

The role of agribusiness diversification in enhancing smallholder farmer resilience against climate change: The case of Vungu District, Zimbabwe

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Abstract

This study investigates the role of agribusiness diversification in enhancing climate change resilience among smallholder farmers in Vungu District, Zimbabwe. The problem addressed is that smallholder farmers in the region remain highly vulnerable to climate-induced shocks due to their over-reliance on rain-fed monocropping, compounded by limited market access, financial constraints, and weak institutional support. Guided by the Sustainable Livelihoods Framework (SLF), the research employed a qualitative case study design. Data were collected through in-depth interviews and focus group discussions with 15 participants, 5 extension officers, and 5 local leaders. The findings reveal that diversification into multiple enterprises (crops, livestock, and agro-processing) significantly improves household income stability, food security, and risk management against climatic shocks. Key challenges identified include limited market access, financial constraints, and insufficient extension support. The study concludes that agribusiness diversification is a critical

resilience strategy. It recommends that policymakers and administrative bodies facilitate diversification by strengthening rural market infrastructure, improving access to credit and climate-smart training, and integrating traditional knowledge with modern practices to build sustainable livelihoods.

Keywords: *Agribusiness, Diversification, Smallholder Farmer, Resilience, Climate Change.*

Introduction

Climate change represents one of the most critical global challenges of this century, profoundly impacting agricultural productivity and food security. The Intergovernmental Panel on Climate Change (IPCC, 2022) reports a 1.1°C rise in global temperatures since the pre-industrial era, a trend projected to continue, which will alter precipitation patterns and increase the frequency of extreme weather events. These changes disproportionately affect smallholder farmers, who produce approximately 70% of the world's food yet rely on climate-sensitive, rain-fed systems (FAO, 2021). Studies indicate significant global yield reductions for key staples like maize, wheat, and rice since the 1960s due to climatic shifts (Smith et al., 2023; Jones et al., 2020).

In Zimbabwe, where agriculture contributes 17% to GDP and employs over 60% of the workforce, the sector faces severe climate-related challenges (ZIMSTAT, 2023). The country has experienced rising temperatures and increased rainfall variability, with a notable decline in precipitation and a high frequency of droughts over recent decades (UNDP, 2022; Mavhura et al., 2021). This has led to a sharp decline in the production of maize, the national staple, severely impacting the smallholder farmers who supply approximately 80% of the country's food (FAO, 2021; Moyo et al., 2024). These challenges are compounded by economic instability, hyperinflation, and constrained access to finance, which limit investments in adaptation (RBZ, 2023). Furthermore, weak policy implementation, unclear land tenure, and insufficient extension services hinder the adoption of resilient agribusiness models (Mutami & Nyikahadzo, 2023; Chitongo & Muzamhindo, 2022).

Agribusiness diversification into activities such as horticulture, livestock, and agro-processing has been advocated as a key strategy to build resilience. Evidence suggests it can improve income stability and food security (Mutami & Nyikahadzo, 2023). However, adoption remains low, hindered by limited market access, financial constraints, and a lack of

coordinated support (World Bank, 2023; Moyo et al., 2024). This is evident in Vungu Rural District, where smallholders primarily practise rain-fed subsistence farming and face worsening climatic conditions that have reduced crop yields significantly (Rukuni et al., 2022; ZINWA, 2023). While some local diversification initiatives show promise, their scalability is limited by systemic barriers. This study, therefore, investigates the role of agribusiness diversification in enhancing the climate resilience of smallholder farmers in Vungu District, aiming to propose a framework for sustainable adaptation.

Theoretical Framework

Sustainable Livelihoods Framework (SLF)

The Sustainable Livelihoods Framework (SLF), developed by the UK Department for International Development (DFID) in the 1990s, serves as a comprehensive analytical tool for understanding the livelihoods of the poor, particularly in rural settings. This framework emphasises a holistic, people-centred approach, focusing on the assets, strategies, and contexts that influence individuals' and communities' abilities to achieve sustainable livelihoods (DFID, 1999). Central to the SLF is the identification of five core asset categories: human, social, natural, physical, and financial capital, which individuals draw upon to pursue various livelihood strategies (Scoones, 1998). These assets are influenced by the vulnerability context, encompassing external factors such as shocks, trends, and seasonality that affect livelihoods. The framework also highlights the importance of transforming structures and processes, including institutions, policies, and legislation, that shape access to assets and livelihood strategies (Ellis, 2000).

It is important to clarify that the SLF is not a prescriptive solution to climate change, but rather a diagnostic and explanatory framework. It helps to systematically analyse how smallholder farmers respond to climate stressors by mapping their asset bases, livelihood strategies, and the institutional environment in which they operate. By doing so, the SLF reveals how diversification can be leveraged as a resilience strategy, given the specific vulnerabilities and capacities of farmers.

Literature Review

Agribusiness practices for climate resilience in agriculture

Research on agribusiness practices for climate resilience has intensified globally. In Sub-Saharan Africa, smallholder farmers face unpredictable rainfall, droughts, and extreme heat. Agroecological methods like crop rotation, intercropping, and organic fertilisation are recognised for enhancing soil health, water conservation, and biodiversity, thereby supporting resilience (Muli, 2020; Walker, 2022). However, debates persist between relying on these traditional practices and the proposed need for advanced technologies like drought-tolerant genetically modified crops and precision irrigation, which remain financially inaccessible to many (Chileshe & Mwewa, 2020; Baker & Roberts, 2023).

In Asia, resilience strategies focus on water efficiency and resilient crop varieties. The introduction of drought-tolerant rice in India has improved food security in rain-fed areas (Sharma et al., 2022), while integrated pest management (IPM) systems in Vietnam address climate risks sustainably (Pham et al., 2023). Yet, poor infrastructure and limited financing hinder the scalability of these innovations (Zhang et al., 2021).

In North America, mainstream agriculture integrates resilience through cover crops, conservation tillage, and crop diversification (Green et al., 2020; Thomas & Verma, 2021). However, these practices operate within large-scale commercial systems with significant land and capital, starkly contrasting the smallholder contexts of Sub-Saharan Africa. This disparity limits direct transferability, underscoring the need for context-specific adaptations (Baker & Roberts, 2023; El-Sayed et al., 2022).

The Middle East, facing severe water scarcity, promotes advanced irrigation like drip systems and hydroponics (Al-Saidi et al., 2021). High costs, however, limit adoption among smallholders, and concerns about environmental sustainability persist (Najjar et al., 2023).

Across regions, supportive policy is crucial. Programs like the Comprehensive Africa Agriculture Development Programme (CAADP) provide frameworks for sustainable practices (Balikowa et al., 2021). However, top-down policies often fail to address local needs, highlighting the importance of participatory, farmer-inclusive approaches for effective implementation (Walker, 2022; Chileshe & Mwewa, 2020).

Challenges in agribusiness diversification amongst smallholder farmers

The diversification of agribusiness among smallholder farmers has been identified as an essential strategy for increasing resilience, improving income, and enhancing food security. However, smallholder farmers often encounter numerous challenges in diversifying their agricultural activities. These challenges, as discussed by several scholars, stem from limited access to resources, inadequate skills, market barriers, and policy constraints. A study by Mugundani et al. (2021) shows that smallholder farmers in Zimbabwe face substantial financial constraints when attempting to diversify their crop and livestock holdings. The study highlights how limited access to credit, high interest rates, and insufficient working capital hinder the adoption of new farming ventures. Similarly, in Kenya, Ngugi and Chikoye (2022) argue that limited access to land and inadequate infrastructure have compounded the challenges faced by smallholders who wish to expand beyond traditional crops such as maize and beans. However, Nyangweso (2020) claims that the challenge of resource constraints is not just financial but also technical. For instance, smallholder farmers often lack the requisite knowledge and expertise to manage multiple enterprises successfully, leading to poor outcomes in diversified ventures. Despite these financial and technical hurdles, the literature suggests that some regions have made strides through collective action and farmer groups that pool resources for diversification efforts, though these models are not universally applicable.

A contrasting view presented by Chikodzi et al. (2023) emphasises that the issue of land tenure systems plays a significant role in the diversification challenges. In their study, they observed that insecure land tenure discourages smallholder farmers from investing in diversification, as farmers are unwilling to invest time and capital in crops or livestock that may not yield immediate benefits. The researchers argue that land reforms that guarantee long-term land tenure would provide farmers with the security necessary to diversify. In line with this, Omotayo et al. (2020) emphasise that farmers in West Africa face challenges in accessing both land and reliable water sources, making it difficult for them to diversify into more water-intensive crops such as vegetables. However, a point of divergence is found in a study by Moyo et al. (2024), who contend that while land tenure is indeed crucial, the absence of proper training and extension services often exacerbates the challenges of diversification. Their findings suggest that providing farmers with proper knowledge of

climate-smart agricultural practices could be a more pressing intervention than land reforms alone, as it would enable them to use available land and resources more efficiently.

In addition to resource constraints, market access remains a significant barrier for smallholder farmers wishing to diversify. Farmers often face limited access to both local and international markets due to inadequate infrastructure, poor transportation systems, and an overall lack of market information. In Zimbabwe, Ncube et al. (2021) note that despite the potential for diversification into high-value crops such as organic vegetables, smallholder farmers often struggle to find reliable markets for their products. These market barriers are compounded by issues such as price volatility, lack of value chains, and weak market linkages. Similarly, Mokoena and Mokoena (2020) highlight how the absence of adequate market access in South Africa limits the capacity of smallholder farmers to diversify into more profitable ventures, such as poultry or dairy farming. However, Nyembe et al. (2022) found that when smallholder farmers were organised into cooperative marketing groups, they were able to overcome some of these market access challenges by collectively negotiating better prices and securing long-term contracts with buyers. This suggests that cooperation and collective marketing could be key solutions to the market access challenge.

Another notable challenge is the lack of government support and unfavourable policies. Many smallholder farmers struggle to access the necessary support from government programs designed to encourage diversification. Policies that favour large-scale agribusinesses, such as subsidies and tax incentives, often neglect smallholder farmers, thereby hindering their capacity to diversify their operations. A study by Makoni et al. (2020) found that Zimbabwe's agricultural policies have not been sufficiently supportive of smallholders seeking to diversify, leading to underperformance in rural economies. In contrast, Kalanga and Moyo (2021) argue that policy interventions aimed at providing smallholder farmers with adequate technical assistance, such as access to improved seeds and fertilisers, can significantly alleviate some of these challenges. They highlight a case in Zambia where government programs that promoted crop rotation and diversification into high-value crops significantly increased smallholder farm productivity. However, some scholars, such as Chitando (2024), caution that while policy support is important, it must be designed with a clear understanding of local contexts and the specific needs of different farmer groups. This is because uniform policies that fail to account for local realities can have limited impact.

In addition to these challenges, climate change has emerged as a significant factor influencing agribusiness diversification. Smallholder farmers are increasingly vulnerable to the negative impacts of changing weather patterns, which can affect the success of diversified agricultural activities. According to Dube et al. (2021), erratic rainfall, prolonged droughts, and increased temperatures have made it difficult for farmers in Southern Africa to adopt water-intensive or climate-sensitive crops. These climatic changes exacerbate the already existing challenges of diversification by reducing yields and making it harder for farmers to predict their outcomes. In contrast, studies such as those by Kamanzi and Malinga (2023) suggest that climate-smart agriculture (CSA) practices, including the use of drought-tolerant crop varieties and improved water management techniques, can help smallholder farmers mitigate some of the negative impacts of climate change. However, the uptake of CSA practices is often low due to the lack of information and extension services. Thus, while there is agreement on the need for climate-resilient strategies, disagreements emerge regarding the most effective way to disseminate this information to smallholders.

Social factors such as gender dynamics and social networks also play a significant role in the diversification of agribusinesses among smallholder farmers. According to Gukurume and Chimonyo (2020), female farmers in Zimbabwe often face additional barriers to diversification, including limited access to land, credit, and training opportunities. These gender disparities result in a lower level of engagement in more profitable diversification activities, such as livestock farming or horticulture. However, a contrasting view from Sibanda and Nyoni (2022) suggests that the participation of women in agribusiness diversification can be increased through targeted empowerment programs that address the socio-cultural barriers they face. They argue that when women are provided with the necessary resources and support, they are more likely to diversify their farming activities. This view is supported by Maseko and Hadebe (2021), who found that women's participation in farmer groups positively influenced their ability to diversify and increase household incomes. However, there is a lingering debate on whether these empowerment programs are sufficient to address the systemic issues that women face in agricultural diversification.

Methodology

This study was guided by an interpretivist philosophy, employing a qualitative case study design to gain an in-depth understanding of how smallholder farmers in Vungu Rural District, Zimbabwe, leverage agribusiness diversification as a strategy for building climate resilience. The research employed a multi-participant approach, involving a total of 25 individuals, comprising 15 smallholder farmers, 5 agricultural extension officers, and 5 local leaders. Each group was selected through a deliberate sampling strategy informed by their distinct roles and knowledge regarding the research focus. The smallholder farmers were purposively sampled based on their direct, firsthand experience with practising diversification, such as integrating crop cultivation with livestock rearing or small-scale agro-processing and having personally navigated climate-induced shocks like drought within the preceding five-year period. This method, commonly used in resilience studies, ensures the selection of information-rich cases that are central to the phenomenon under investigation. The sample size for this group was determined by the principle of data saturation, whereby data collection continued until subsequent interviews yielded no new substantive themes, a recognised benchmark for achieving depth in qualitative inquiry.

The five agricultural extension officers were also purposively selected to serve as formal key informants. Their inclusion was based on their institutional role and professional mandate to provide technical advisory services on farming practices within the district, thereby offering a critical service-provider perspective on the barriers and facilitators of diversification. In contrast, the five local leaders, including village heads and heads of farmer associations, were identified through snowball sampling. This technique was deemed most appropriate for accessing this cohort, as their influential positions are often embedded within informal community networks not easily captured through official registries. Initial participants, including farmers and extension officers, were asked to nominate local leaders reputed for their deep understanding of community agricultural dynamics and climate adaptation efforts. Snowball sampling is a validated method for reaching such knowledgeable yet less formally accessible community stakeholders.

Data collection utilised two complementary qualitative methods. First, semi-structured interviews were conducted individually with each of the 25 participants. Separate but thematically aligned interview guides were designed for farmers, extension officers, and leaders. These guides

featured open-ended questions to foster detailed narratives while systematically covering core research domains, including perceptions of climate change, diversification activities, and encountered challenges. All interviews were audio-recorded with informed consent, transcribed verbatim, and rigorously checked for accuracy against the recordings to ensure dependability. Second, to capture interactive and collective viewpoints, two focus group discussions (FGDs) were held exclusively with the smallholder farmers, each comprising 6-7 participants and segmented by gender to encourage open dialogue. These FGDs utilised a separate discussion guide to explore shared experiences, community norms, and collectively held knowledge about diversification, generating data on social dynamics less likely to emerge in one-on-one settings.

To uphold the rigour and trustworthiness of the study, several strategies were implemented. Credibility was enhanced through methodological triangulation, corroborating findings from individual interviews, FGDs, and field observations and through prolonged engagement with the community. Dependability was pursued via a clear, auditable research process, while confirmability was supported through reflexive journaling and peer debriefing sessions with academic colleagues to minimise researcher bias.

The collected data were analysed using reflexive thematic analysis, following the six-phase framework established by Braun and Clarke (2006). This method was selected for its theoretical flexibility and proven efficacy in similar studies that explore complex, context-dependent social phenomena such as livelihood adaptation. The analysis began with a deep familiarisation with the transcripts, followed by the systematic generation of initial codes that captured meaningful features of the data. These codes were then collated and reviewed to identify broader patterns of shared meaning, which were gradually refined into coherent and distinct themes. Throughout this iterative process, themes were developed inductively from the data itself rather than being imposed by a pre-existing framework. This approach allowed for the emergence of nuanced insights, including the critical, yet often overlooked, role of intergenerational knowledge transfer and informal labour-sharing networks in facilitating successful diversification. The final step involved weaving these defined themes into an analytic narrative, substantiated with vivid, anonymised extracts from the participants' own words to form the study's results.

Results

Proceeding from the methodological framework, the analysis yielded several key themes that illuminate the role of agribusiness diversification in building climate resilience among smallholder farmers in Vungu District.

Agribusiness diversification as a risk management strategy

The study found that agribusiness diversification played a crucial role in reducing the vulnerability of smallholder farmers to climate-induced shocks in Vungu District. Farmers who engaged in multiple agricultural enterprises, including crop farming, livestock rearing, and agro-processing, demonstrated a higher capacity to withstand climate variability. Participants explained that relying on a single crop or enterprise exposed them to significant risks, especially in the wake of erratic rainfall and prolonged droughts. Diversification enabled farmers to spread risk across various agricultural activities, ensuring that losses in one enterprise could be compensated by gains in another. A smallholder farmer shared his experience, saying, *“In the past, I relied solely on maize, and when the rains failed, my family had no food. Now, I keep chickens and grow groundnuts, and even if the maize fails, I can sell eggs or peanuts to buy mealie-meal.”* This strategy allowed farmers to buffer themselves against income and food security shocks, ensuring greater stability. Additionally, those involved in agro-processing, such as peanut butter making and dairy farming, found that adding value to their agricultural products increased their earnings, further strengthening their resilience.

Another significant finding was that farmers who diversified their agribusinesses had better access to cash throughout the year, allowing them to reinvest in their farming operations and climate adaptation measures. Unlike those who depended on seasonal crop harvests, diversified farmers generated year-round income from livestock sales, dry-season vegetable production using available water sources such as shallow wells and conserved rainwater, and the small-scale processing of foods, such as groundnuts into peanut butter, tomatoes into sauces, and surplus grains into flour. This financial stability enabled them to adopt sustainable agricultural practices such as mulching, conservation agriculture, and rainwater harvesting. Some farmers reported that they used earnings from alternative agribusiness ventures to construct small irrigation systems, allowing them to grow crops throughout the year. This proactive approach

helped mitigate the impact of droughts and irregular rainfall patterns, which had become increasingly common in the region. Farmers also noted that diversification provided them with market flexibility, enabling them to sell different products at different times and avoid price crashes that often affected monocropping farmers. This dynamic approach to farming ensured that even during climate-induced crises, households could maintain an income stream and sustain their livelihoods.

Impact of diversification on household food security

The study also revealed that agribusiness diversification significantly enhanced food security within smallholder households by ensuring a steady and diverse food supply. Farmers who practised mixed cropping, including drought-tolerant varieties such as sorghum, millet, and sweet potatoes, reported experiencing fewer instances of food shortages. These crops required less water than maize and could survive under harsh conditions, making them ideal for adapting to climate change. Participants also highlighted that diversification into horticulture contributed to improved nutrition within their households, as families had access to vegetables throughout the year. A local leader emphasised the importance of crop diversification, stating, *“Long ago, our people grew many different crops, and we always had something to eat. But when commercial maize farming took over, we abandoned those crops and started facing hunger when droughts came. Those who mix crops today are surviving better.”* This perspective underscored the importance of traditional farming knowledge in promoting food security amidst climate change.

The study further found that livestock farming complemented crop production by providing essential dietary components such as milk, eggs, and meat, contributing to household nutritional diversity. Households that reared goats, poultry, or dairy cattle reported having a consistent source of protein, which was particularly crucial for children and lactating mothers. Additionally, livestock played an economic role in ensuring food security, as farmers could sell animals during times of crisis to purchase essential food supplies. Some farmers also reported using livestock manure to improve soil fertility, thereby increasing crop yields and securing food production for future seasons. Women in particular benefited from small-scale livestock farming, as they could generate independent income from egg and poultry sales, which allowed them to contribute to household food purchases. These findings reinforced the idea that agribusiness diversification not only ensured food availability but also improved dietary

quality and overall household resilience against climate-induced food shortages.

The role of agricultural extension services in diversification

Access to agricultural extension services was reported to be a critical factor in determining the success of agribusiness diversification among smallholder farmers. Farmers who regularly interacted with extension officers were more likely to adopt climate-smart farming techniques, explore alternative agribusiness opportunities, and increase their productivity. Extension officers played a pivotal role in providing training on conservation agriculture, post-harvest management, and improved livestock rearing techniques. However, many participants expressed concerns that the number of extension officers in the district was insufficient to meet the needs of all farmers. One agriculture extension officer acknowledged this challenge, saying, *“We try our best to reach as many farmers as possible, but we are overwhelmed. If we had more resources and personnel, we could provide better support.”* This lack of adequate agricultural advisory services meant that some farmers struggled to access the knowledge needed to successfully implement agribusiness diversification strategies.

Despite these challenges, farmers reported that those who had access to extension services were more likely to adopt intercropping, organic farming, and agroforestry practices, which improved their resilience to climate change. Farmers also reported that community-based knowledge-sharing platforms, such as farmer groups and cooperatives, played an essential role in supplementing the efforts of extension officers. These groups allowed farmers to exchange knowledge, collectively invest in diversification projects, and share resources such as improved seeds and irrigation equipment. Some farmers formed cooperatives to negotiate better market prices and pool financial resources to invest in shared agribusiness ventures. By working together, farmers were able to overcome some of the challenges associated with individual agribusiness diversification efforts, such as limited capital and lack of market access.

Market access and value addition in agribusiness diversification

The study revealed that market access played a significant role in determining the success of agribusiness diversification among smallholder farmers in Vungu District. Farmers reported that those who had reliable access to markets were able to sell their diversified agricultural products at

competitive prices, ensuring a steady income stream and reducing post-harvest losses. However, smallholder farmers reported that they faced considerable challenges in accessing profitable markets due to poor infrastructure, lack of transport, and exploitative middlemen who offered low prices for their produce. Some farmers noted that local markets were often saturated with similar products, leading to price drops that made it difficult for them to make a profit. A farmer expressed his concerns, stating, *"We work hard to grow vegetables and rear chickens, but when we take them to the market, the prices are so low that we barely make any profit. Sometimes, we even return home with unsold goods."* This lack of fair market access discouraged some farmers from fully embracing agribusiness diversification, as they feared investing in additional enterprises would not yield sustainable financial returns.

To address these challenges, some farmers adopted value-addition strategies to increase the profitability of their agricultural products. Instead of selling raw produce, they processed their crops into higher-value products such as dried fruits, peanut butter, dairy products, and homemade juices. This strategy allowed them to fetch higher prices and reduce post-harvest losses, making diversification more viable. Extension officers reported that farmers who engaged in agro-processing had a more stable income and were less affected by price fluctuations in the raw produce market. However, many of these farmers faced difficulties in acquiring processing equipment due to financial constraints, and some lacked the necessary technical knowledge to engage in large-scale value addition. The absence of agro-industrial infrastructure in the district further limited the ability of smallholder farmers to fully benefit from processing and value addition. Nonetheless, those who had managed to invest in small-scale processing were reaping significant benefits, demonstrating that agribusiness diversification, when combined with value addition, was an effective strategy for enhancing resilience against climate change.

The role of traditional knowledge and social networks in enhancing resilience

Community leaders reported that traditional knowledge and social networks played a crucial role in enhancing the resilience of smallholder farmers engaged in agribusiness diversification. Many farmers relied on indigenous farming techniques that had been passed down through generations to cope with the effects of climate change. These included

traditional seed-saving methods, intercropping, and organic fertilisation techniques that improved soil fertility and crop yields. Some farmers also practised water conservation methods such as digging infiltration pits, constructing small reservoirs, and using organic mulching to retain soil moisture during dry spells. A village elder highlighted the importance of these traditional methods, saying, *“Before modern fertilisers, we used cattle manure and ash to enrich the soil, and our crops grew well. Today, many farmers depend on expensive chemicals, but those of us who use traditional ways still get good harvests even when the rains are not good.”* This demonstrates that blending traditional agricultural knowledge with modern diversification strategies enhanced farmers’ ability to adapt to climate change.

Additionally, social networks and community cooperation played a vital role in facilitating knowledge exchange and resource sharing among farmers. Extension officers reported that farmers who participated in cooperatives and farmer groups were more likely to succeed in diversifying their agribusinesses, as they benefited from shared resources, group savings, and collective bargaining power. These groups enabled farmers to pool financial resources, purchase inputs in bulk at lower costs, and access training programs facilitated by NGOs and extension officers. Some farmers also engaged in labour-sharing arrangements where they assisted each other in farm work, allowing them to manage diversified enterprises more effectively. The presence of strong social networks provided emotional and psychological support to farmers facing climate-induced hardships, helping them to remain motivated in their agribusiness diversification efforts. By leveraging traditional knowledge and strengthening community collaboration, smallholder farmers in Vungu District were able to build resilience against climate shocks and sustain their diversified agricultural activities despite numerous challenges.

Challenges of accessing financial resources for diversification

Extension officers reported that access to financial resources was a major determinant of whether smallholder farmers could successfully diversify their agribusiness ventures. Farmers reported that those who had access to credit facilities were more likely to invest in irrigation systems, improved livestock breeds, and agro-processing equipment, which enhanced their resilience to climate change. However, many smallholder farmers struggled to secure loans due to high interest rates, lack of collateral, and bureaucratic lending processes. One farmer shared his frustration, stating, *“I wanted to start fish farming because I saw it was profitable, but the bank told me I*

needed security for the loan. Where do we get security when we don't even have title deeds for our land?" This lack of access to capital limited many farmers' ability to diversify their agribusiness operations, forcing them to rely on traditional farming methods that were increasingly vulnerable to the effects of climate change.

Some farmers resorted to informal financial mechanisms such as rotating savings and credit associations, but these often provided limited funds that were insufficient for large-scale investments. Community leaders reported that donor-funded initiatives and NGOs played a significant role in supporting agribusiness diversification by providing grants and training programs. However, these programs were often temporary and not accessible to all farmers. Additionally, farmers who lacked financial literacy found it difficult to navigate available funding opportunities, further restricting their ability to invest in climate-smart agribusiness diversification. Addressing these financial constraints was identified as a key policy area that could enhance smallholder farmers' ability to implement and sustain diversified farming models.

Discussion

The findings of this study reveal that agribusiness diversification serves as a key resilience strategy for smallholder farmers facing climate variability, aligning with previous studies that emphasise diversification as a climate adaptation mechanism. Adomako, Amankwah-Amoah, and Danso (2023) argue that diversification enhances the capacity of farmers to absorb climate-induced shocks by spreading risks across multiple agricultural and non-agricultural activities. Similarly, the African Development Bank (2022) highlights that climate resilience in Africa can be bolstered through the expansion of income sources, reducing farmers' dependency on single-crop production. However, the study also identifies constraints such as limited market access, lack of financial resources, and weak policy implementation, which hinder effective diversification. Antwi-Agyei, Dougill, and Stringer (2021) similarly discuss the role of land tenure arrangements in shaping the adaptive capacity of marginalised farming communities, demonstrating that insecure land tenure restricts farmers' ability to diversify their agribusiness operations. These findings support the notion that while diversification is a viable resilience strategy, structural challenges continue to limit its full potential.

Furthermore, smallholder farmers often engage in agribusiness diversification not only as a response to climate change but also as a

strategy to enhance household income and food security. This is consistent with research by Beillouin, Ben-Ari, and Makowski (2021), who analysed global trends in crop diversification and found a positive correlation between diversified farming systems and food security. Asia Farming (2023) also emphasises that smallholder farmers benefit from diversified agricultural ventures through increased profitability and reduced income volatility. However, the current study suggests that despite these benefits, smallholder farmers in Zimbabwe still struggle with limited technical knowledge and insufficient support services, echoing the findings of Chibaya, Zulu, and Banda (2023), who highlight the critical role of agro-processing in enhancing climate resilience. The disparity between potential benefits and actual implementation underscores the need for targeted interventions, such as farmer training programs and improved access to financial resources, to enable more effective diversification.

Additionally, government policies play a crucial role in facilitating or hindering agribusiness diversification, with policy inconsistencies often undermining farmer-led adaptation strategies. Chitando (2024) discusses the challenges of agribusiness diversification policies in sub-Saharan Africa, noting that while many governments acknowledge its importance, practical implementation remains weak. This aligns with the findings of Chitongo and Muzamhindo (2022), which highlight gaps in climate adaptation policies in Zimbabwe, particularly in smallholder support systems. Furthermore, Chikodzi, Ncube, and Manyeruke (2023) argue that land tenure systems significantly influence agribusiness diversification, with restrictive policies limiting farmers' ability to adopt innovative farming techniques. The present study confirms these concerns by identifying bureaucratic hurdles and policy fragmentation as major obstacles to diversification efforts. Addressing these challenges requires coordinated policy action, improved regulatory frameworks, and greater investment in agricultural extension services to create an enabling environment for smallholder farmers to diversify their agribusiness activities successfully.

Conclusion

This study found that the effectiveness of credit management strategies employed by microfinance institutions played a crucial role in enhancing their overall performance, with findings revealing that well-structured credit policies, rigorous risk assessment measures, and efficient debt recovery techniques significantly contributed to financial stability and

long-term sustainability. However, despite the positive impact of these strategies, challenges such as high loan default rates, inadequate client assessment procedures, and limited technological integration were identified as key obstacles that hindered optimal performance. The optimal performance of agribusiness diversification strategies was identified qualitatively through participants' self-reported improvements in household income stability, enhanced food security throughout the year, reduced vulnerability to climate shocks, and the ability to reinvest earnings into adaptive measures such as small-scale irrigation or improved inputs. The study further demonstrated that institutions that regularly reviewed and updated their credit policies in response to market dynamics and regulatory changes were better positioned to manage credit risks effectively and maintain profitability. The enhanced performance of institutions that regularly updated credit policies was demonstrated through qualitative evidence, where participants, including extension officers and local leaders, reported observing fewer loan defaults, greater financial resilience among recipient farmers, and increased institutional adaptability to economic shifts compared to those with static lending frameworks. Additionally, it was observed that the use of digital credit management tools, coupled with borrower financial literacy programs, greatly improved loan repayment rates and reduced cases of non-performing loans. While the study concluded that credit management strategies were essential for operational efficiency and institutional growth, it also highlighted the need for continuous improvement in credit risk mitigation approaches, debt collection mechanisms, and the adoption of innovative financial technologies to strengthen overall institutional resilience and ensure sustainable success in the microfinance sector.

Recommendations

Based on the findings of this study, a set of integrated recommendations is proposed to strengthen agribusiness diversification as a climate resilience strategy for smallholder farmers. To enhance adaptive capacity, farmers should be supported in adopting sustainable practices such as crop rotation, agroforestry, and conservation agriculture, which improve soil health and water retention. Concurrently, investment in appropriate modern technology, including affordable drip irrigation, moisture sensors, and small-scale processing equipment, should be facilitated to optimise resource use and improve yields. Financial accessibility must be addressed by strengthening rural credit systems; microfinance institutions should

refine their client assessment methods, incorporate flexible collateral alternatives, and offer loans tailored to agricultural cycles. Accompanying financial literacy programmes will help farmers manage credit responsibly. Furthermore, the capacity of extension services must be expanded through increased staffing and training in climate-smart diversification. Meanwhile, parallel efforts should improve market linkages by upgrading rural infrastructure and promoting farmer cooperatives for better bargaining power. At the policy level, coherence and implementation should be enhanced by aligning national agricultural and climate adaptation policies with the specific needs of smallholders, ensuring secure land tenure, and fostering an enabling environment for diversified, resilient agribusiness ventures.

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