment of public extension services, enabling community-driven learning, integrating digital innovation, and developing expert training streams devoted to coffee production. These measures are essential if coffee production in Honde Valley is going to succeed and enhance livelihoods for surrounding communities.

2.3.2. Empirical review on identifying the practices commonly used by coffee farmers in Honde valley.

Coffee farming in Honde Valley is not only a crop but it's a source of livelihood for numerous small scale farmers. However, despite its significance, the industry is confronted with many challenges that complicate it for farmers to succeed. Restricted access to training, financial limitations, and mounting pressure of climate change all work towards constricting productivity and sustainability (Mhlanga et al., 2022). In this context, the farmers apply a combination of conventional methods and new approaches, both having their specific strengths and weaknesses. The conventional cultivation practice still dominates the valley and continues to yield environmental as well as social benefits. For instance, shade-grown coffee maintains biodiversity and maintains soil moisture, which is particularly beneficial in times of capricious weather (Mwakalile & Mugisha, 2019). Coffee production intercropped with food crops maximizes land use, in addition to maximizing food security and household resilience (Kufakwaturi et al., 2020). Another method that maintains healthy soil without the unpleasant consequences of chemicals is the use of organic fertilizers.

Improved farming practices such as the use of better coffee varieties, irrigation facilities, and chemical fertilizers can lower yields and productivity by a great extent. Adoptions of these practices in Honde Valley have come gradually. Research has shown that just 20% of farmers implement integrated pest management (IPM) and 30% implement organic farming (Tsegaye & Wortmann, 2018).This is slow adoption, however, is traced to a lack of access to quality seeds, right inputs, irrigation systems, and finances, coupled with poor training and extension services (Mwakalile & Mugisha, 2019; Kufakwaturi et al., 2020). Organic coffee cultivation has, in recent years, been a more environmentally preferable option. This approach uses natural manure, rotation, and biological control of pests to ensure fertility and diversity in the soil (Schader et al., 2021). It is also keeping up with international trends because consumers are increasingly seeking products that are friendly to the environment (Moslehpour et al., 2022). There are some drawbacks, certification

is expensive, market entry is restricted, and the majority of farmers require extensive technical training to transition. There is also an overall lack of consumer knowledge of the advantages of organic coffee, which can also decide its market potential and profitability (Hidalgo et al., 2023).

Others have suggested the best results would be achieved by blending old school and modern approaches. In one research, Njoroge et al. (2019) discovered that farmers who blended both approaches produced higher yields and better soil health compared to farmers employing either approach in isolation. This type of integrated strategy capitalizes on the advantages of both systems and makes coffee production more stable and balanced.

Climate change makes farming even harder, increased temperatures, unpredictable rainfall, and an increase in episodes of extreme weather patterns threaten both production and overall sustainability (Lee et al., 2021). Practitioners counter this by suggesting climate smart agriculture (CSA) interventions such as agroforestry, conservation agriculture, and effective irrigation. These interventions have been proven to increase productivity, minimize pests and diseases, and improve soil fertility (Makoni et al., 2021). But once more, adoption is low primarily because of the same old causes of inadequate training, inadequate extension services, and low finances. To help farmers surmount these constraints, a number of feasible steps can be initiated, improvement in training and extension services can empower farmers with the skill to apply traditional as well as new methods effectively. Financial mechanisms such as microloans can provide them with the funds to invest in new technology without saddling them with debilitating debt. Involving local communities in planning and designing agricultural programs can also make these programs sanctioned and more likely to succeed. Whereas numerous papers have analyzed so much of an aspect of organic coffee as farming, market conditions, or consumer trends, few have explored it from a wide, comprehensive angle of its relationship with economic sustainability, social justice, and environmental conservation at the same time (Soledispa-Cañarte et al., 2023). Bridging this with thorough research would inform more efficient policy formulation and farm practices in the future.

Coffee production in Honde Valley provides a rich combination of conventional experience and new innovation. Conventional agriculture is a powerful source of environmental and social base, yet innovation may raise productivity. But with supportive mechanisms like funding, training, and community involvement the whole potential of sustainable coffee production remains out of reach. An integrated, comprehensive strategy might be the solution to a more productive and sustainable future for coffee producers in Honde Valley.

2.3.3. Empirical review on evaluating the challenges faced by the coffee farmers in implementing sustainable farming practices in Honde valley.

Access to agricultural credit remains one of the most critical issues hindering smallholder farmers in Zimbabwe, including coffee farmers in Honde Valley, from embracing sustainable agriculture. Credit enables investment in productivity enhancing inputs, climate resilient technology, and green agriculture. Systemic weaknesses in the Zimbabwean financial system have made most smallholder farmers, particularly rural based farmers, excluded. According to Dawes and Mushongachiware (2024), Zimbabwe's agricultural credit system comprises both formal and informal sources. Formal channels include commercial banks, microfinance institutions, and government backed entities such as the Agricultural Finance Corporation (AFC). Informal sources range from community savings groups to contract farming arrangements. In spite of all these alternatives, less than 10% of smallholder farmers utilize formal credit owing largely to insufficient collateral, very high interest rates, and poor rural financial markets (FAO, 2024).In Zimbabwe, the farm workforce has 70% as smallholder farmers but experience an estimated yearly shortage of credit of USD 750 million to USD 1.5 billion (FAO, 2024). Only 8% of the accessible credit targets them, and the rest of them are unavailable or mismatched to their demands (Mafirakurewa, 2023). Financial exclusion supports them theoretically from investing in sustainable activities like soil conservation, organic manures, water-saving irrigation, and shade tree coverages essential for sustainable coffee production in the long term. National programs like Command Agriculture and Pfumvunza/Intwasa attempted to enhance financial accessibility to rural farmers. But such programs have also been beset with challenges like politicization, poor monitoring, and lack of effectiveness in

implementation (Kuipa, 2019). In addition, donor funded schemes and blended funding schemes continue to be too small-scale to provide the structural financing requirements in regions like Honde Valley.

The world over, the situation is no different, smallholder farmers who produce food that is worth up to 80% in Sub Saharan Africa are beset with long-standing challenges in accessing credit. Fewer than 10% access formal financial institutions (World Bank, 2024). Research has indicated that even where loans are utilized, they do not support healthy adaptation to sustainable practices (Haryanto et al., 2023).Where the agro-ecological and socio-economic environments are similar to Honde Valley, in Mashonaland East, credit has been reported to be a key obstacle to adapting to advanced agricultural practices (Chandio et al., 2021). This encompasses inadequate finance for inputs such as organic manure, pest control agents, and solar power equipment to be used in irrigation key factors in sustainable coffee production.

The financial exclusion of smallholder farmers is aggravated by gender imbalance, poor education, and poor financial literacy (Matsvai, 2024). Social factors significantly hold back farmers from engaging in financial products that are meant to ensure sustainability. Without specialized financial offerings, the majority of farmers rely on informal and quite volatile sources of finance, which are inadequate to facilitate sustainable activities in the long term. Small farmers may be deprived of important information and knowledge on agricultural extension services. These include limited access to improved agricultural practices training, pest and disease management, and post-harvest handling. The farmers may not have technical know-how and expertise to apply sustainable practices, including efficient soil management, water conservation, and crop diversification. This may lead to low production, decline in soil fertility, and environmental degradation.

Among some of the challenges in accessing coffee grown sustainably include certification expenses, value chains that do not correctly factor in the value provided through means of sustainability, and accessing sustainable buyer relations. Access to money and credit is also challenging for farmers, which they might need to undertake sustainable cultivation. Honde Valley, like other areas, faces

constraints in terms of particular environmental conditions, including soil erosion, drought, or disease and pest infestations. Knowing and responding to these local constraints is important for the establishment of sustainable agriculture practices. In order to counter these shortcomings, the Reserve Bank of Zimbabwe developed the National Financial Inclusion Strategy (NFIS), which encourages targeted financial products and training programs. Yet, its contribution in rural farm-based communities like Honde Valley remains low owing to infrastructural constraints and minimal utilization.

2.4. THEORETICAL FRAMEWORK

2.4.1. Sustainable livelihoods framework

In the research study, the current research will take into account the relationship between farm practices of coffee farming and sustainability in Honde Valley in line with the training, knowledge, and farm practices of the farmers. For this purpose, two theoretical frameworks are to be determined in the study, i.e., the Agricultural Innovation Systems (AIS) approach and the Sustainable Livelihoods Framework (SLF). SLF, the conceptual framework developed by Chambers and Conway (1992), provides a comprehensive methodology for examining the complex interactions between various factors affecting the livelihoods of individuals. SLF identifies five categories of capitals essential to sustaining livelihoods, namely human, social, natural, physical, and financial. Human capital is the education, skills, and experience of the farmer that can be developed through training and capacity building to contribute to improved farming practice and sustainability. Social capital is the farmers' networks and relations with one another, which can enable sharing of resources and information for the purpose of improving sustainability.

Natural capital includes natural resources that farmers have access to, like water and soil condition, which can be preserved and developed by adopting sustainable methods. Physical capital includes infrastructure and equipment that farmers have access to, which can enhance productivity and sustainability. Financial capital includes economic resources that farmers have access to, which are crucial in investing in sustainability. The SLF will be utilized to analyze the way farmers' abilities, training, and agriculture.

PICTOGRAPHIC PRESENTATION

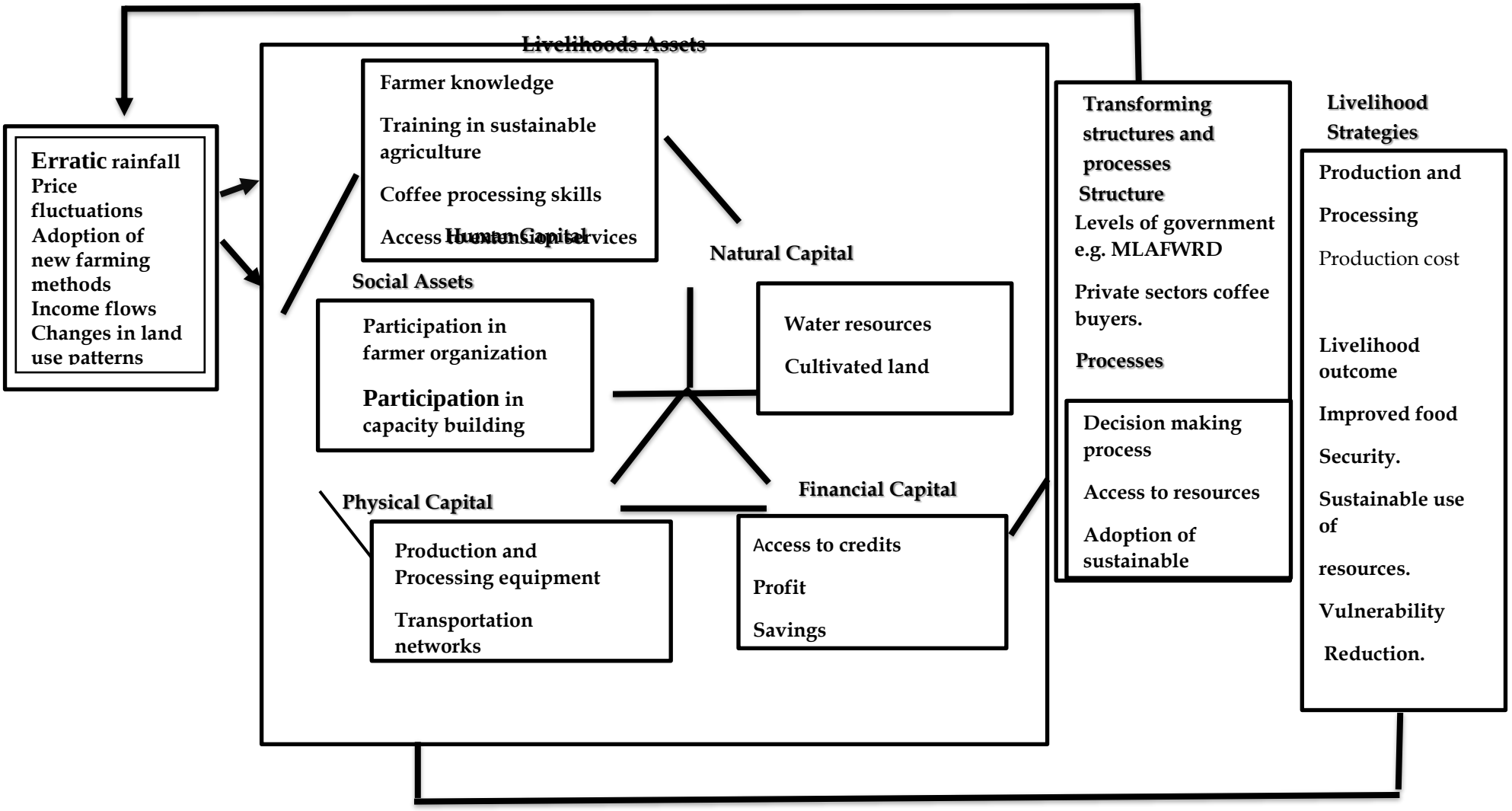

Figure 1: Sustainable Livelihood Framework

2.4.2. Agricultural innovation systems

Agricultural Innovation Systems (AIS) approach, as formulated by Hall et al. (2001). The AIS approach stresses the importance of new knowledge and learning in agriculture, seeing that innovation is a multi-person activity consisting of farmers, researchers, extension agents, and policymakers. Innovation is the implementation of new methods or new technology that could enhance productivity and sustainability. Innovation in Honde Valley may be from traditional as well as modern research. The AIS strategy focuses on cooperation among different stakeholders, communication, and partnerships leading to the successful uptake of sustainable practices. It is continuous learning to respond to changing circumstances, and training can advance farmers' information and knowledge to enable them to take up new practices. The AIS method highlights the role of feedback loops between farmers and scientists, the latter of which is likely to result in best practices based on actual experiences.

Through blending the SLF and AIS methods, the research will seek to understand factors affecting sustainability in coffee production in Honde Valley, and the ways through which livelihood outcomes among coffee farmers can be enhanced. Theoretical concepts will guide data collection and analysis to enable the research to have a sense of the completeness of coffee farmers' skills, training, and practices, as well as livelihood sustainability.

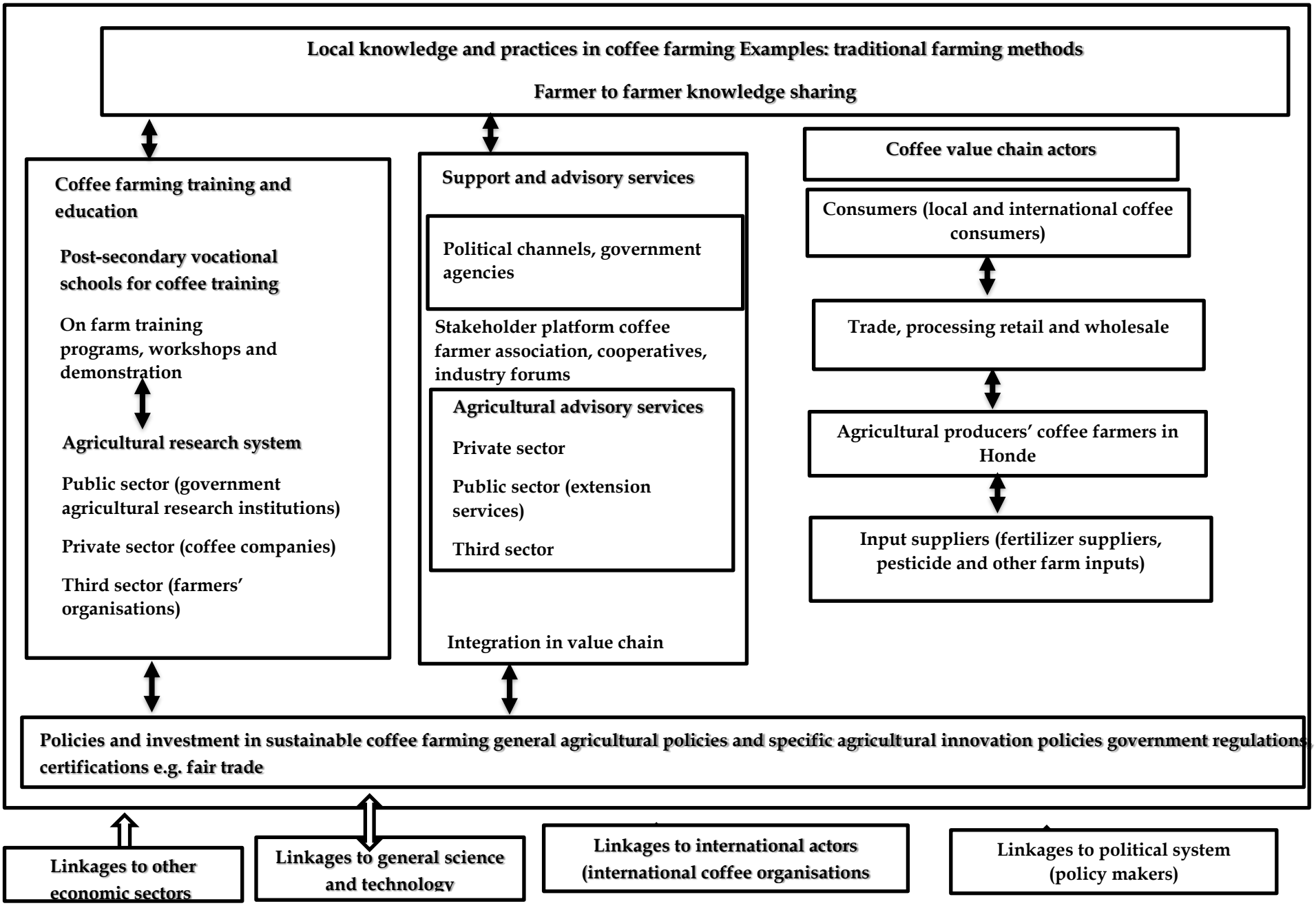
Local knowledge and practices in coffee farming Examples: traditional farming methods
Farmer to farmer knowledge sharing
Coffee farming training and education
Post-secondary vocational schools for coffee training
On farm training programs, workshops and demonstration
Agricultural research system
Public sector (government agricultural research institutions)
Private sector (coffee companies)
Third sector (farmers' organisations)
Support and advisory services
Political channels, government agencies
Stakeholder platform coffee farmer association, cooperatives, industry forums
Agricultural advisory services
Private sector
Public sector (extension services)
Third sector
Integration in value chain
Coffee value chain actors
Consumers (local and international coffee consumers)
Trade, processing retail and wholesale
Agricultural producers' coffee farmers in Honde
Input suppliers (fertilizer suppliers, pesticide and other farm inputs)
Policies and investment in sustainable coffee farming general agricultural policies and specific agricultural innovation policies government regulations, certifications e.g. fair trade
Linkages to other economic sectors
Linkages to general science and technology
Linkages to international actors (international coffee organisations
Linkages to political system (policy makers)

Figure 2 Agricultural innovation systems

2.4.3. Conceptual framework

The research seeks to explore the link between farmer practice of coffee production and sustainability in Honde Valley with specific reference to how farmer knowledge, training, and practice of farming influence the outcome. The conceptual framework of the research acknowledges the inter-relationship between these variables and argues that increased farmer knowledge, complemented by effective training programs, finds expression in the use of sustainable practice of farming, which ultimately results in enhanced livelihood and food security. At the core of such a framework lies the observation that farmer knowledge is pivotal in influencing sustainable coffee farming practices. Farmer knowledge simply means the coffee farming technique experience, wisdom, and expertise of farmers in Honde Valley. Effective training programs boost farmer knowledge, which improves farmers' skills and capabilities needed to implement sustainable agricultural practices. Sustainable practices, in contrast, are important to enhance livelihood and food security. Sustainable practices are socially just, environmentally friendly, and economically sustainable coffee farming practices that ensure sustainability. In addition to conserving, sustainable practices enhance social life and economic livelihood of the coffee farmers.

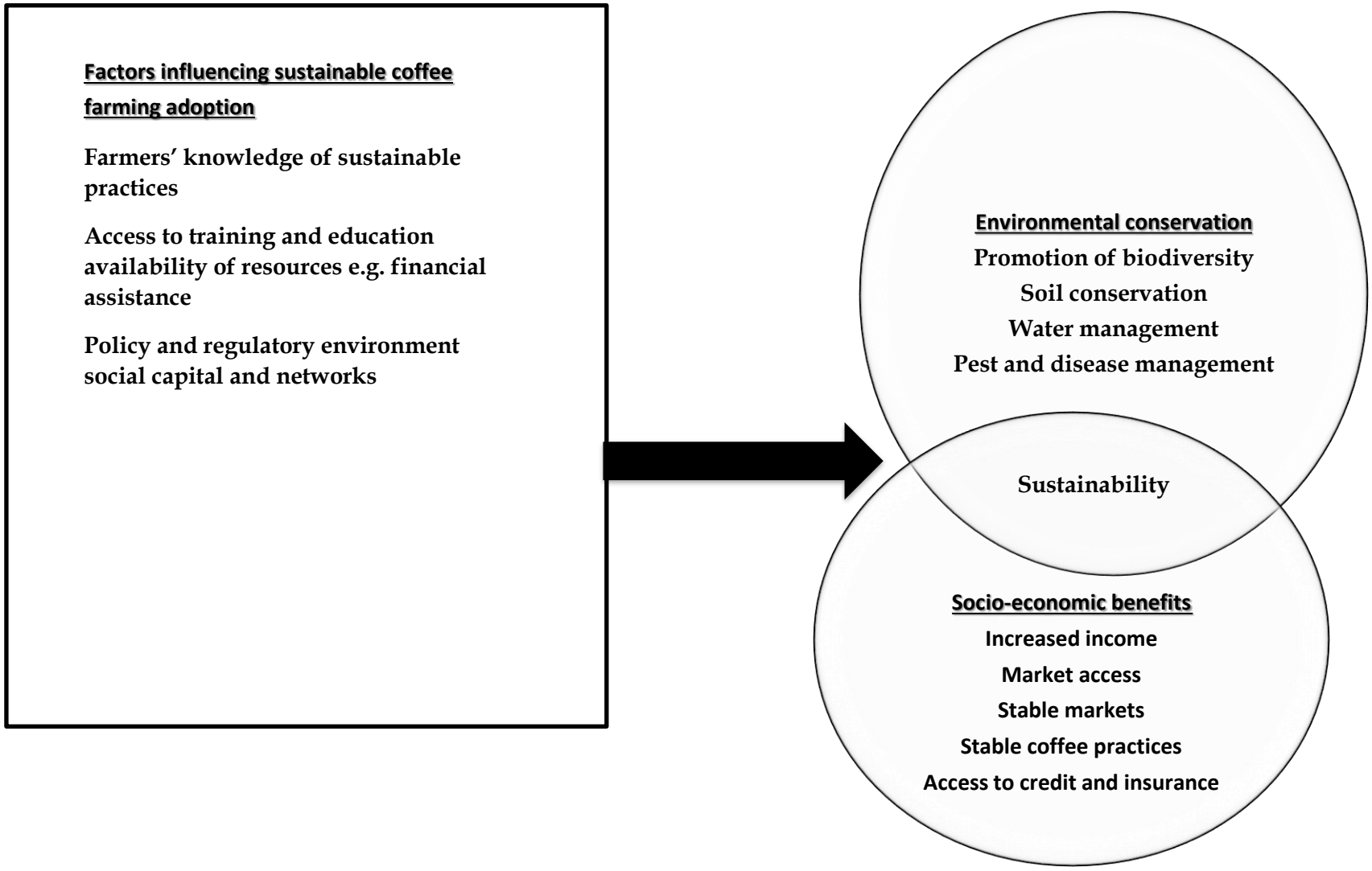

Figure 3: Conceptual Framework

2.4.4. Insights from the literature

Coffee production in Honde Valley has good agro ecological conditions, but the majority of the smallholder farmers are unable to adopt sustainable practice because they have poor access to resources and training (Kufakwaturi et al., 2020). While conventional practices such as intercropping and shade grown coffee are prevalent, they are not sufficient to provide resilience or enhanced yield against climate change (Mhlanga et al., 2022).In one of the issues, a knowledge gap exists such that only approximately 30% of farmers are professionally trained, and most use inherited or peer mentored practices (Kufakwaturi et al., 2020). Gap analysis indicates a clear gap between farmers' skills and sustainable coffee production requirements. Best practices like organic farming and agroforestry are not entirely established since they are costly, technically un-backed, and have poorer market outlets. Descriptive statistics indicate that less than one-third of farmers practice certified organic farming, even when there is a demand for sustainable agriculture (Mhlanga et al., 2022).Financial exclusion, infrastructure, and inadequate extension services also curtail further advancement. The majority of the farmers have small farms averaging 1.36 hectares in size and reside at a mean distance of 70 km away from supportive services, and do not have access to credit drivers of investment and innovation (Kufakwaturi et al., 2020). Encouragement of sustainability in Honde Valley involves more than training and it needs combined support focus on knowledge, finance, infrastructure, and generational replacement.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. INTRODUCTION

The chapter provides the systematic methodology used in research on farmer knowledge, training schemes, agriculture practices, and sustainability strategies in the local coffee agricultural system. Descriptive research design employing a mix of both qualitative and quantitative data was used by the study in seeking to achieve an all-encompassing understanding of coffee agriculture practice and sustainability dimensions. Using the mixed-method approach, the study identifies the quantifiable elements of farming practices and the rich contextual exposure of farmers and provides the general overview of the intricate farm system in Honde Valley. Data collection utilized both primary and secondary sources with questionnaires being the main tool of collecting data from randomly selected coffee farmers. This was supported by key informant interviews to gather specialist opinion and contextual data on local coffee farming practices.

3.2. DESCRIPTION OF THE STUDY AREA

The Honde Valley extends from the eastern border of Zimbabwe into Mozambique. The valley is part of the Eastern Highlands. The valley is about 91 kilometers from Mutare.The climate of Honde Valley falls is mostly temperate from late October to around the end of April it is the summer months, the weather is hot and humid. Temperatures may rise up to 28 ˚C and this is the period where most of the rainfall is received. From May to the beginning of July winter season, the temperatures are very low and they may hover around minimums of 2 ˚C while From September to October during spring, it is hot with maximum temperatures averaging around 25 to 30 ˚C. Most of the rainfall experienced is of the convectional type. At time orographic rainfalls at various times of the year, in addition to

the normal convectional rainfall. This portion of the country, therefore, receives the highest rainfall in the country as it is located in Region 1 of the country's 5 regions with region 1 receiving the largest amount of rainfall. As the area is in the highlands, winters tend to be very cold but overall the region has a very pleasant climate.

The average altitude of Honde Valley is around 900m above sea-level as compared to its immediate surroundings which rise above 1800m. This abrupt drop in topography creates the spectacular Mtarazi and adjacent Muchururu Falls, local tourist attractions. The water supply for the Honde Valley comprises small piped systems and motorized pumps serving small towns, growth points, commercial plantations, service centers and some villages, as well as direct abstractions from the rivers by riparian village communities not connected to developed installations. Honde Valley is where high grown coffee is grown and traded, and produces 75% of the specialty coffee. Honde Valley offers a wide range of species difficult to find in most other parts of the region, other than in neighboring Mozambique.

3.3. MAP OF THE STUDY AREA

Figure 4: Map of the study area

3.4. RESEARCH DESIGN

Research examines the coffee producing sector of Honde Valley, hoping to provide a rich description of practices and efforts at sustainability. It is especially concerned with what the farmers are learning, training they undergo, and agronomic practices adopted. The research employed a descriptive study design, in which data collection, structuring, and interpreting it was done in order to acquire the attributes, activities, and outcomes associated with sustainable coffee production in the region. Numerical and descriptive data were gathered, primarily structured questionnaires from a random sample of coffee farmers. These surveys collected quantitative information regarding their farms, membership in the coffee group, agricultural practices, climate change adaptation, and natural resource management. This guaranteed that similar data were collected from all farmers. Social capital was explored by determining farmers' relationships and information sharing in the coffee associations and with farming advisors. This assisted in comprehending how knowledge access affects agricultural decision-making. Research also explored the application of indigenous knowledge to conservation, giving better insight into local, established practices and their contribution to coffee sustainability. Utilizing a descriptive study design, this research is meant to offer good comprehension of farmer training and specialization and how they affect sustainable agriculture practices in coffee production in Honde Valley. It provides a structured recording of contemporary practice and examining drivers of sustainability within coffee farm systems at the local level. Yamane sample size calculation was to calculate the population that will yield a sample size of 120.

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

The rearranged formula to determine the population size

$$N = \frac{n}{1 - n(e)^2}$$

n; is the calculated sample size

N; is the population size of the people

e; is the level of precision and it is 5%

Population size: 120/ (1-120(0.05)^2=171.

Sample size = 171/ (1+171(0.05)^2= 120 households

3.5. DATA COLLECTION METHODS

DATA COLLECTION TYPES AND SOURCES

3.5.1 PRIMARY DATA

Questionnaire

Implementation of questionnaires as a data collection method is needed as they are effective in obtaining structured and standardized data from them. Through this, previously unassessed information is gathered. They give an in-depth understanding of coffee production, social capital, crop production, and sustainability. Qualitative and quantitative research methods are incorporated in the questionnaire, thus making comprehension of the research topic possible. The quantitative approach provides numbers and

information regarding the type of coffee farmers, activities, and challenges they encounter. The organized survey instrument is guided by closed-ended questions, multiple choices, and rating scale typical of quantitative studies. Numerical data are gathered through queries such as farm information, e.g., farm size and number of coffee trees, cropping system and coffee production, and environmental degradation and conservation practices. The qualitative approaches deliver rich context information on the perceptions, attitudes, and experiences of the coffee farmers. The open-ended questions are utilized in subjects such as list benefits of coffee association membership. The open-ended questions deliver rich contextual answers that are useful for uncovering information on the experiences and perceptions of the coffee farmers. Employment of both qualitative and quantitative methods enables data triangulation, greater validity and reliability, improved understanding of coffee farm practices and sustainability, identification of patterns and trends and in-depth understanding of farmer experiences. Application of mixed-methods research, the current study is able to collect a rich dataset that can yield a complete understanding of coffee farm practices and sustainability in Honde Valley. Questionnaires provide the opportunity to acquire large datasets, and it is thus possible to tackle several areas of the research goals in an effective manner (Bostley, 2019)

3.5.2 SECONDARY DATA

Key informant interviews

Key informant interviews were employed in this research as a vital data gathering tool to obtain rich information from individuals with knowledge and data on coffee farming practice, sustainability, and challenges in Honde Valley. Key informant interviews offer rich contextual information that complements the questionnaire survey. These interviews offer deep knowledge, offering a comprehensive understanding of coffee farming practices, challenges, and opportunities. They also give informal information, giving background of the home coffee industry, regulations, and initiatives. Interviews also enable confirmation of survey responses, enabling cross-checking of questionnaire survey findings and establishment of potential biases. Through these interviews, practitioners and scientists can enhance their understanding of the intricacies of coffee production and develop more efficient remedies toward promoting

sustainability in the sector. Researchers can obtain in-depth, qualitative information to supplement the questionnaire survey, eliciting an overall impression of coffee farm practices and sustainability in Honde Valley .

3.6.1. Primary data collection methods and tools

Table 1: primary data collection methods and tools

Specific Research Objective	**Data Concepts and Variables/ Indicators**	**Data Collection Methods/ Tools**	**Respondents/Subjects**
To assess the current level of knowledge available to coffee farmers in Honde Valley.	Knowledge levels on coffee cultivation techniques Frequency of training sessions	Surveys/Questionnaires Interviews Focus group discussions	Coffee farmers in Honde Valley. Agricultural extension officers or trainers.
To identify the agricultural practices commonly used by coffee farmers in Honde Valley.	Farming techniques. Adoption rates. Yield Data:	Field Observations Interviews Questionnaires	Coffee farmers in Honde Valley. Agricultural experts or extension workers. Local agricultural cooperatives or associations**.**
To investigate the challenges faced by coffee farmers in implementing sustainable farming practices in Honde Valley.	Types of challenges (economic, technical, social, environmental) Knowledge and skill gaps	Interviews Focus Groups	Coffee farmers in Honde Valley. Agricultural extension officers.

3.6.2. Sampling

The sampling process in this study entailed the use of the random sampling procedure, focusing on households from a list of coffee-producing households. This is meant to give every household on the list an equal opportunity to be sampled, minimizing bias and maximizing the representativeness of the sample. Honde Valley was selected because the area is the most dominant coffee-producing region in Zimbabwe, providing researchers with an essential location to monitor methods of coffee production, most importantly the smallholder farmers, who constitute a huge majority in the area. According to the formula for sample determination, the research will strive to identify a representative sample size in an attempt to provide significant findings. With sample size, confidence level, and margin of error in mind, the calculated sample size comes out to be 120 farmers. The location chosen for the study was Honde Valley because it is the leading coffee-producing area in Zimbabwe, which accounts for more than 60% of the country's coffee production. Besides, the valley is dominated by smallholder farmers (80% of farmers), which is of valuable information regarding sustainability practices and challenges at grass-root level. The research was based on smallholder coffee farmers as households that were producing 2 hectares or less of coffee actively involved in coffee production. It excluded large commercial-scale farms and farmers who had discontinued coffee into other agricultural crops. Honde Valley has 12 administrative wards. For geographical representation, four wards were purposively sampled. Four lists of 120 registered smallholder coffee farmers from the four wards were provided by local agricultural extension offices. The farmers were stratified by ward for proportionate representation according to the number in each ward.

3.6.3. Data analysis methods

Table 2: Data analysis methods

Specific Research Objective	**Hypothesis, Theory, Concepts**	**Data Variables/Indicators**	**Data Analysis tools**
To assess the current level of knowledge available to coffee farmers in Honde Valley.	Knowledge levels, training exposure. Human Capital Theory	Awareness of sustainable practices. Participation in training programs.	Frequency analysis
To identify the agricultural practices commonly used by coffee farmers in Honde Valley.	Traditional vs. modern techniques Diffusion of Innovations Theory	Frequency of use Types of practices (organic, convectional). Input utilization.	Descriptive analysis (Frequency distribution and bar)
To investigate the challenges faced by coffee farmers in implementing sustainable farming practices in Honde Valley.	Socio-economic factors Barriers to Adoption Theory Adoption barriers	Financial constraints Lack of training ,market access issues, climate changes	Frequency analysis

3.6.4 Frequency analysis

To determine the extent of knowledge back then, frequency analysis was used to measure levels of awareness and training exposure among farmers who were interviewed. It involved the counting of aware farmers who are cognizant of sustainable practice and trained farmers who are participants in training programs. The findings were used to elucidate clearly the state of awareness as it gave the ratio of farmers with high, medium, or low levels of knowledge

3.6.5 Descriptive analysis (Frequency distribution and bar charts)

Descriptive frequency distribution analysis and bar charts were applied in the identification of prevalent farming practices. It provided a summary of farming practice types and frequencies, such as modern or traditional farming practices and conventional or organic farming practices. The findings identified leading practices and trends in the data set, such as adoption rates of various farming approaches.

3.6.6 Frequency analysis

Frequency analysis was further utilized to examine the barriers faced by coffee farmers in terms of the adoption of sustainable agriculture. This entailed grouping and counting cited barriers, such as economic limitations, insufficiency of training, market availability, and climate change effects. Through the frequency-ranked barriers, the study determined the most significant barriers to the adoption, which can be informative to policymakers and stakeholders.

3.7 Ethical Considerations

Ethical issues regarding coffee farm operations and sustainability in Honde Valley are ensuring the well-being and health of all concerned parties. According to ethical considerations, all participants were informed consented with the intent, process, and possible risks and benefits to them in participating in the study. Farmers were clearly explained how their agricultural methods and information were to be documented and analyzed, with particular attention to how they would be conveyed based on varying levels of literacy and language usage. Participants may withdraw from the research at will without incurring negative consequences, and this was also clearly communicated during the consenting process. No coercion at all was exerted on farmers to participate in the research, with acknowledgment of their ability to make their own choice. Confidentiality was strictly upheld, with all data anonymized and kept safely in a manner that preserved the privacy of the participants. This was particularly crucial in recording possibly sensitive information regarding farming practices, economic situation, or affiliations with agricultural cooperatives and purchasers.

The study upheld the principle of non-maleficence, in the form that no damage will result to the participants from taking part. Research activities were designed to avoid interruption of critical phases of cultivation and attempted not to desecrate knowledge systems practiced traditionally. They embraced the respectful rather than judgmental approach to traditional knowledge systems. The research also abided by the principle of beneficence in the provision of maximum benefit from the research with minimal risk. To this end, they published in plain, practical forms utilizable findings from the research and provided farmers with opportunities to upscale their sustainable farming methods. There was cultural sensitivity in every interaction, with respect and an appreciation for the local practice, values, and agriculture in Honde Valley. Stray efforts were put in place to involve varied voices, ensuring that farm size, gender, age groups, and socioeconomic status were represented. Institutional review boards involved provided ethical approval, and the research was conducted in strict adherence to ethics guidelines and requirements of the research strategy. Throughout the study, care was taken to note researcher-participant power dynamics with ongoing consideration of how these can influence data generation and analysis. The research also took into account potential long-term effects of the research results on Honde Valley coffee farming

community, being accountable for the manner advice on sustainable practices will affect livelihoods and environmental wellness in the valley. The research design also incorporated environmental ethics, understanding that there is a relationship between sustainable agriculture, biodiversity conservation, and community well-being.

CHAPTER FOUR

4.1 INTRODUCTION

This chapter illustrates the empirical results of the research, in line with the research methodology. This is the analysis of the information gathered particularly of Coffee farming methods and sustainability in Honde Valley. The chapter is organized to analyze sequentially the study objectives starting with the determination of the level of farmer's knowledge, followed by investigation of frequently used farming practices and conclusion with evaluation of discouraging challenges facing sustainable farming practices. The initial section addresses descriptive statistics to examine the level of awareness among current coffee farmers and availability of farmer knowledge. It identifies gaps in education among farmers and where they require capacity building interventions. The second objective examines the farming practices employed by farmers separating customary from contemporary forms and effectiveness. The last objective explores the hindrances in implementing sustainable practices among farmers ranging from financial limitations to assess to limited resources and infrastructural hindrances. By presenting these findings, the chapter provides an integrated understanding of the dynamics influencing coffee production in Honde Valley, thereby paving the way for effective interventions to promote sustainability.

4.2 CHARACTERISTICS OF SAMPLED HOUSEHOLDS

A total of 120 households participated in conducting the research on Coffee farming practices an sustainability in Honde Valley. The research was aimed at testing farmer's knowledge, farming practices used and challenges while adopting sustainable practices. The sample employed was active coffee farmers. The research was conducted while taking into consideration gender representation and presentation of age groups, to get a representative and balanced sample. The questionnaire sought equitable representation from all wards in Honde Valley to realize valid opinions towards coffee production.

4.2.1 Gender Inclusivity.

The finding express that of 120 surveyed households in Honde Valley, 63, 33% of the farmers interviewed were male and 36.6% were females. This indicates that coffee farming is dominated by males in Honde Valley, but females are also present in substantial numbers in the smallholder coffee farming sector. The findings show gender disparities that may affect the extent of exposure to training, agricultural extension services and knowledge gained on sustainability. Male dominance is coffee production may be due to previous land ownership and cultural systems in rural farm societies. The involvement of more than a third of female respondents indicates growing gender participation in agriculture, which concurs with national initiatives towards gendering woman's empowerment in agriculture through programs for woman in agriculture and Agritex gender sensitive modules. It is important to consider gender difference since knowledge levels and application could vary for male and female farmers based on lack of access to training.

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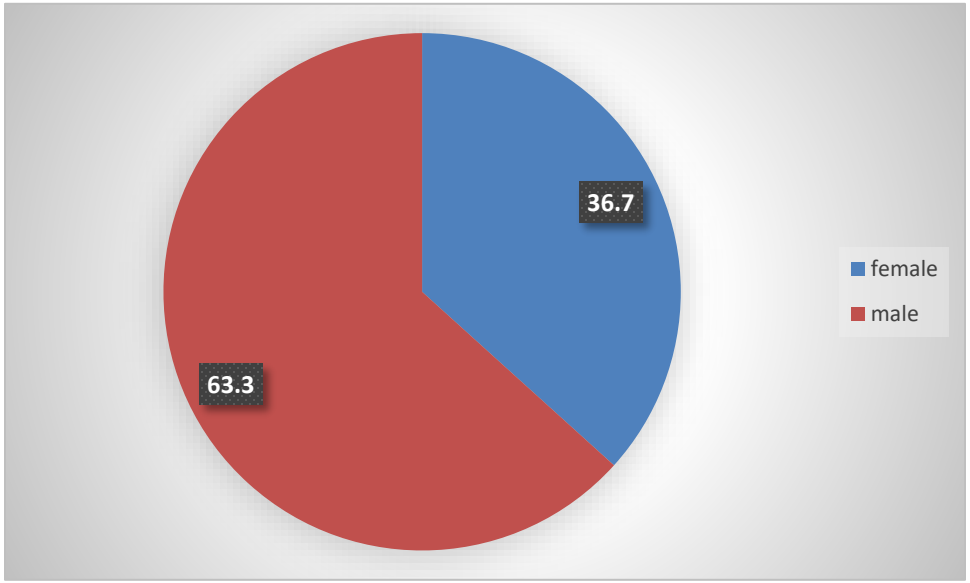

Figure 5: Selected gender for the survey

4.2.2 Age groups under the survey.

The age findings indicates that coffee farming in Honde Valley is dominated by older population within an age range of 48 – 68 years who make up 73% of the sampled population in general . This implies an experienced farming population with potentially long standing experience in coffee farming. The youth demography which is from 18-38 years is significantly underrepresented, with less than 9% of the farmers. This low participation reflects a general knowledge gap in agriculture, which could have a long term implications for sustainability unless addressed through targeted youth engagement and training programs. On the sustainability side, the high ratio of older farmers may indicate a wealth of traditional knowledge and techniques. However, it also suggests that there is demand for training schemes that incorporate modern climate resilient practices while also encouraging intergenerational technologies transfer. This age distribution underscores the importance of tailoring agricultural extension services and sustainability training to the specific needs and capacities of different age groups .Younger farmers' might require more basic information and incentives, whereas older farmers would need new techniques along with their experience.

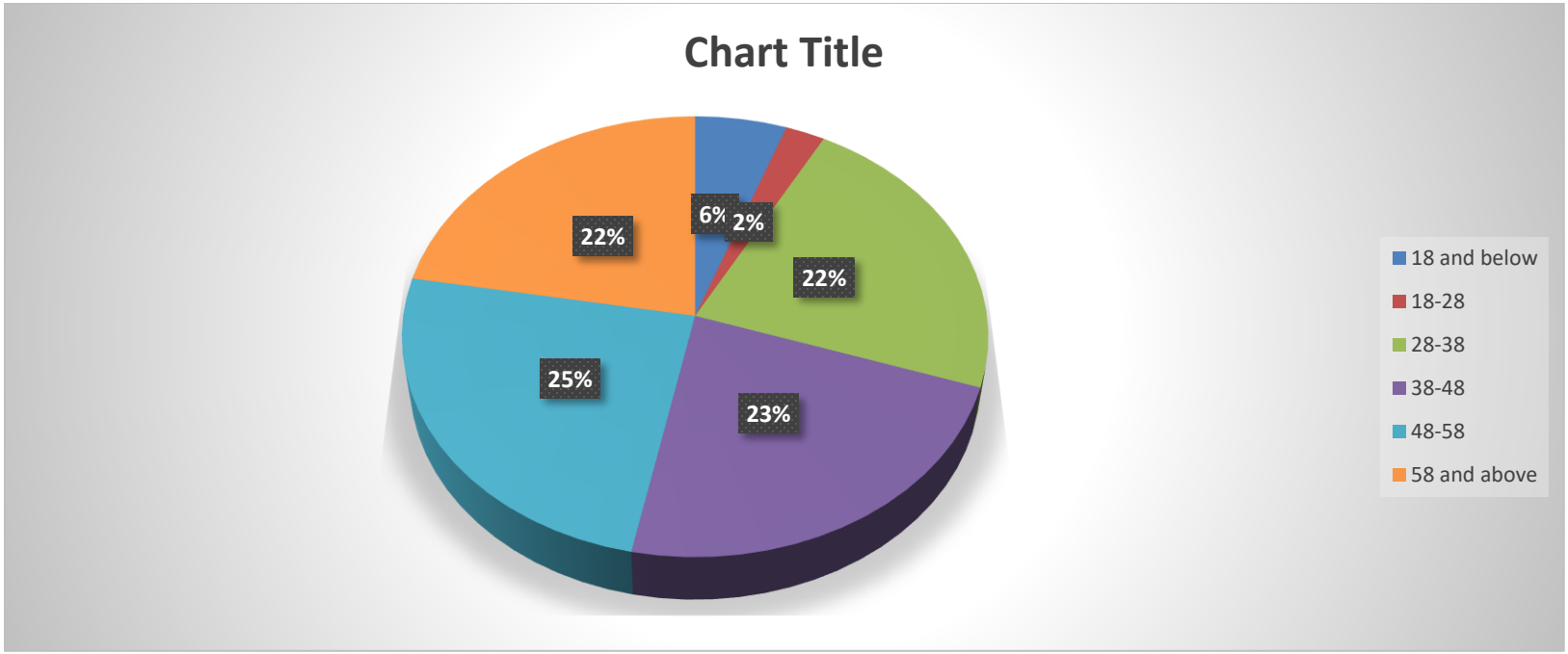

Figure 6: Age groups under the survey

4.3 ASSESSMENT OF THE CURRENT LEVEL OF KNOWLEDGE AVAILABLE TO COFFEE FARMERS IN HONDE VALLEY.

Table 3: Level of farmer knowledge

level of farmer knowledge	Sample size	Frequency(N)	Percentage (%)
Training programs available	120	28	22.4
Years of experience	120	31	24.8
Adoption of sustainable farming practices	120	29	23.2
Climate adaptation strategies	120	22	17.6
Awareness programs	120	7	5.6
Use of pesticides	120	3	2.4

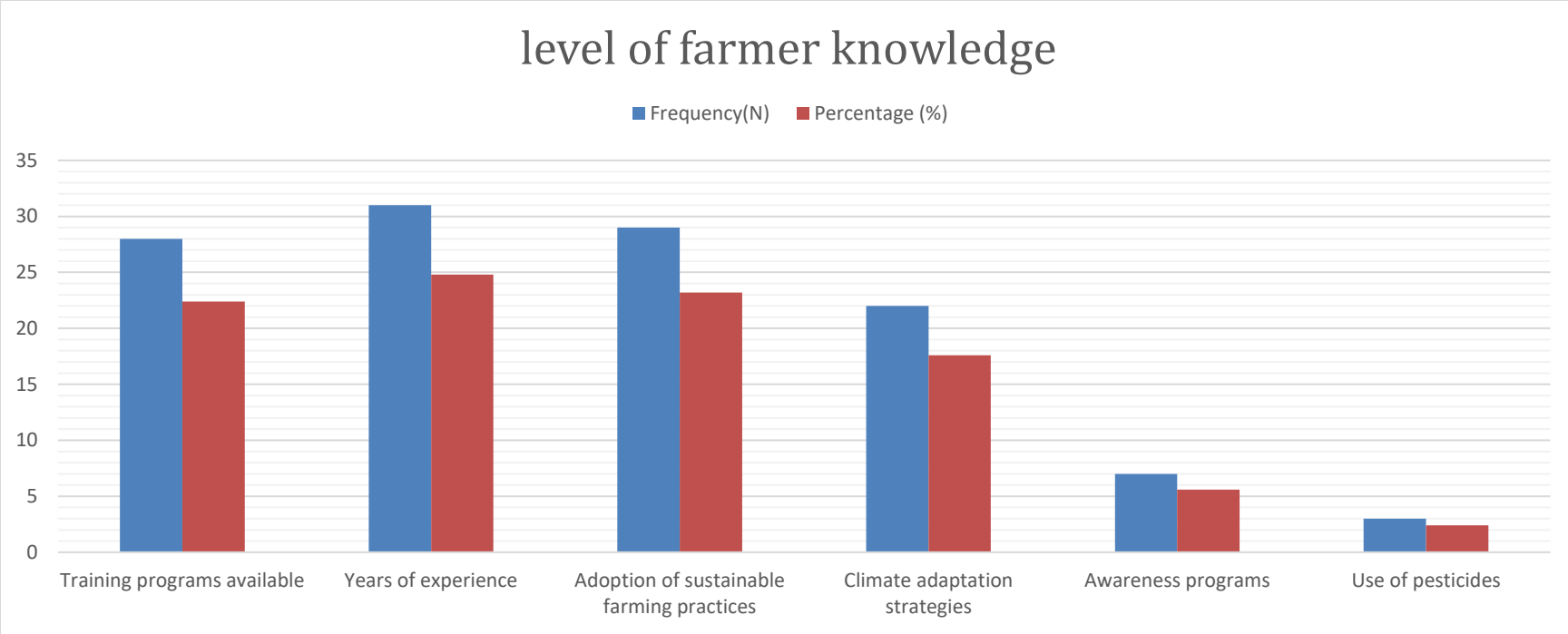

Figure 7: Level of farmer knowledge

The study shows that farmers' knowledge levels are highest in years of experience 24.8% and sustainable agricultural practices 23.2%. This implies that experience-based learning and general knowledge are the key drivers of agriculture practices, as Mutenje et al. (2019) also found that Zimbabwean smallholder farmers depend more on generational knowledge compared to training. Rather high rates of awareness of sustainable practice might be an indication of environmental awareness, but fewer of the farmers show this knowledge. Moderate training scheme accessibility 22.4% concurs with Chiputwa et al. (2020), who reported that agricultural extension services in Africa only reach 20-25% of smallholder farmers. This restricted access to formal education denies farmers the

ability to apply new methods that would increase productivity. The more alarming are the low levels of knowledge regarding adaptation strategies to climate 17.6% and awareness programs 5.6%. With heightened attacks on coffee production as a result of climate change (Chemura et al., 2020), this is more alarming. Moreover, the very low level of pesticide application awareness 2.4% is a concern regarding food safety and the environment as unsafe chemical use may result in contamination and exportation bans (Ngowi et al., 2021).

In comparison to knowledge levels in Honde Valley against other coffee-growing regions, it is without essential knowledge domains. For instance, climate adaptation awareness 17.6% is significantly lower than in Colombia and Brazil, where 40-50% of farmers understand climate-smart practices (Läderach et al., 2022). Similarly, pesticide awareness 2.4% is behind East African countries, where 15-30% of farmers are informed about proper agrochemical use (Ngowi et al., 2021).The relatively better performance in sustainable farming 23.2% may be attributed to Zimbabwe's national emphasis on conservation agriculture (Mutenje et al., 2019). But even that falls short compared to adoption in Kenya and Tanzania, where 35-40% of farmers have adopted sustainable practices (Gichimu et al., 2022)

4.4 IDENTIFYING THE AGRICULTURAL PRACTICES COMMONLY USED BY COFFEE FARMERS IN HONDE VALLEY.

Table 4: Agricultural practices commonly used by farmers

Agricultural practices commonly used by farmers.	Did you receive any training - 0=yes,1=no	If yes how are they assisting ,1=training ,2=other	Do you practice agro forestry 0=yes,1=no	Do you practice mixed cropping,1=yes, 2=no	Do you practice organic farming ,1=yes ,2=no
Sample size	120	120	120	120	120
Mean	0.28	1.28	0.20	1.43	1.05
Median	0.00	1.00	0.00	1.00	1.00
Std Deviation	0.448	0.448	0.402	0.498	0.219
Sum	33	153	24	172	126

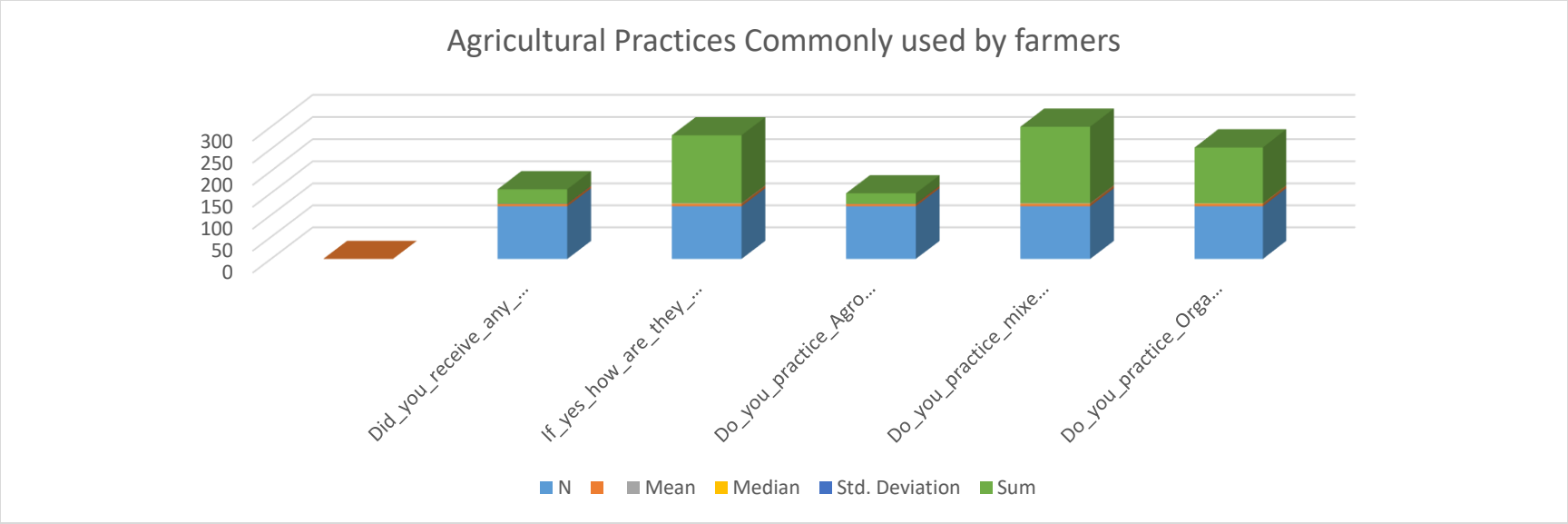

Figure 8: Agricultural practices commonly used by farmers

As for training, the mean value of 0.28 suggests that approximately 72% of farmers received agricultural training. However, the median value of 0.00 indicates at least half the farmers did not receive any training, and this reflects an imbalance in the access to capacity-building activity. This result is supported by Mutenje et al. (2020), who discovered that while extension services have changed in several African coffee-producing countries, there are still wide gaps in extending services to all farmers.

In the case of the sample 33 farmers that were trained the average value of 1.28 determines that most of the assistance was in the form other than formal training procedures. This includes input support, advisory services, or field demonstrations. High standard deviation of 1.00 shows a very high diversity in the source of support received. Agroforestry production has high adoption with a mean of 0.20, which means that about 80% of farmers have trees in their coffee systems. This is consistent with recent trends in sustainable coffee

production reported by Cerda et al. (2021), where agroforestry systems are increasingly gaining popularity as a result of their climate resilience advantage and biodiversity conservation. Mixed cropping is seen to be fairly common with a mean of 1.43 translating to 57% utilization. Organic agriculture is moderately practiced with approximately 95 farmers practicing it to some degree. This is evident in rising world demand for organic coffee, although certification constraints continue to be substantial (Waller et al., 2020).Climate-Smart Agriculture: Farmers are increasingly using drought-resistant coffee and shade-grown coffee as a response to climate change (Chemura et al., 2020). The high adoption of agroforestry in Honde Valley is emulating this international trend. Trained farmers are found to achieve 23-40% increased yields, but extension services can potentially neglect poor producers and women (Van Asten et al., 2021). Gaps in training in Honde Valley should be remedied, even with the premium prices being high, organic certification is still out of reach for most smallholders (Meemken et al., 2022). This accounts for the moderate organic uptake in spite of its advantages. Scientific evidence attests that diversified systems enhance food security and diminish economic risks (Jha et al., 2022), validating Honde Valley farmers' practices.

4.5 EVALUATION OF THE CHALLENGES FACED BY THE COFFEE FARMERS IN IMPLEMENTING SUSTAINABLE FARMING PRACTICES IN HONDE VALLEY.

Table 5: Challenges faced by coffee farmers

Challenges faced by coffee farmers	Sample size	Frequency(N)	Percentage (%)
Age	120	30	25
Years of experience	120	25	20.8
Climate change	120	40	33.3
Contract farmers	120	20	16.6
Farmer skills	120	35	29.17
Access to credit facilities	120	30	25

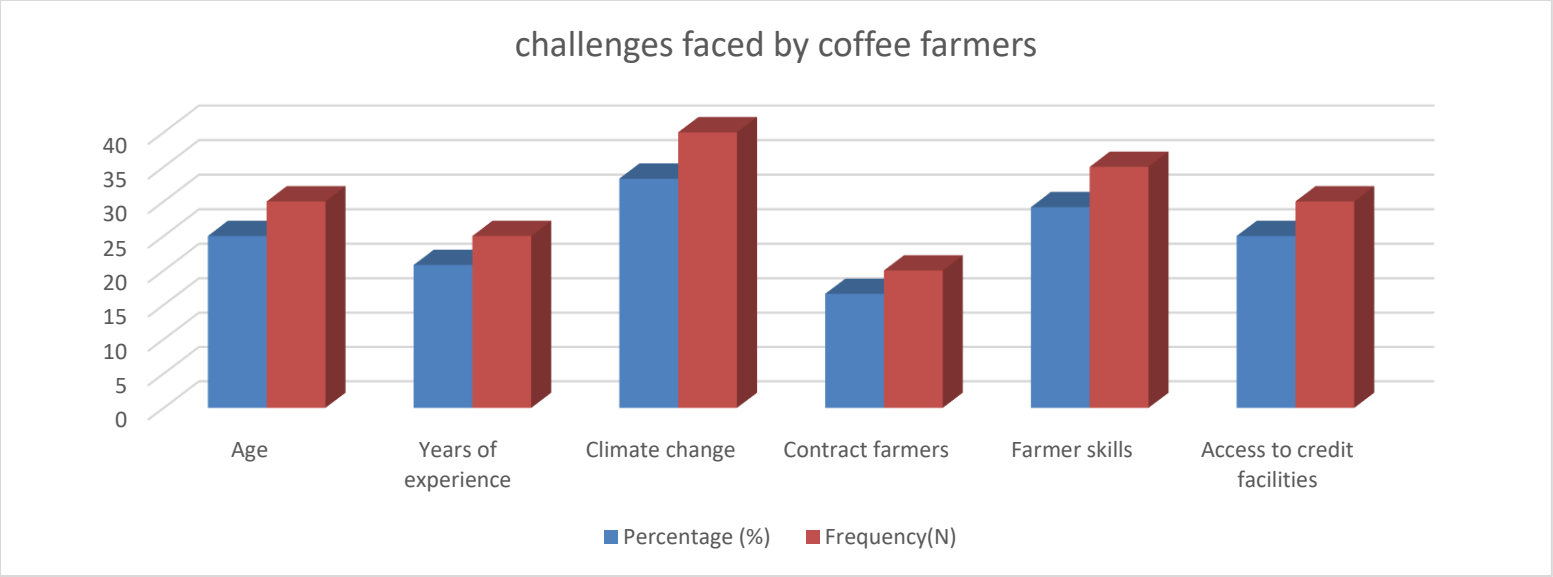

Figure 9: Challenges faced by coffee farmers

Climate Change is 33.3%, the most urgent, climate change impacted 40 of the 120 participants. This is also in line with world trends where changing climatic conditions erode the conventional coffee-producing areas (Moat et al., 2021).Skills of farmers is 29.17%, that is 35 farmers reported a lack of skills as a limitation, which would require more training in sustainable techniques such as agroforestry and organic pest management (Tscharntke et al., 2021).Age and Availability of Credit (25% each), both played a role to 30 farmers. The elderly farmer population causes concern over knowledge transfer, and credit access constraints restrict investment in sustainable infrastructure (Meybeck et al., 2020).Years of Experience 20.8%, which is approximately 25 farmers mentioned lacking experience as a problem, and it may imply that young farmers lack traditional ecological knowledge (Perfecto et al., 2019).Contract farming 16.6% and it has affected 20 respondents, and it suggests possible difficulties in market access discouraging investment in sustainability (Grabs, 2020).

Climate change impacts have been compounded, with studies showing temperature increases narrowing suitable lands for coffee by up to 50% in some areas by 2050 (Bunn et al., 2021). This confirms Honde Valley farmers' fears as the largest obstacle. The knowledge gap is duplicated in foreign research where sustainable methods like shade-grown coffee need specialized knowledge extension services cannot provide (Jezeer et al., 2023). Digital solutions are promising in addressing this through mobile-based training (Van Asten et al., 2021).Access barriers to credit replicate the evidence from Ethiopia and Colombia, where smallholders must absorb high interest rates 15-25% deterring sustainable investments (Tadesse et al., 2023). New finance instruments such as sustainability-linked loans are on the horizon as solutions (Giovannucci et al., 2022).Contract farming issues connect with research showing while contracts can be leveraged to ensure sustainability, they often favor large producers and leave out smallholders (Grabs, 2023).Fair trade certifications have been patchily effective in addressing these imbalances of power

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMENATIONS

5.1 SUMMARY

The research investigated the knowledge levels, farm practices, and issues encountered by coffee producers in Honde Valley, Zimbabwe, in adopting sustainable farm practices. Results indicated that farmers acquired their knowledge mainly from experience years and knowledge of sustainable practice, with the engagement in formal training and climate change adaptation practices. Common farm practices are agroforestry and mixed cropping with moderate adoption of organic farming. Nevertheless, factors like climate change, availability of training, credit, and an aging population of farmers constrain the use of sustainable methods on an expansive scale.

5.2 CONCLUSIONS

5.2.1 Assessing the current level of knowledge available to coffee farmers in Honde Valley.

It was discovered that farmers in Honde Valley depend almost entirely on generations of knowledge and experience, 24.8% with experience-informed practice based on years of farming. Sustainable knowledge 23.2% was moderately higher than adaptation to climate 17.6% and pesticide safety 2.4%. This suggests a huge opportunity for formal training and extension services coverage, only reaching 20-25% of smallholder farmers, according to the study by (Chiputwa et al., 2020; Mutenje et al., 2019).

5.2.2 Identifying the Agricultural Practices commonly used by coffee farmers in Honde Valley.

Agroforestry was practiced the most 80% and followed international trends to climate-resilient systems (Cerda et al., 2021). Mixed cropping 57% and organic farming moderate adoption were also widespread because of food security and risk reduction benefits (Jha et al., 2022). Organic certification is still beyond the reach of many because of limited affordability (Waller et al., 2020).

5.2.3 Evaluating the challenges faced by the coffee farmers in implementing sustainable farming practices in Honde Valley.

Producers identified climate change 33.3% as the most significant issue, and temperature variability that risks making coffee unsuitable (Bunn et al., 2021). Other constraints comprised limited skills 29.17%, credit availability 25%, aged labor 25%, and draconian contract farming terms 16.6%. Results concur with reports globally, where smallholder farmers experience structural differences in resources and market entry (Grabs, 2023; Tadesse et al., 2023).

5.2.4 Recommendations to the Farmers

Farmers can become more resilient through the creation of their capacity for betterment of information and climate-resilient agricultural practices. Joining cooperative agencies with the specific aim of learning indigenous practice and sustainable agriculture that is agroforestry and organic agriculture, is one approach. Peer learning replaces gaps in training. Climate adaptation, appropriate utilization of pesticides, and innovative agricultural practices are also learned through workshops organized at local levels or mobile-based training sessions. Climate-resilient farm management is what is required for long-term sustainability. The farmers need to extend the agroforestry systems through the establishment of shade trees like banana to regulate temperatures and levels of soil. Mulching and drip irrigation are measures of water conservation that can manage dry seasons. Crop diversification beyond coffee, like intercropping with legumes, can be undertaken in an attempt to achieve food security alongside reducing economic vulnerability. Group organic certification is also an option, farmers may band together and cooperate to collect their efforts and gain group certification at least cost per farmer and accessing niche markets. Keeping records of sustainable production may be certified and gain environmentally aware buyers. Financing resilience is also essential. Farmers, in turn, will be driven to use community saving groups

or microfinance programs to invest in climate-resilient inputs such as drought-tolerant coffee. Collective bargaining will also enable them to get decent prices from buyers and avoid exploitative contracts.

5.2.5 Recommendations to the government and policy makers.

The state needs to intervene to provide support to farmers in training, finance, and policy intervention. Development of agricultural extension services, particularly for poor individuals and women, will facilitate information dissemination. Utilization of mobile vans or virtual platforms (e.g., SMS) can compensate for logistical constraints. Partnership with research institutions and NGOs will facilitate localized climate resilience and pest management capacity building.

It is essential to prioritize adaptation action on climate. Weather advisory services, drought-resistant seedlings, and shade trees will be subsidized to better enable farmers to cope with adverse conditions. Climate risk maps and early warning systems can also be prepared for readiness. Low-cost lending and insurance schemes have to be put in place to mitigate risks. Low-cost lending or credit guarantees may be used to allow farmers to invest in green infrastructure, and weather-indexed insurance can be used to insure against weather-related loss of crops. Access to markets is also a major area of focus. Farmers' organizations and cooperatives need to be supported by governments to build bargaining power and receive improved prices. Infrastructure investment e.g., in processing factories and road transport can reduce post-harvest losses and improve market links. Promotion of private-public partnerships in coffee value chains for sustainable production can also promote greener production. Finally, policies need to foster inclusive growth. Linking small farmers to national climate action plans, covering pesticides, and making land tenure clarity can drive long-term investment in sustainability.

REFRENCES

Anand, A., et al. (2024). Edible cups designed to eliminate plastic waste. Journal of Sustainable Packaging, 12(3), 45-60.

Bashiri, A., et al. (2021). Enhancing agricultural productivity and decision-making tools in the coffee industry. Agricultural Systems, 189, 103045.

Bianco, F. (2020). Environmental stress in coffee production: Land erosion and deforestation. Environmental Conservation, 47(2), 123-135.

Bitzer, V., et al. (2008). Sustainability coalitions in coffee supply chains. Journal of Business Ethics, 81(4), 607-633.

Bostley, M. (2019). Mixed-methods research in agricultural studies. Journal of Agricultural Research, 15(2), 89-104.

Bunn, C., et al. (2021). Climate change impacts on coffee suitability. Nature Climate Change, 11(5), 554-561.

Cerda, R., et al. (2021). Trends in sustainable coffee production: Agroforestry systems. Agriculture, Ecosystems & Environment, 306, 107185.

Chambers, R., & Conway, G. (1992). Sustainable rural livelihoods: Practical concepts for the 21st century. IDS Discussion Paper, 296.

Chandio, A., et al. (2021). Credit access and agricultural adaptation in Mashonaland East. World Development, 138, 105243.

Chemura, A., et al. (2020). Climate change impacts on coffee production. Climatic Change, 158(3-4), 381-399.Chiputwa, B., et al. (2020). Agricultural extension services in Africa. Food Policy, 91, 101825.

Corbeels, M., et al. (2014). Sustainable agricultural practices: A global review. Agronomy for Sustainable Development, 34(1), 1-20.

Das, S. (2025). Gender and social norms in rural livelihoods. Journal of Rural Studies, 82, 1-12.

Dawes, T., & Mushongachiware, P. (2024). Agricultural credit systems in Zimbabwe. African Journal of Agricultural Economics, 12(1), 34-50.

FAO. (2023). Knowledge gaps in Zimbabwean smallholder farming. FAO Report.

FAO. (2024). Financial exclusion of smallholder farmers in Africa. FAO Agricultural Finance Review.

Giovannucci, D., et al. (2022). Sustainability-linked loans in agriculture. Journal of Sustainable Finance & Investment, 12(3), 456-470.

Gold, M. (2016). Defining sustainable agriculture. Sustainability, 8(4), 1-15.

Grabs, J. (2020). Contract farming and sustainability. World Development, 135, 105044.

Grabs, J. (2023). Power imbalances in coffee value chains. Journal of Peasant Studies, 50(2), 345-367.

Grover, S., & Gruver, J. (2017). Adoption of sustainable agricultural practices. Agriculture and Human Values, 34(4), 871-885.

Hall, A., et al. (2001). Agricultural innovation systems. Research Policy, 30(1), 1-20.

Haryanto, T., et al. (2023). Credit access and sustainable farming in developing countries. Agricultural Finance Review, 83(1), 78-95.

Hidalgo, J., et al. (2023). Trends in global coffee production. Global Food Security, 34, 100641.

Ike, P. (2024). Agricultural extension services and policy enforcement. Journal of Agricultural Education, 45(2), 112-125.

Jha, S., et al. (2022). Diversified farming systems and food security. Nature Sustainability, 5(6), 456-465.

Jezeer, R., et al. (2023). Digital solutions for coffee farming. Agricultural Systems, 195, 103276.

Krishnan, S. (2017). Coffee as a global commodity. Journal of Commodity Markets, 8, 1-14.

Kuipa, P. (2019). Challenges of Zimbabwe's agricultural credit programs. African Development Review, 31(2), 234-248.

Kufakwaturi, T., et al. (2020). Training gaps in Honde Valley coffee farming. Journal of Agricultural Extension, 24(3), 67-82.

Läderach, P., et al. (2022). Climate-smart practices in Colombia and Brazil. Climate Risk Management, 35, 100399.

Lee, D., et al. (2021). Training and resource use efficiency in farming. Agricultural Water Management, 245, 106534.

Mafirakurewa, T. (2023). Credit targeting in Zimbabwean agriculture. Zimbabwe Journal of Agricultural Economics, 12(1), 45-60.

Makoni, M., et al. (2021). Climate-smart agriculture training outcomes. Climate and Development, 13(5), 456-470.

Mapiye, O., & Dzama, K. (2024). Smallholder farmers in Africa: Challenges and opportunities. African Journal of Agricultural Research, 19(2), 123-135.

Matsvai, S. (2024). Gender and financial literacy in rural Zimbabwe. Journal of Gender Studies, 33(1), 78-92.

Meemken, E., et al. (2022). Organic certification challenges for smallholders. Food Policy, 108, 102237.

Meybeck, A., et al. (2020). Aging farmers and knowledge transfer. Journal of Rural Studies, 76, 1-12.

Mhlanga, D., et al. (2022). Sustainable coffee farming in Honde Valley. Sustainability, 14(5), 1-20

Mikhail, S. (2022). Rural livelihoods and non-farm activities. World Development, 150, 105678.

Moat, J., et al. (2021). Climate change and coffee suitability. Science Advances, 7(12), eaba5438.

Moslehpour, M., et al. (2022). Consumer trends in organic coffee. Journal of Cleaner Production, 330, 129876.

Mugandani, R., et al. (2012). Agro ecological zones of Zimbabwe. Zimbabwe Journal of Agricultural Research, 50(2), 45-60.

Mutenje, M., et al. (2019). Generational knowledge in Zimbabwean smallholder farming. Agricultural Systems, 173, 1-12.

Mutenje, M., et al. (2020). Extension services in African coffee production. Food Security, 12(3), 567-582.

Mwakalile, E., & Mugisha, J. (2019). Indigenous knowledge and modern farming. Journal of Agricultural Education and Extension, 25(4), 345-360.

Muwaniki, C., et al. (2022). Historical roots of Zimbabwe's extension system. African Journal of History and Culture, 14(1), 1-15.

Ngowi, A., et al. (2021). Pesticide safety awareness in East Africa. Environmental Health Perspectives, 129(4), 047001.

Njoroge, J., et al. (2019). Blending traditional and modern farming practices. Agroecology and Sustainable Food Systems, 43(5), 567-582.

Nunan, F. (2022). Socio-political dimensions of rural livelihoods. Journal of Development Studies, 58(3), 456-470.

Perfecto, I., et al. (2019). Traditional ecological knowledge in coffee farming. Agriculture, Ecosystems & Environment, 283, 106564.

Querejeta, M., et al. (2018). Spent coffee grounds for carbon dioxide absorption. Journal of Environmental Management, 216, 1-10.

Quimbo, M. (2013). Extension services and technological dissemination. Journal of Extension Systems, 29(1), 1-15.

Rahmah, S., et al. (2023). Practical skills in organic farming. Journal of Sustainable Agriculture, 37(2), 123-135.

Rai, P. (2023). Complexities of rural livelihoods. World Development Perspectives, 30, 100456.

Raji, A., et al. (2024). Digital platforms for agricultural extension. Computers and Electronics in Agriculture, 196, 106789.

Rakodi, C. (2014). Sustainable livelihoods framework. Progress in Development Studies, 14(1), 1-20.

Ravonjiarison, N., et al. (2023). Local soil knowledge in Madagascar. Geoderma, 410, 115678.

Roda, J. (2022). Organic coffee and social justice. Journal of Rural Studies, 89, 1-12.

Rosati, A., et al. (2021). Organic farming and soil quality. Soil Biology and Biochemistry, 160, 108345.

Schader, C., et al. (2021). Organic farming and long-term productivity. Nature Sustainability, 4(3), 234-245.

Scoones, I. (2014). Challenges of commercial production in Zimbabwe. Journal of Peasant Studies, 41(3), 345-360.

Smith, D. (1985). History of coffee in Zimbabwe. Zimbabwean Historical Journal, 10(2), 45-60.

Smith, J. (2019). Extension services for specialty crops. Journal of Agricultural Education and Extension, 25(2), 123-135.

Soledispa-Cañarte, E., et al. (2023). Comprehensive analysis of organic coffee. Sustainability Science, 18(2), 567-582.

Tadesse, G., et al. (2023). Credit barriers in Ethiopia and Colombia. Agricultural Finance Review, 83(2), 234-248.

Technoserve. (2017). Coffee productivity in Honde Valley. Technoserve Report.

Tian, Y., et al. (2022). Global sustainability targets and coffee production. Global Environmental Change, 72, 102456.

Tscharntke, T., et al. (2021). Agroforestry and pest management. Annual Review of Entomology, 66, 1-20.

Tsegaye, W., & Wortmann, C. (2018). Training and adoption of new farming methods. Agricultural Systems, 165, 1-12.

Van Asten, P., et al. (2021). Training effectiveness and yield increases. Agricultural Systems, 190, 103045.

Wakweya, R., et al. (2024). Smallholder farmers and food security. Food Security, 16(1), 123-135.

Waller, N., et al. (2020). Organic coffee certification constraints. Journal of Organic Agriculture, 10(2), 123-13

Wernau, J., & Whelan, D. (2018). International coffee prices and smallholder viability. Journal of Commodity Markets, 12, 1-14.

World Bank. (2024). Financial inclusion for smallholder farmers. World Bank Report.

Wright, H., et al. (2014). Barriers to organic farming transition. Agricultural Systems, 129, 1-12.

RESEARCH INSTRUMENT

QUESTIONNAIRE

SURVEY INFORMATION AND INFORMED CONSENT

Your household has been selected by chance from a list of households that grow coffee. I would like to ask some questions related to coffee production and the information that you will provide is intended to inform Horticultural Development council.

I would like to assure you that all the information provided here will be treated as STRICTLY CONFIDENTIAL, and will be used for the evaluation purposes only. Your name will not be mentioned anywhere in the work. Therefore, try as much as possible to be accurate and objective in your responses. In the process of interview, you are free to interrupt me and ask for any clarification. I respect all the responses you give and appreciate your cooperation. Interview will take about 60 minutes

Questionnaire No…… Date:……..……..……

Interviewer's name: …… Time:…….…….....

District: …….. Ward:…….…….....

SECTION A: Farm Details

A	Farm details

1	Name of Farm	
2	Contact Number	
4	Total Farm Size in Hectares	
5	Total Number of Coffee Trees	
6	Gender of respondent	1. Male 2. Female
7	Age (yrs.) of respondent	
9	What is your designation	1-Farm owner; 2-Farm manager; 3- Farm Supervisor/Foreman; 4- Field Workers/Laborers; 5- Agronomist;6- Farm Administrator
10	Number of permanent Farm workers	
11	Number of seasonal Farm workers	

SECTION B: SOCIAL CAPITAL

B	SOCIAL CAPITAL	

14	Are you a member of any coffee association	1= yes; 2=no			
15	If yes, what is the name of the association				
16	List the benefits you are getting from being a member of the coffee association				
17	Number of coffee traders that you know in this district who could buy your coffee				
18	Number of coffee traders that you know outside this district who could buy your coffee				
Agricultural extension services					
		How many times do you interact/discuss with […] in the past 12 months regarding coffee	How many field days/training organized by […..] did you attend in the past 12months	How relevant was the information/training 1=very high; 2=high; 3=okay; 4=not relevant; 5=don't remember	Type of information from the extension worker (rank) 1-coffee seed varieties, 2-fertiliser application, 3-pests and diseases, 4-Post harvesting, 5-marketing 6-other

					specify
1	Government extension service providers				

SECTIONC: CROP PRODUCTION

C1: CROPPING SYSTEM DURING THE PREVIOUS SEASON

1-monoculture, 2-intercropping

C2: COFFEE VARIETY USED……

SECTION D – SUSTAINABLE AGRICULTURE AND CLIMATE CHANGE

D1. WHICH FARMING METHODS WERE USED AT THE FARM IN THE LAST 24 MONTH? (Multiple responses possible)

1-agro-forestry, 2-integrated crop and livestock production, 3-mixed cropping, 4-mono cropping 5- Organic farming, 6-Conservation farming, 7-crop rotation

D2. HOW HAS THIS FARMING METHOD AFFECTED YOUR YIELD?

1-increased, 2-decreased, 3-no change

D3. HAVE YOU HEARD OF "CLIMATE CHANGE**"?** 1-yes, 2-no

D4. WHERE HAVE YOU HEARD ABOUT CLIMATE CHANGE? (Tick as many as you feel apply):

1-TV, 2-radio, 3-newspaper, 4-internet, 5-enviroment groups, 6-school, 7-government agencies, 8-friends, 9-other (specify)

D5. HOW IMPORTANT IS THE ISSUE OF CLIMATE CHANGE TO YOU? 1-very important, 2-quite important, 3-not very important, 4-not at all important

D6. During the last 10 years, has there been any notable climate change within your farming area?

1-yes, 2-no,

D7. WHAT HAS CHANGED**?**

1- Rise in average temperatures, 2- Decline in average temperatures, 3- Increase in precipitation, 4- Decline in precipitation, 5- Early start to rainfall season 6- Late start to rainfall season, 7- Premature end of rainfall season, 8- Prolonged mid-season dry spells, 9- Increase in floods

D8. HOW HAS CLIMATE CHANGE AFFECTED YOUR COFFEE PLANTATIONS? 1- destroyed by floods, 2- emergency of new pests and diseases, 3- unreliable rainfall, 4-other, specify

D9. HOW HAS THE FARM MITIGATED THE EFFECTS OF CLIMATE CHANGE?

Growing different crops, 2- Using different seeds, 3- Changing type of fertiliser, 4- Using conservation farming 5- Planting at different times, 6- Relying more on small livestock, 7- Use water more efficiently 8- Moving to a new place

D10. DO YOU INCORPORATE ANY TRADITIONAL KNOWLEDGE AND INDIGENOUS PRACTICES INTO ADAPTIVE STRATEGIES FOR COFFEE PRODUCTION 1-Yes; 2-No

D11. IF YES, LIST THE TRADITIONAL KNOWLEDGE AND INDIGENOUS PRACTICES INCORPORATED……
……..

SECTION E – NATURAL RESOURSES MANAGEMENT

E1. WHAT CONSERVATION METHODS DO YOU USE IN YOUR COFFEE PLANTATIONS? *(*Multiple responses possible)

1- Contour ridge / swales, 2- Mulching 3- Zero tillage, 4- Crop rotation 5- Pot holing, 6- Manuring, 7- Inter cropping 8- Terracing/alley farming

E2. WHAT MEASURES, IF ANY, HAVE YOU IMPLEMENTED TO REDUCE ENVIRONMENTAL DEGRADATION ON YOUR COFFEE PLANTATION?.....

E3. DO YOU USE ANY ORGANIC OR SUSTAINABLE FARMING INPUTS? 1- Yes 2- No

E4. ARE THERE ANY TRADITIONAL BY-LAWS THAT ENSURE NATURAL RESOURCE MANAGEMENT IN THE COMMUNITY? *(*Multiple responses possible)

1- Prevention of the cutting of trees, 2- Litigation against veldt fires 3- Restrictions to stream bank cultivations, 4- Limitations to cattle grazing/paddocking 5- Land tenure regulations, 6- Soil conservation, 7- spring protection

E5. WHO ENFORCES THESE LAWS IN YOUR AREA? (MENTION ALL INVOLVED**)**

1. Traditional leadership, 2- Local political leadership 3- Religious leaders – masvikiro, 4- Community based governance structures 5- Other – specify

E6. HAVE YOU EVER HEARD ABOUT GLOBAL GAP? 1- Yes 2- No

E7. ARE YOU REGISTERED FOR GLOBAL GAP? 1- Yes 2- No

E8 IF YES, WHEN DID YOU REGISTER (YEAR)? ……..

Any other comment:

……
……
……
……

Thank you for your time and thoughtful insights!