

The Impact of Agricultural Innovation on Social Structures in Rural Communities of Matabeleland North, Zimbabwe

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Abstract

Original Research Article

This study examined the effects of agricultural innovation on social structures in rural communities of Matabeleland North, Zimbabwe. The study acknowledges the role of agricultural innovation as a mixture of technological advancements and social change, and examines the impacts of such innovation on traditional leadership, community involvement and social cohesion. The data was collected using a purposive sampling of 44 participants which comprised traditional leaders, farmers, youth representatives and agricultural extension officers through semi-structured interviews and focus group discussions.

The findings show that there has been a partial transformation of social structures through innovation in agriculture without the removal of traditional leaders. Mobile money platforms, solar home systems and conservation agriculture, among other innovations, have improved resilience and productivity, making them more inclusive, especially for women and youth. The role of traditional leaders is integral to governance, and increasingly, they share influence with educated and digitally literate individuals. The study highlights opportunities such as empowerment and effective communication, and challenges such as capacity constraint and conflict between old and new governance systems.

The findings highlight the importance of building capacity, providing access to affordable technologies, establishing an inclusive community awareness program, as well as deepening partnership and cooperation between traditional and new forms of leadership for enabling rural development in an equitable and sustainable manner.

Keywords: Agricultural innovation, traditional leadership, social structures, community participation, Matabeleland North, Zimbabwe, resilience, inclusivity.

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Introduction

Among many innovations in the agricultural sector, the rise in technical advancements and social changes both contribute to overall agricultural innovation and impact rural livelihoods worldwide. Although innovations like improved seeds, irrigation technology, and climate-smart practices

have recently gained significant attention for their productivity benefits, their role in strengthening social structures in rural communities has received far less focus. These innovations can create a change in local leadership, community networks, participation in decision making and social relations. This shift in power dynamics and social structures, driven by the integration of new farming



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methods and digital agricultural platforms, has had mixed impacts on social inequalities, depending on cultural contexts, governance systems, and pre-existing inequalities (Littlewood, 2022; Suri & Jack, 2021; Spitzer, 2023).

In developed countries such as the United States and Europe, innovation in agriculture intersects with policy-based social programs designed for inclusiveness and sustainability. Precision agriculture technologies in the U.S., for instance, have transformed farm management, but also led to greater land concentration and marginalization of smallholder farmers, resulting in an increase in social authority at the hands of corporate and technological elites (Graham, 2020; Suri & Jack, 2021). In contrast, the European programs include technological change and participatory approaches which aim to include smallholder farmers, but exclude those who are not resource-rich or certified (Thapa et al., 2026). State-driven technological integration has played a crucial role in shaping rural authorities in Asia, especially China and India, where technology managers are valorized and younger farmers who are more knowledgeable in using technology are promoted, potentially creating inter-generational tensions (Long & Yang, 2025).

The pressure for innovation in Africa is frequently dictated by need: problems like climate variability, water scarcity and food insecurity drive agricultural innovation. New technologies, such as conservation agriculture, drought-resistant crops and mobile digital apps, have improved resilience, and are changing social norms and community governance. A notable example is the financial innovations that Kenya's M-Pesa has brought, which has transformed traditional kinship and wealth sharing networks, giving women greater agency and creating new ties (Van Hove, & Dubus, 2019). Access to these innovations, however, is often unequal, often exacerbating existing social inequalities, and there is a need for inclusive frameworks (Mawere et al., 2024).

Agricultural innovation's impact on social structures is complex and context dependent within Southern Africa, this includes Zimbabwe. Innovations can

also enhance community networks and productivity but can also undermine traditional community structures of authority by redirecting influence to project committees, extension officers or technologically literate people (Ndhlovu, 2024). This dynamic can present fresh opportunities for participation and tensions between customary leadership and new actors. Zimbabwe's development plans highlight climate-smart agriculture, digital technologies, and irrigation as key factors for rural transformation (Government of Zimbabwe, 2022). However, the social impacts of such interventions, especially in rural areas such as Matabeleland North, have not been sufficiently studied. The *Zunde raMambo/ Isiphala seNkosi*, models are one of the most feared cultural models to be extinguished by technology as technology mainly promote individualism which is different from the collective model of the traditions. Previously officers of Agritex and now known as Agricultural Business advisory officers in Zimbabwe play an important role in educating individual farmers and rural communal farmers about their Agri-businesses that can be a threat to community leaders.

Matabeleland North is a dry arid region with recurrent droughts, and limited water resources, which poses a high risk of food insecurity and climate variability (ZimVAC, 2020). In this context, there have been initiatives to increase resilience and productivity in the agricultural sector by introducing such innovations as drought resistant crops, water harvesting, community-based irrigation management projects, and digital platforms such as mobile applications and computers. For these innovations to be successful, the social capital of cooperation, trust and collective action is key (Matunhu, 2022). They also contribute to the reconfiguration of social and institutional systems by reallocating roles and power within communities. For instance, community irrigation schemes could give power to cooperative members but not to those who run lower resource levels or are older and less tech savvy, and digital platforms could tilt the balance in favor of younger, tech-

savvy farmers. Gender dynamics are seen to be significantly impacted, where the traditional role of women in agriculture can be reinforced with increased access to resources, or weakened with extra responsibilities (Matunhu, 2022).

Although agricultural innovation has become important in Matabeleland North, there is much uncertainty regarding the impacts of these innovations on the traditional social structures and leadership. These innovations are supposed to enhance productivity and community development but the impact on the authority and social cohesion of the traditional leadership is still limitedly understood (Nyathi, 2023). Existing efforts have tended to ignore the intricate dynamics of conventional authority and modern innovation, leading to few changes in power and limited community engagement, especially in the participation of women and youth (Mahiya 2023). If such dynamics are not considered, rural communities may continue to be socially excluded and fail to reap the necessary empowerment benefits to make sustainable development and resilience possible.

This study aims at investigating the impact of agricultural innovations on the roles and powers of traditional leaders in rural communities of Matabeleland North in the face of these problems. It is intended to examine how new agricultural practices are implemented and adopted by traditional leaders and community members and to shed light on the power and participation dynamics in this new and changing landscape. In addition, the research highlights the problems and possibilities that agricultural innovation poses to traditional leadership for social cohesion and community development. Lastly, it attempts to suggest strategies that drive innovation to bring about social change with a focus on improving equity, participation and community resilience. The study intends to help establish a more complex picture of the process of agricultural innovation as one that is socially embedded not only as a technical process, but as one that can lead to inclusive and sustainable rural transformation in Zimbabwe.

Theoretical framework

Structuration and Social capital theories were used to direct the study. They were combined to offer a comprehensive lens to examine the impacts that agricultural innovations have on social organization, leadership and community involvement in rural areas.

Structuration Theory was created by the British sociologist Anthony Giddens in his influential book, *The Constitution of Society* (1984). The theory examines the process of institutional change as dynamic and incremental, and how social structures are both the medium and product of social practices. The theory has been used in several studies to explain the social and institutional changes, such as in the rural area by Ulrich Koester & Bernhard Brümmer, (2006) and the consequences of power dynamics in agricultural innovation in Zimbabwe by Nyati et al., (2025), and social innovations in agriculture by Spitzer (2023).

Social Capital Theory has its origin in the early studies of Pierre Bourdieu (1986) and James Coleman (1988) but has come to the fore in the research of Robert Putnam on community and civic involvement in the 1990s. It is centered on the importance of networks, relationships and norms for collective action, social cohesion and inclusive development. This theory has been applied to various contexts to look into the social aspects of agricultural innovation and community resiliency, including in the studies of Mutengwa et al. (2023) on Climate-Smart Agriculture and Food Security in Southern Africa; the work of Matunhu (2022) on water management and gender in irrigation schemes in Zimbabwe; and the work of the Food and Agriculture Organization (FAO, 2023) on gender empowerment through agricultural innovation.

The combination of the Structuration and Social Capital theories is very beneficial as it gives an integrated approach to the dynamics of institutional changes and social network functions in agricultural innovation. Structuration Theory provides an explanation of the way that social structures and

power relations develop over time, and Social Capital Theory specifies the role of relationships, trust, and norms in community participation and collective action. Theories when combined can inform a comprehensive examination of the impact

of agricultural innovations on social organization, leadership, and participation of communities in rural areas.

Conceptual Framework: Agricultural Innovation and Traditional Leadership

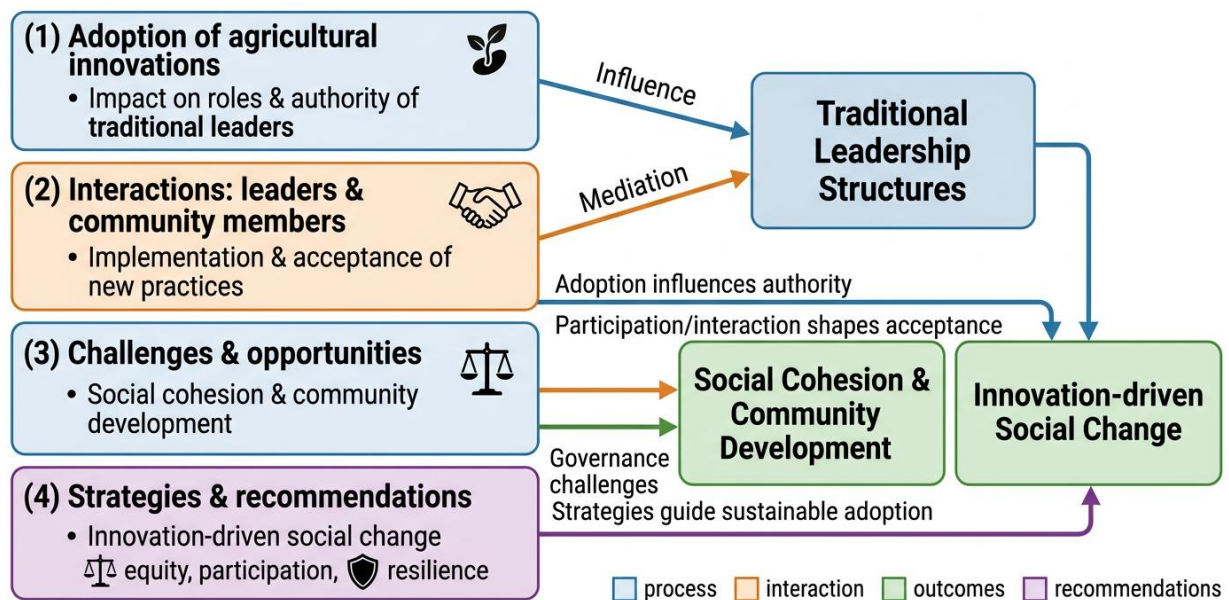


Figure 1: Conceptual framework- Source: (Researcher 2026)

This conceptual framework shows how agricultural innovation and traditional leadership are interrelated. It emphasizes the impact that new farming methods have on traditional forms of leadership and the ways these forms of leadership affect communications between chiefs and community members. These interactions influence the acceptance and implementation of innovations and challenges or opportunities in the community influence social cohesion and social development. Finally, strategies and recommendations inform sustainable innovation-driven social change, with a focus on equity, participation and resilience.

Methodology

This study used a qualitative research design approach that investigated the impact of agricultural innovations on rural communities in Matabeleland North from a deep analysis of the social impacts. The qualitative approach helped to gain a nuanced and contextually rich understanding of the intricate social dynamics of traditional leadership, community engagement and innovation uptake.

Target Population

The target population consisted of Matabeleland

North residence which amounts to a population of 827,645, according to the 2022 national census by the Zimbabwe National Statistics Agency (ZIMSTAT, 2022). Representatives from key stakeholders in agricultural innovation initiatives – including agricultural extension officers and NGO representatives were also included to bring in a variety of perspectives.

The respondents were selected using purposive sampling on the basis of their direct experience and/or strong impact on innovations in agriculture. A total of 44 people including traditional leaders, farmers, youth representatives, extension officers and NGO staff were included in the sample. This sampling guaranteed that the data was a result of informed insights which were relevant to the research questions.

Data Collection Instruments

Semi-structured interviews were carried out with key informants (traditional leaders, extension officers and NGO representatives) to gather in-depth information on leadership and challenges, and opportunities in agricultural innovation. Focus group discussions (FGDs) with farmers and youth groups to gain insight into farmers' and youth groups' views on community perspectives on innovation adoption, participation and social change.

Data Analysis Methods

Thematic content analysis was used to analyze the qualitative data from interviews and FGDs. Thematic analysis was used in this method to systematically identify key themes related to leadership dynamics, social inclusion, and community development and innovation impacts. Transcripts were analyzed in detail to uncover patterns, relationships, and subtle understandings of the changing social context.

Research Strategy

A case study method was used in the study and the

case study is based on the selected rural communities in Matabeleland North. This strategy allowed this social process and social interaction to be studied in-depth in their natural context, offering in-depth insights into the implications of agricultural innovation for traditional leadership and community unity.

Ethical Considerations

Relevant academic and local authorities had given ethical clearance before the data collection. Participants were fully informed regarding the purpose of this study, their voluntary participation, and that they have the right to withdraw whenever they wish without any penalty. Participant codes and secure data storage were used to ensure confidentiality and anonymity. Prior to starting interviews and focus groups, written informed consent was obtained. There was a respect for cultural sensitivities, particularly with traditional leaders and community members.

The qualitative methodology adopted ensured that the study was conducted from a community perspective and the findings were based on the lived experiences and perspectives of the community affected by agricultural innovation in Matabeleland North.

Results

The study revealed that in Matabeleland North agricultural innovations have resulted in some changes in social structures. Traditional leadership has been preserved without significant changes, whereas the social arrangements have changed to be more inclusive, particularly with more women and youth participating. This is reflected in the establishment of project committees for agricultural activities, and the involvement of the wider community, though leadership of those committees have shifted a little bit moving from communal leaders to now the government led organizations.

Engaging the involvement of traditional leaders remains a key component in promoting the uptake and adoption of new farming techniques, where

their acceptance and endorsement matters greatly. In the interim, decision-making and agricultural management has become more active among community members, especially women and youth, enhancing social cohesion and community participation.

The traditional leadership faces both challenges and opportunities in the innovations. The transition to new and more inclusive roles may be challenging, but such changes have helped to improve communication and collaboration in communities.

Marginalized groups have helped to build leadership for community development and resilience.

Some strategies that were identified to promote innovation-led social change are inclusive project committees, ongoing traditional leader capacities building and community sensitization programs to promote equitable participation. All this helps to create a more resilient and participatory social framework, one in which traditional authority is balanced with innovation.

Word cloud



Figure 2: Word cloud, Source, (Researcher, 2026)

The word cloud is a visual representation of these important findings. Its heart is Agricultural Innovation, which is the force that propels social

change in rural Matabeleland North.

The importance of traditional leadership and community participation is highlighted, reflecting

the long-term relevance of traditional leadership and changes in social relationships. The presence of Women and Youth in a visible manner indicates that they are increasingly involved in the decision-making process as well as participation in agricultural projects, reflecting a more inclusive social structure.

The words Empowerment, Resilience, and Cooperation highlight the opportunities afforded by innovations for marginalized communities to become agents and improve their connection to the community. The mention of terms such as Irrigation, Digital Platforms or Climate-Smart Agriculture highlight the innovations of the livelihoods and the social relations.

Challenges, Opportunities and Social Cohesion show how these changes have a dual nature: on one hand, these changes create benefits and opportunities for collaboration, but on the other hand, they also pose new difficulties for traditional leaders who need to overcome to ensure unity and equitable development.

The new organizational forms and improved information flows for participation and collective action are highlighted in Project Committees and Communication.

The results combined with the word cloud show the dynamic between technological development and social change. Agricultural innovation in Matabeleland North alters roles, authority and participation, but does not replace traditional roles and structures, but rather makes them more inclusive and dynamic.

Discussion

The findings of this qualitative study highlight how agricultural innovation in Matabeleland North is complex in relation to social structure, governance, and livelihoods. The experiences shared by participants were rich, and mirrored the broader trends in rural Africa in terms of access to markets and inputs, such as the adoption of digital tools like mobile money platforms (Mugoro & Makhura, 2025). In the discussions, however, it was found that the limitations of infrastructure and networks

are critical factors which affect the reach of these innovations, as presented in the study of Chimanimani (Marango & Chitongo, 2023).

The participants noted that solar home systems are essential tools for climate change coping and adaptation, which is consistent with the reports by Madziyauswa (2025). The stories of conservation agriculture practices such as *Pfumvudza* confirmed local adaptation and good policy implementation in line with Zimbabwe's National Development Strategy (Government of Zimbabwe, 2022).

The interviewees said that the traditional leadership is still a major part of social dynamics but is changing. There is an increase in youth participation and digitally literate people who are now challenging the authority of the traditional leaders, which supports the Structuration Theory (Giddens, 1984) and the study conducted by Ulrich Koester & Bernhard Brümmer, (2006). The emergence of knowledge-based authority is also noted by Bolisani, & Bratianu, (2018) and it complements the traditional power structures.

There was a notable theme of gender empowerment, with participants reporting more women to be involved in decision making and economic activities, in line with FAO (2023). There are, however, cultural norms that continue to serve as barriers and need to be targeted.

In addition, participants' narratives also demonstrated capacity gaps, resource limitations, and institutional friction, among other issues also highlighted by Muzondo and Pashapa, (2025). The presence of project committees and traditional governance and regular conflicts corroborate the conclusions of Tyhotyholo, and Nokele, (2024).

Community awareness, affordability, and communication emerged as crucial factors for equitable innovation uptake, aligning with the development discourse (Rakgwata et al., 2025). But even as youth and women gain in influence, they are still opposed and resisted in traditional leadership. However, tradition and transformation remain a conflict as youth and women are opposed and resisted in formal leadership.

The observation that the innovation process in

agriculture is socially situated and a component of social connections and power is supported by this qualifying data. The function of traditional institutions must be modified, knowledge gaps must be filled, and marginalized groups must be empowered in order to promote inclusive and sustainable rural change (Spitzer, 2023).

Conclusion

From this study it can be concluded that agricultural innovations in Matabeleland North have begun a slow change in the social structures without the elimination of traditional leadership. Digital platforms, conservation agriculture and solar technologies are among the innovations that strengthened participation, especially for women and youth, leading to inclusive and resilient solutions. But there remain capacity, resource and institutional issues and tensions, suggesting that there is not a uniform or automatic pattern of social change. To ensure sustainable rural development, a balance needs to be struck between innovation-led change and sensitivity for the existing social and governance structures.

Recommendations

- **Community and Community Leaders:** Strengthen capacity-building to support agricultural innovations and inclusive leadership.
- **Policymakers:** Ensure affordable access to agricultural technologies for equitable participation.
- **NGOs:** Empower women and youth through targeted leadership and training programs.

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