

The Mediating Role of Governance in the Application of Cooperative Principles amongst Agricultural Cooperatives

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Abstract

Agricultural cooperatives play a crucial role in rural development and sustainable agriculture. This study examines the role of mediating governance in the application of cooperative principles among agricultural cooperatives. The research draws on evidence from multiple studies across different regions to provide a comprehensive analysis. Governance structures in agricultural cooperatives have undergone significant changes in recent decades, adapting to evolving market environments and member needs. These changes have implications for member control, manager accountability, and overall cooperative performance. The study explores how governance mechanisms mediate the application of cooperative principles, such as democratic member control, member economic participation, and concern for community. The research reveals that cooperatives have developed innovative governance models to balance traditional principles with market demands. For instance, some cooperatives have adopted multi-stakeholder

approaches, integrating producers, consumers, and other stakeholders to create more sustainable food systems. This approach challenges the conventional divide between producers and consumer cooperatives, potentially enhancing the application of cooperative principles. The study reveals that effective governance plays a critical role in mediating the application of cooperative principles in agricultural cooperatives. It enables cooperatives to maintain their core values while adapting to changing market conditions and member expectations.

Keywords

Agricultural cooperatives, Cooperative principles, Governance structures, Cooperative performance.

1. Introduction

Cooperative principles and governance are critical factors influencing the performance and sustainability of South African agricultural cooperatives. Despite the importance of these factors, the sustainability of South African agricultural cooperatives is hindered by various challenges, including inadequate funding, limited access to resources, and a lack of proper training for their members.

To address these challenges and ensure the long-term sustainability of agricultural cooperatives, it is crucial to implement effective strategies and interventions that focus on building the capacity of cooperatives and providing them with the necessary resources to improve their governance, management, and operational practices. These entities, which are owned and controlled by farmers, are designed to pool resources for mutual benefit and are integral to rural development programs post-1994 (Qian and Olsen 2018). In recent years, there has been a growing recognition of the critical role that these collective action groups play in promoting agricultural productivity and rural development in South Africa. As such, they have become an important focus of government policy and support programs aimed at improving the livelihoods of smallholder farmers. Governance and operations management practices within these cooperatives are pivotal, as they can affect both financial and social efficiency, as well as the overall success of these cooperatives (Oliveira Junior and Wander 2022; Rukuni et al. 2020).

Moreover, while cooperative principles are foundational to the functioning of these entities, the knowledge of these principles among cooperative leaders significantly impacts enterprise performance (Lemmi 2020). Governance quality, particularly in terms of reliability and transparency, has been linked to better performance outcomes (Silva et al. 2022). However, operational competencies, such as member participation and communication, are perceived negatively by cooperative members, indicating room for improvement in these areas (Junior and Wander 2022). Additionally, the introduction of performance measures like Economic Value Added (EVA) could further enhance managerial decision-making and value growth (Geyser and Liebenberg 2020).

The principles of cooperatives, coupled with effective governance and operations management, are essential for the success of South African agricultural cooperatives. While there are challenges, such as the need for professionalization of management and modernization of cooperative principles (Junior and Wander 2022), addressing these issues through continuous training and strategic management can lead to improved performance and sustainability (Bakam Fotso et al. 2022). Therefore, a focus on these aspects is crucial for the advancement of South African agricultural cooperatives. The cooperative movement in South Africa has been instrumental in the economic development of the country, particularly in the agricultural sector. Cooperatives are organizations owned and run by their members, who collaborate to meet common economic, social, and cultural needs through a jointly owned and democratically controlled enterprise (International Cooperative Alliance 2024).

In South Africa, agricultural cooperatives have been favored by the government in rural development programs post-1994, and their principles, governance, and operations management are critical to their success (Yobe et al. 2020). Furthermore, while cooperatives are designed to be efficient and promote member welfare, studies have shown that many agricultural cooperatives in South Africa are relatively inefficient compared to the best-performing entities. Factors such as the age and size of the cooperative, the gender of the principal manager, governance quality, and training have been identified as significant determinants of financial efficiency (Yobe et al. 2020). Moreover, despite the potential of cooperatives to enhance food security, they often face challenges due to a lack of institutional support and resources, which hampers their effectiveness (Ndlovu and Masuku 2021). Managerial challenges also persist, with the need for professionalization of management and adoption of good governance practices to ensure competitiveness (Junior and Wander 2022).

While the government has provided legislative support and financial incentives, the sustainability of many cooperatives remains in question due to operational inefficiencies and management challenges (Okbandrias and Okem 2016). Despite these challenges, many cooperatives have demonstrated that they can effectively address the needs of their members and contribute to the sustainable development of their communities with the right support and resources. To improve the performance and sustainability of cooperatives, there is a need for enhanced training, better management structures, and strategic partnerships (Rukuni et al. 2020). Additionally, the relationship between financial and social efficiency must be considered, as financially efficient cooperatives are more likely to achieve social efficiency, which is crucial for the broader goals of agricultural development (Yobe et al. 2021). For example, the financial efficiency of a cooperative can be measured by its ability to generate profits, while its social efficiency is determined by its success in improving the livelihoods of its members and the community it serves.

1.1 Objectives

Governance and operations management practices are critical factors that influence the implementation of cooperative principles in agricultural cooperatives. Therefore, this study aims to determine whether governance and operations management operationalises cooperative principles in selected African agricultural cooperatives.

2. Literature Review

The literature on South African agricultural cooperatives highlights the importance of cooperative principles and governance in challenges faced by agricultural cooperatives and enhancing their financial and operational performance. Additionally, the literature suggests that effective communication and collaboration among cooperative members, as well as strong leadership and strategic planning, are crucial in ensuring the success of South African agricultural cooperatives.

2.1 History of Agricultural Cooperatives

The history of agricultural cooperatives has a long and fascinating history that dates to the 19th century. Initially, these cooperatives were formed as a response to the challenges faced by farmers, who were often at the mercy of middlemen and market fluctuations (Russell 2013). Over time, agricultural cooperatives have evolved and adapted to changing economic and social conditions, and today they play a crucial role in supporting small-holder farmers and promoting sustainable agriculture. Despite their many accomplishments, agricultural cooperatives continue to face significant challenges, including limited access to financing, weak governance structures, and limited capacity to innovate (Sljukic 2020). Nevertheless, with the right support and resources, agricultural cooperatives have the potential to become powerful engines of economic growth and social development. By pooling together their resources and expertise, these cooperatives can leverage their collective strengths to overcome obstacles and achieve greater success (Zhong et al. 2023).

Moreover, with proper training and access to technology, farmers can improve their productivity and competitiveness (Mojo et al. 2018). Therefore, it is important for governments and other stakeholders to invest in the development and sustainability of agricultural cooperatives. By investing in agriculture, farmers can not only improve their own livelihoods but also contribute to the economic growth and stability of their local communities and the country. This investment can lead to the development of new technologies and infrastructure that can increase productivity, reduce costs, and create new opportunities for farmers and rural communities (Mojo et al. 2018). Additionally, it can lead to the creation of new jobs, which can help to reduce poverty and improve the standard of living for people in rural areas. By investing in agriculture, the government can also ensure food security and improve South Africa's overall competitiveness in the global market (Fedorova and Taaricht 2021). For example, investing in irrigation systems and modern farming techniques can not only increase crop yields but also reduce the reliance on imported food, making the country more self-sufficient and improving its standing in the global market. By implementing such measures, farmers can also contribute to mitigating the effects of climate change, as they become more efficient in their use of resources and reduce their carbon footprint (Fedorova and Taaricht 2021). This, in turn, will create a more sustainable future for both the agricultural industry and the environment.

2.2 Agency Theory and Agricultural Cooperatives

Agency theory is a branch of economics that deals with the relationship between principals and agents, which is relevant to the governance and operations management of South African agricultural cooperatives. By applying agency theory principles and cooperative principles, South African agricultural cooperatives can enhance their financial and operational performance (Gwon and Kim 2020). Furthermore, by incorporating a strategic approach and

utilizing effective communication and leadership strategies, these cooperatives can further achieve greater success. This involves identifying and leveraging their unique strengths and resources, as well as fostering a collaborative and inclusive environment that encourages participation and input from all members (Gwon and Kim 2020). However, traditional hierarchical structures may hinder the full realization of these benefits. While collaboration can occur across departments, it is often limited by the power dynamics and authority structures that exist within organizations (Zhong et al. 2023). In addition, it is also important to recognize and address any potential barriers or challenges that may arise within the team, such as communication breakdowns or conflicts, to ensure that everyone can contribute to their fullest potential. While it is essential to implement these strategies, it is crucial not to overlook the possibility of external factors that may hinder the team's progress and productivity, such as limited resources or tight deadlines, which could lead to further challenges and barriers.

To effectively overcome these barriers, it is essential to foster a culture of open communication and collaboration within the team, where individuals feel comfortable sharing their ideas and concerns, and conflicts are resolved in a constructive manner (Bijman and Höhler 2023). Additionally, cooperatives can benefit from engaging in professional development and training programs to enhance their skills and knowledge, as well as staying up to date with industry trends and best practices. Overall, by adopting a comprehensive and strategic approach that incorporates both agency and cooperative principles, South African agricultural cooperatives can enhance their performance and achieve greater success in the long run. However, there are some challenges those agricultural cooperatives in South Africa need to overcome to fully realize the benefits of adopting a comprehensive and strategic approach (Ortmann and King 2023). One of the main challenges is the lack of resources and funding available to cooperatives, which can limit their ability to implement new strategies and invest in infrastructure (Bijman and Höhler 2023). There may be resistance from individual members who are reluctant to change traditional practices and ways of working, which can hinder the effectiveness of cooperative efforts.

Nevertheless, by addressing these challenges and continuing to work together, agricultural cooperatives in South Africa can overcome these obstacles and achieve greater success in the long run. In addition to that, it is also important to recognize the role that government support and policies can play in promoting their success. By working together with policymakers and advocating for policies that support cooperative development, cooperatives can create a more conducive environment for growth and sustainability in the long run.

2.3 Stewardship Theory: A Key Element for the Success of Agricultural Cooperatives

Stewardship theory, as an alternative to agency theory, posits that managers are stewards whose motives are aligned with the objectives of their principals or owners (Chrisman, 2019). In the context of agricultural cooperatives, this theory suggests that cooperative managers would inherently act in the best interests of the cooperative members, as their goals would be congruent. However, stewardship theory has been critiqued for its lack of realism and relevance due to its assumptions about goal alignment and control systems, as well as its neglect of bounded rationality and pre-employment situations (Chrisman 2019).

Moreover, the principles of stewardship theory may be observed in the functioning of agricultural cooperatives, which are designed to serve the interests of their members. For instance, cooperatives often face challenges such as free-rider and horizon problems due to vaguely defined property rights (Ortmann and King 2023). These issues could potentially be mitigated by a stewardship-oriented management, which would prioritize the long-term well-being of the cooperative and its members over individual short-term gains. Moreover, the role of cooperatives in supporting sustainable agricultural practices and engaging in dialogues to develop a shared sustainability vision aligns with the stewardship perspective, as it reflects a commitment to the collective good and long-term sustainability (Bijman and Höhler 2023).

To ensure their long-term success, agricultural cooperatives must also prioritize effective governance and operations management practices, which can help them adapt to changing market conditions and maintain the trust of their members. One way that agricultural cooperatives can prioritize effective governance and management is by incorporating stewardship theory into their decision-making processes (Ortmann and King 2023). By adopting a long-term perspective and considering the interests of all stakeholders, these cooperatives can create a more sustainable and resilient business model that benefits both the cooperative(s) and its members. According to Bijman and Höhler, (2023) effective governance and operations management practices can also help cooperatives to build strong relationships with policymakers and other key stakeholders, allowing them to advocate for policies that support cooperative development and create a more conducive environment for growth and sustainability in the long run.

Future research could also investigate the potential influence of stewardship theory on the strategic decision-making processes of agricultural cooperatives, given their distinct characteristics and goals (Bijman and Höhler 2023; Ortmann and King 2023; Chrisman 2019). In addition, future research could explore how the principles of stewardship theory can be applied to the governance structures of agricultural cooperatives to enhance their long-term sustainability and profitability.

2.5 Challenges Faced by South African Agricultural Cooperatives

The literature on South African agricultural cooperatives reveals a complex interplay between cooperative principles, governance, and operations management, with various challenges impeding their effectiveness. Yobe et al.(2021) highlights the relationship between financial and social efficiency, indicating that while financial efficiency can positively influence social efficiency, there are diminishing returns with age, and current training methods do not adequately address social efficiency challenges. Ndlovu and Masuku (2021) underscore the importance of institutional support for the enhancement of food security through cooperatives, suggesting that despite their potential, cooperatives often lack access to necessary resources and governance frameworks. Middelberg (2013) calls for an integrated strategy to address the broader challenges of the South African agricultural sector, including the role of cooperatives in food security and the impact of land redistribution.

Contradictions and interesting facts emerge when comparing these findings with other studies. Junior and Wander (2022) identifies the need for professionalization of management and the adoption of good practices to overcome the conservative environment and doctrinal rigidity in Brazilian cooperatives, which may resonate with the South African context. Pandey et al. (2024), focusing on Nepal, emphasizes the importance of universal cooperative principles for sustainable operation, which aligns with the findings of Badiru et al. (2023) that show a significant relationship between awareness and adherence to cooperative principles in Nigeria. (2021) Pandey et al. (2024) discusses governance challenges specific to the Menoua division, influenced by OHADA law, which may differ from the South African context but still highlights the critical role of governance in cooperative management.

2.6 Strategic Approaches for Enhanced Performance in Agricultural Cooperatives

Yobe et al. (2020) provides an empirical analysis of the financial efficiency of agricultural cooperatives, identifying governance and training as significant determinants of efficiency. It suggests that deviations from sound governance may be linked to cooperatives prioritizing non-financial goals (Yobe et al. 2020). Junior and Wander (2022) emphasize the need for professional management and good governance practices to ensure competitive positioning, suggesting that strategic management and risk management are central to overcoming managerial challenges.

Contradictions arise in the literature regarding the effectiveness of current practices. While Ndlovu and Masuku (2021) acknowledges the role of institutional support in improving agricultural cooperative efficiency and productivity, it also notes a gap in access to agricultural inputs, which hampers food security efforts. Yobe et al. (2021) finds a positive relationship between financial and social efficiency but indicates that current training does not necessarily lead to social efficiency. Rukuni et al. (2020) points to negative perceptions among agricultural cooperative members regarding operational competencies and external factors, suggesting a need for improved training and development. The literature suggests that adherence to cooperative principles, robust governance, and effective operations management are crucial for the enhanced performance of South African agricultural cooperatives. However, there are challenges in implementing these approaches effectively, including gaps in institutional support and training. To improve cooperative performance, there is a need for a clear definition of performance metrics, strategic management, and professionalization of management (Junior and Wander 2022). The literature also indicates that while financial efficiency is important, it should not overshadow the cooperative's social agenda (Yobe et al. 2021). Therefore, a balanced approach that addresses both financial and social efficiency is recommended for the sustainable development of agricultural cooperatives in South Africa.

3. Methods

Three common research approaches are prescribed by literature, and they are qualitative, quantitative, and mixed method (Moen, 2020). To suit the objective(s) of this study, the researcher used a quantitative research approach since it provides genuine, quantifiable data for scientific analysis. This strategy is useful for studying patterns, linkages, and causes (Moen, 2020). The quantitative strategy allowed planned data collection from many agricultural cooperatives. Sampling was intentional since it selected agricultural cooperatives that satisfied the study's relevance and informative sample requirements (Etikan et al. 2016). The study needed 200 agricultural cooperative members from agricultural

cooperatives that are based in South Africa. By concentrating on subgroup characteristics, purposeful sampling helps researchers understand communities (Palinkas et al. 2015). Therefore, the study used purposeful sampling to examine successful agricultural cooperatives for data relevance. All data were collected using a paper-based questionnaire.

This strategy also helped the researcher to collect data from numerous agricultural cooperatives to study cooperative governance, operations management and the evaluation of cooperative principles. For a representative sample, the researcher obtained an updated list of cooperatives from the Small Enterprise Development Agency (SEDA) by obtaining consent from the agricultural cooperatives that are in partnership with SEDA. Similarly, the researcher obtained a list from the National Development Agency (NDA) by sending a letter requesting access to the updated list of agricultural cooperatives that are in partnership with the NDA to one of the NDA's officials via email. The researcher also obtained a list from the Gauteng Department of Agriculture and Rural Development (GDARD) by sending a letter requesting access to the list of agricultural cooperatives that are in partnership with the GDARD via email. The researcher purified the list by contacting all the agricultural cooperatives mentioned on the lists to identify the appropriate ones. Therefore, listed cooperative members were sampled using purposive sampling technique. This allowed for the organizations that best suits the aim of the study to be chosen for participation in the study. The researcher's sample method addressed logistical and practical constraints. The research exploited the South Africa's well-developed infrastructure and transit networks to study cooperatives. Limiting the study to South Africa allowed for a deeper look of agricultural cooperatives in a specific location, which might inform future research and policy.

The data collection process took a total of four months, which was from August 2024 - November 2024. The researcher chose this time frame to accommodate the schedules of the agricultural cooperative members and to ensure a high response rate. Following up with individuals on a regular basis served as a reminder to them to finish and submit questionnaires. This proactive approach increased engagement and decreased non-response biasness. After obtaining finalized surveys, data were handled carefully to maintain anonymity and integrity. Each questionnaire included a unique number for monitoring and data input while preserving respondents' identities. The data were reviewed for accuracy and completeness after being recorded into an electronic database. Data entry quality was ensured via duplicate input, because of this, two people had to input the data twice and compare the results to find and fix errors. This strategy aims to improve data accuracy and reduce data input mistakes (Van den Broeck et al. 2022).

Data management techniques preserved respondents' discretion. Only authorized staff could access encrypted personal data. The data was anonymized before analysis to protect the respondents. Research methodologies included training data collectors and entry helpers. The class included study goals, ethics, and tasks. This prepared all crew members to do their duties according to research criteria. The study was consistent and transparent due to its rigorous procedure. Each step was well-specified, ensuring smooth execution and accurate data. This rigorous strategy was necessary to achieve the study's goals and ensure its trustworthiness.

3.1 Hypothesis

For putting the study's hypotheses to the test, statistical methods such as Pearson's association and linear regression models were utilized. As a result of the research questions, these theories were developed with the intention of determining the extent to which cooperative governance, operations management, and the implementation of cooperative principles are connected among themselves. How does cooperative governance and operations management impact the operationalization of cooperative principles in South African agricultural cooperatives? This was the primary issue that the study sought to answer.

The result of this was the formulation of three sub-research questions:

- How does the impact of governance affect the operational performance in agricultural cooperatives?
- How do the linkages between cooperative principles and governance impact agricultural cooperatives?
- How do the correlations between cooperative governance, cooperative principles, and operations management impact the enterprise(s) financial performance of agricultural cooperatives?

Based on these research questions, the following hypotheses were formulated:

H₁: Cooperative governance and operations management have a positive impact on the operationalization of cooperative principles in agricultural cooperatives.

H_{1a}: Cooperative governance and operations management have a negative impact on the operationalization of cooperative principles in agricultural cooperatives.

H₂: Governance has a positive impact on the operational performance of agricultural cooperatives.

H_{2a}: Governance has a negative impact on the operational performance of agricultural cooperatives.

H₃: Cooperative principles have a positive linkage with governance of agricultural cooperatives.

H_{3a}: Cooperative principles have a negative linkage with governance of agricultural cooperatives.

H₄: There is a positive correlation between cooperative governance, cooperative principles, operations management and the enterprise(s) financial performance of agricultural cooperatives.

4. Results and Discussions

This section covers governance structures and cooperative ideals that agricultural cooperatives can use to enhance how they run their day-to-day operations.

4.1 Data Analysis of Cooperative Governance

This section goes into more detail about joint governance solutions. It focusses on governance frameworks, jobs, openness, and other important governance elements. There are four parts to the analysis of the responses: Structure of governance, accountability and how well the board works, openness and communication, and ways to settle disagreements.

4.1.1 Governance Structure

Table 1 below shows how governance of agricultural cooperatives relies on clear organisational structure and vividly defined roles and responsibilities of cooperative members in these cooperatives.

Table 1. Governance Structure

Governance Item	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
My cooperative has a clear organisational structure.	1.92	1	35.0	0.854
My cooperative has well-explained roles and responsibilities.	2.01	3	40.5	0.856

Effective cooperative management relies on the governance structure, which assesses organisational clarity and cooperative responsibilities. Both items had mean scores of 1.92 and 2.01, respectively. These ratings indicate a decent participant unanimity, but suggested governance clarity and job description difficulties among agricultural cooperatives. The 35.0% and 40.5% agreement rate suggest there is a decent governance structure, openness and comprehensibility but these still require improvement.

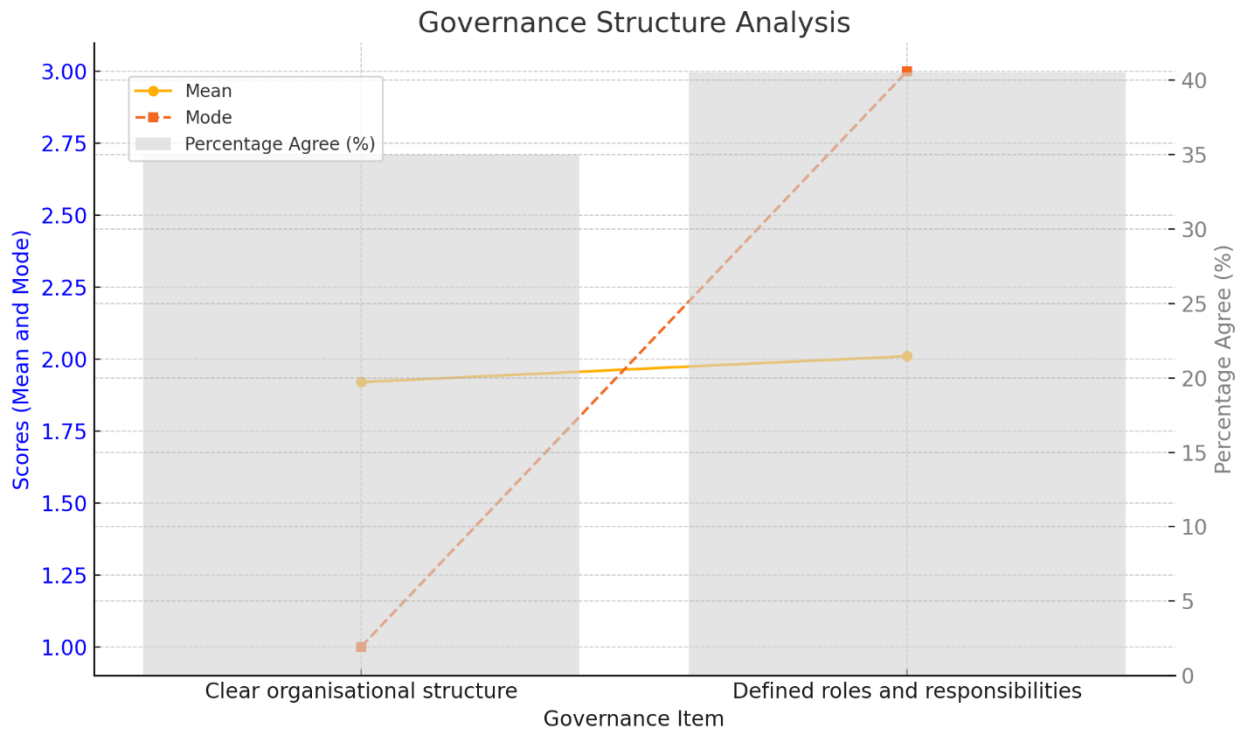


Figure 1. Governance Structure Analysis

The answers from the participants show a middling level of agreement about how clear and structured their agricultural cooperatives were (see figure 1). A Cronbach's Alpha value of more than 0.70 for example 0.854 and 0.856 (see table 1) means that there is internal consistency and the item from the instrument is reliable, which means that participants have similar ideas or feelings about the governance system(s) that are implemented in these agricultural cooperatives. This similarity could be because different groups of agricultural cooperatives may be following the same pattern in terms of their cooperative governance.

Similar studies have also shown that clear control structures are important for the success of agricultural cooperatives. Chibanda et al.(2024) indicate that making jobs and organisational structure clear makes it much easier for people to work together and makes them happier. Michaud and Audebrand (2022), claim that unclear control systems can make operations less effective, which makes it harder for agricultural cooperatives to reach their goals. The fact that participants in this dataset did not agree with each other fits with Michaud and Audebrand's results, which show that poor organisation may make it harder for people to work together, thus, making organisational rules more clearly could help agricultural cooperatives groups work well together and be more accountable.

The mean represents the average value of a dataset, while the mode indicates the most frequently occurring value. As these two measures intersect (see figure 1), it suggests that the data distribution amongst the members of agricultural cooperatives for the items; clear organisational structure, and defined roles and responsibilities is symmetrical or close to symmetrical (Rahmah and Setianingsih 2020). This intersection point can be particularly informative in understanding the central tendency and shape of the distribution, which is crucial for statistical reasoning and data interpretation (Arjun et al. 2021; Rahmah and Setianingsih 2020).

4.1.2 Accountability and Board Effectiveness

This section examines cooperative governance accountability, especially board accountability and member nominations.

Table 2. Accountability and Board Effectiveness

Governance Item	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
The board holds management accountable for feedback on operations.	2.01	2	38.0	0.780
All members have equal opportunity to nominate for board positions.	2.04	3	41.0	0.782

As seen in table 2 above, the mean scores for board transparency and member selection chances were rated at 2.01 and 2.04, respectively. 38.0% and 41.0% of those who participated agreed. It looks like responsibility is in place based on the answers given, but openness and individual involvement could be better.

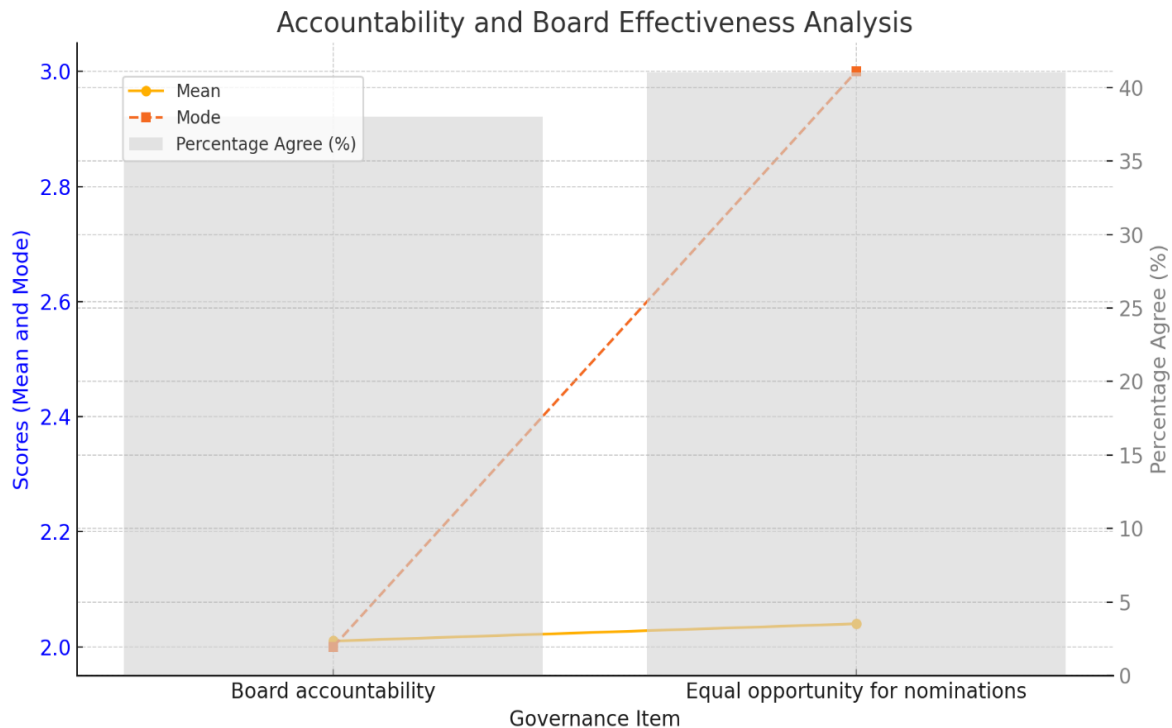


Figure 2. Accountability and Board Effectiveness Analysis

Cronbach's Alpha values of 0.780 and 0.782 (see table 2) indicate that participant responses were consistent, various individuals have similar responses about how cooperatives should manage responsibilities, this shows that the items of the instrument are reliable. This shows that the boards of these agricultural cooperatives have tighter governance and are more responsible. Bhuyan and Leistriz (2019), suggest that a governance framework requires accountability systems that assist cooperative members with trust and are therefore able cooperate. The decent agreement in this survey suggests members may believe that present accountability mechanisms are sufficient. This supports Guzmán et al., (2020) who emphasise cooperatives' need for participatory governance. By making accountability methods better, agricultural cooperative members could be more satisfied and joint governance systems would be seen as more legitimate.

4.1.3 Transparency and Communication

Governance must be transparent to educate and engage cooperative members. This section discusses yearly reports and member feedback mechanisms. The replies show moderate agreement, with mean scores of 2.05 and 2.92 and a 48.5% and 53.5% agreement rate. This data suggest that cooperative communication gaps may impair transparency and member confidence.

Table 3. Transparency and Communication

Governance Item	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
Annual reports are regularly published.	2.05	2	48.5	0.820
Surveys collect member feedback.	2.92	3	53.5	0.896

Table 3 above shows that participants were mostly satisfied with the openness steps, and the Cronbach's Alpha values of 0.820 and 0.896 shows how similar participant's answers were about how well they communicated with each other, this shows the internal consistency within these agricultural cooperatives and how reliable the item's instruments are. For example, most of the agricultural cooperative members thought that openness practices were good enough. Johnson et al. (2020) indicate that cooperatives with good communication lines have better governance because they encourage trust and include everyone. Chaddad and Iliopoulos (2022), also state that important regular feedback systems are for making cooperative governance better. These results agree with what they said, because having similar ways of communicating and giving comments can make it easy for members to get involved. Agricultural cooperatives could improve their governance and get more members involved by making their openness measures stronger.

4.1.4 Dispute Resolution Mechanisms

Cooperative governance relies on dispute resolution processes to resolve conflicts fairly. With a mean score of 2.94 and an agreement level of 70.5%, answers to the formal conflict settlement procedure reveal opportunities for development. A decent internal consistency (Cronbach's Alpha of more than 0.70) highlights agricultural cooperatives' similar views on conflict settlement efficacy.

Table 4. Dispute Resolution Mechanisms

Governance Item	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
Formal dispute resolution process exists.	2.94	3	70.5	0.834

The mean score and agreement rate in table 4 above show that there is sufficient agreement on how well conflict settlement methods work in agricultural cooperatives. Guzmán et al. (2020), indicate that conflict settlement systems that are clear and easy to use are important for keeping agricultural cooperatives stable and making sure that members are satisfied. These results agree with what Michaud and Audebrand (2022) state about how not enough ways to settle disagreements can make members unsatisfied and make operations less effective. By putting in place more organised and clear ways to settle disagreements, agricultural cooperatives could create a better place for members to work together, which would improve the quality of their cooperative governance.

4.2 Application of Cooperative Principles

This section discusses membership policies and practices in agricultural cooperatives, economic participation from agricultural cooperative members, their community and environmental contribution.

4.2.1 Membership Policies and Practices

As seen in the items below (specific membership criteria exist, membership application process is clear and accessible, membership is offered to the public), agricultural cooperative membership policies emphasise inclusion and accessibility.

Table 5. Transparency and Communication

Membership Policies and Practices	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
Specific membership criteria exist.	2.04	2	39.0	0.792
Membership application process is clear and accessible.	2.95	3	35.5	0.881
Membership is offered to the public.	2.02	2	36.0	0.789

Agricultural cooperatives employ various membership policies and practices, with specific criteria and public offerings playing crucial roles in their operations and effectiveness. Membership in agricultural cooperatives is often associated with positive outcomes for farmers. Cooperative membership has been shown to increase the likelihood of farmers adopting better farming practices, improve access to marketing channels, and enhance agricultural performance (Habiyaemye et al. 2023; Verhofstadt & Maertens 2014). For instance, cooperative membership positively affects farmers' choice of milk marketing channels and increases banana yield while reducing production risk (Habiyaemye et al. 2023; Ma et al. 2021).

However, the impact of cooperative membership is not uniformly positive across all aspects of farming. While membership generally improves social and human capital, it has been found to negatively affect farmers' environmental performance in some cases (Mojo et al. 2015). This contradiction highlights the need for cooperatives to focus more on environmental sustainability in their practices.

Research suggests that cooperative membership policies and practices significantly influence farmers' decision-making and outcomes. The positive impacts on market access, technology adoption, and risk reduction (Gefferas, 2023; Habiyaemye et al. 2023; Ma et al. 2017; Ma et al. 2021) indicate that cooperatives play a vital role in supporting smallholder farmers. However, the varying effects across different aspects of farming (Mojo et al. 2015) underscore the importance of carefully designed membership policies that balance economic, social, and environmental objectives.

Cooperative membership appears to be influenced by various factors, suggesting that the application process may not be equally accessible to all farmers. Abebaw and Haile (2014) indicates that cooperative members are more likely to be male-headed households, have better access to agricultural extension services, possess oxen, participate in off-farm work, and have leadership experience. Geographic location and age of the household head are also strongly associated with membership (Abebaw & Haile 2024). This implies that certain demographic and socioeconomic factors may affect access to cooperative membership.

Interestingly, there are contradictions in the accessibility of cooperatives for different groups. While Dohmwirth and Liu (2020) suggests that women have limited access to mixed-gender cooperatives, it also notes that women-only cooperatives are generally more accessible for most women. This indicates that the accessibility of cooperatives may vary depending on the type of cooperative and the target demographic.

While the papers do not directly address the clarity of the application process, they suggest that access to cooperative membership may not be equally available to all farmers. Factors such as gender, socioeconomic status, and geographic location appear to influence membership. To improve accessibility, policymakers and cooperative leaders may need to address these barriers and ensure that the application process is clear and accessible to a wider range of farmers, particularly those from marginalized or underrepresented groups.

Table 5 above shows the mean scores, median, % agreement, and Cronbach's Alpha of more than 0.70 for these items. The mean ratings for membership criteria at 2.04, for membership application procedure at 2.95 suggest moderate inclusiveness. Public accessibility had a mean of 2.02, showing space for improvement in increasing openness and clarity on agricultural cooperative entrance criteria.

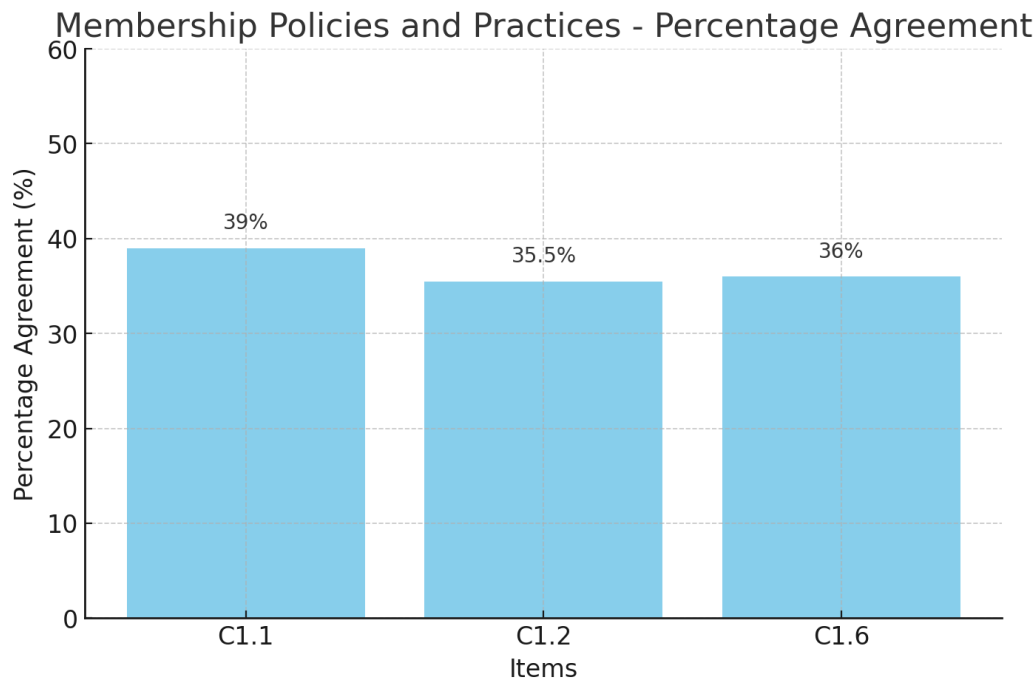


Figure 3. Membership Policies and Practices - Percentage Agreement

Figure 3 above shows that the agricultural cooperative's methods for welcoming new members are partly in line with cooperative principles for example, 39% of those that were surveyed agreed that the membership standards were clear. This number shows that agricultural cooperative members have a basic idea of what it takes to become a member. However, only 35.5% of those who participated agreed that the application process is accessible, which suggests that the agricultural cooperative's policies may not always be clear or follow the same rules when it comes to accessibility. Furthermore, the level of agreement for public accessibility was the same at 36.0%. This suggests that even though membership is theoretically open, more active communication efforts could improve how potential agricultural cooperative members see accessibility.

The results in Figure 3 show that participation rules do not put a lot of emphasis on being open to everyone, which is like some other studies' results. For example, Ajates (2020), indicates that openness and clearly defined participation procedures can help cooperative inclusion and fair access. The author claims that inclusion is important to make sure that cooperatives reflect the values of the whole community. Moreover, Guzmán et al. (2020) show that agricultural cooperatives with easy-to-understand entry requirements tend to have higher member satisfaction and retention rates, this is because they feel more open and welcoming.

Agricultural cooperatives play an important role in supporting smallholder farmers and improving agricultural productivity (Ige & Ojo 2023; Nyawo & Olorunfemi 2023). Membership in these cooperatives can positively impact farmers' livelihoods and reduce poverty levels. For example, a study in Southwestern Nigeria found that cooperative membership negatively influenced the depth of poverty among cocoa farmers (Ige & Ojo 2023). Regarding accessibility, there are some challenges that may affect the public's ability to engage with agricultural cooperatives in rural areas of Nigeria. These include limited Internet access, poor infrastructure, and lack of computer skills, which contribute to the digital divide (Tayo et al. 2015). Additionally, factors such as distance to markets and access to credit services can influence farmers' participation in cooperatives (Akinola et al. 2023).

However, the results of this study in terms of these items are different from those of Badiru et al. (2023), who claim that there was more agreement about what it means to be a cooperative member and how easy it is for the public to get to agricultural cooperatives in Oyo State, Nigeria. The results in this study could mean that the administration situation is different or that specific policies are needed to make sure that participation practices are in line with how agricultural cooperatives are usually run, which is to include everyone.

Michaud and Audebrand (2022), also state that the success of a cooperative depends on how open and easy it is for potential members to join. The authors further indicate that this openness makes the agricultural cooperative members feel more like a community and it makes the members to be more responsible. These theory views and the results of this study show that agricultural cooperatives have a huge chance to make their participation policies more open to all the members and potential members by making them easy to understand. Getting these things in better shape might also help cooperatives to stay true to their beliefs, giving members more power and ensuring the long-term survival of these cooperatives. This means that organised changes need to be made to make the membership rules in these enterprises clearer and more open to all members.

4.2.2 Economic Participation

This section assesses economic participation replies, focusing on financial openness and report accessibility.

Table 6. Economic Participation

Economic Participation	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
Financial reports are accessible to members.	2.02	2	38.0	0.726

Agricultural cooperatives play a significant role in enhancing the economic participation of smallholder farmers, but the accessibility of financial reports to members varies across different cooperative models and regions. In traditional agricultural cooperatives, financial transparency and member access to financial reports can be limited. This is evident in the Greek food sector, where a study comparing traditional cooperatives with those incorporating capital-seeking entities found management inefficiencies, particularly in traditional cooperatives (Kontogeorgos et al. 2016). This suggests that the organizational structure of cooperatives can impact their economic performance and, potentially, the level of financial transparency provided to members.

Interestingly, the economic participation of members in agricultural cooperatives is not always straightforward. In China, for instance, some cooperatives are considered 'fake' if they lack farmer members or capital contributions. However, these 'fake' cooperatives do not necessarily hinder agricultural economic growth (Zhong et al. 2023). This contradicts the conventional understanding of cooperative structures and highlights the complexity of economic participation in different contexts. Agricultural cooperatives generally aim to enhance members' economic participation although the accessibility of financial reports to members varies. Factors such as organizational structure, regional context, and cooperative policies influence the level of financial transparency. Further research is needed to explore how different cooperative models can improve financial reporting practices and member engagement to maximize economic benefits for smallholder farmers.

Table 6 above shows moderate agreement among participants on cooperative financial information accessibility. Financial transparency and report accessibility averaged 2.02, with 38% of participants agreeing that financial data are available to all members. Such data shows how well agricultural cooperatives that participated in this study promote economic involvement. Accessible and accurate financial reports are vital for agricultural cooperative members as they promote transparency, facilitate informed decision-making, and enhance member commitment and group cohesion (Taruvunga et al. 2021). By improving financial literacy and management practices among cooperative members (Hoxha et al. 2023), cooperatives can strengthen their operations, increase efficiency (Sunarwibowo et al. 2024), and ultimately contribute to the overall welfare of farmers and agricultural development.

The preparation and accessibility of financial reports are essential for cooperative members to understand the financial performance and position of their organisation (Adiyarta et al. 2020). These reports serve as material for analysing the cooperative's performance and as an accountability measure from management to the owners or members, particularly during annual member meetings (Hoxha et al. 2023). Economic participation in agricultural cooperatives has been shown to have significant benefits for farmers, particularly smallholders. Studies indicate that cooperative membership can lead to increased income and improved technical efficiency for farmers (Abate et al. 2014; Hoken & Su, 2018). For instance, research in China found a significant difference in net income from rice production between cooperative participants and non-participants (Hoken & Su 2018). Similarly, in Ethiopia, agricultural cooperatives were found to enhance members' efficiency by facilitating access to productive inputs and extension services (Abate et al. 2014).

However, the economic benefits of cooperative participation are not uniform across all contexts. There is evidence of heterogeneity in treatment effects between large and small farmers, with relatively small farmers benefiting more due to reduced transaction costs (Hoken & Su 2018). Additionally, the relationship between cooperative size and economic performance is complex. In China, the number of cooperatives at the county level shows an 'inverted U-shaped' effect on agricultural economic growth, while the average membership size of cooperatives has a 'U-shaped' effect (Zhong et al.2023).

Whilst agricultural cooperatives generally contribute positively to farmers' economic welfare, their impact is influenced by various factors such as farm size, cooperative structure, and local context. The effectiveness of cooperatives in bridging the gap between smallholders and modern agriculture is particularly noteworthy, with capital accumulation playing a critical role in this process (Zhong et al. 2023). However, it is important to note that the economic focus of cooperatives may sometimes come at the expense of their social and transformative potential, as highlighted by the concept of "deviant mainstreaming" in European agricultural cooperatives (Ajates 2019).

Economic Participation - Financial Transparency Response

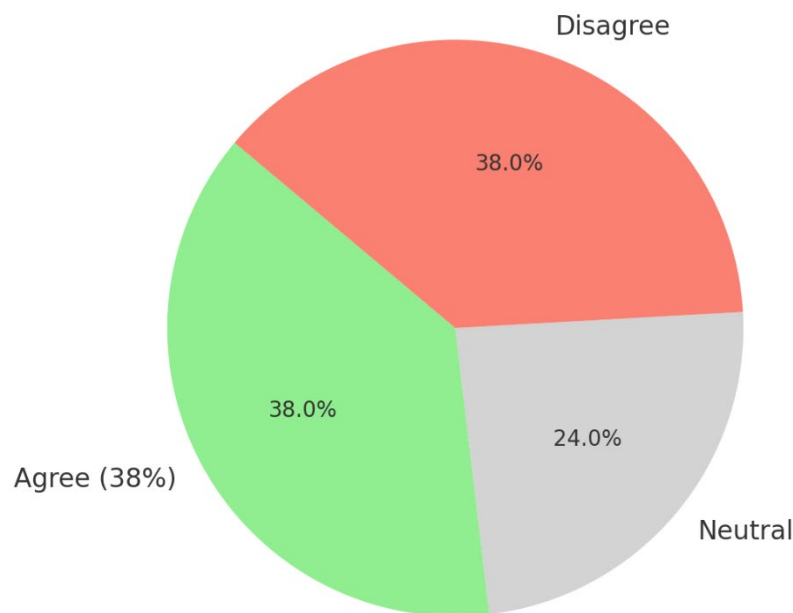


Figure 4. Economic Participation - Financial Transparency Response

Figure 4 above shows that participants were mostly satisfied with how open the cooperative's finances were, for example, 38% of those surveyed agreed that financial records were easily accessible. The average number of 2.02 means that participants have a middling opinion about how easy it is to access financial records. This means that while some members may be able to access and understand it, there may be obstacles that keep them from doing so fully. Since the Cronbach's Alpha value shown in table 8 is above 0.70 (Cronbach's Alpha = 0.726), this means that there were not many disparities in terms of the answers that the participants gave, therefore, the items from the instrument are reliable. This could be because different agricultural cooperative networks have similar financial openness standards. This variation could be because of how aware agricultural cooperative members are and how easy it is to get financial records across these agricultural cooperatives.

The economic involvement principle is important for agricultural cooperative's success because it is linked to trust, responsibility, and satisfied members. Guzmán et al. (2020) state that the cooperative model works best when financial resources are shared fairly, the management of those resources is open and honest, and all members can see all

financial records. When cooperatives make sure that their finances are always clear, members feel like they have a bigger stake in the group, which makes them more loyal and trusting. The 38% agreement in this study, on the other hand, suggests that agricultural cooperatives might need to improve their openness, especially when it comes to making sure that all members can see and understand financial information.

In contrast, these results show that things could be better, especially when compared to agricultural cooperatives where more than half of the members agree on financial openness (Bhuyan and Leistritz 2019). In those situations, members said that open meetings and clear, regular financial reporting helped them have faith in cooperative governance. Studies by Edwards (2024), show that members may lose interest in the cooperative if they cannot get access to important financial information. They may feel left out of important decisions about the cooperative's operations and financial health. Edwards states that giving members regular financial talks or easy-to-find recaps might help them understand the cooperative better and be more involved.

4.2.3 Community and Environmental Contribution

This section discusses the agricultural cooperative's involvement in community development and sustainable environmental practices, focusing on member replies on local socio-economic and environmental support.

Table 7. Community and Environmental Contribution

Community and Environmental Contribution	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
Cooperative supports economic and social development of local area.	2.13	3	45.0	0.755

Table 7 above shows that 45% of the respondents agreed that the agricultural cooperatives actively support the local economy and community welfare, with a mean score of 2.90. This shows a better degree of alignment with the cooperative principle of community support, yet space for development.

Community and Environmental Contribution - Perception of Support

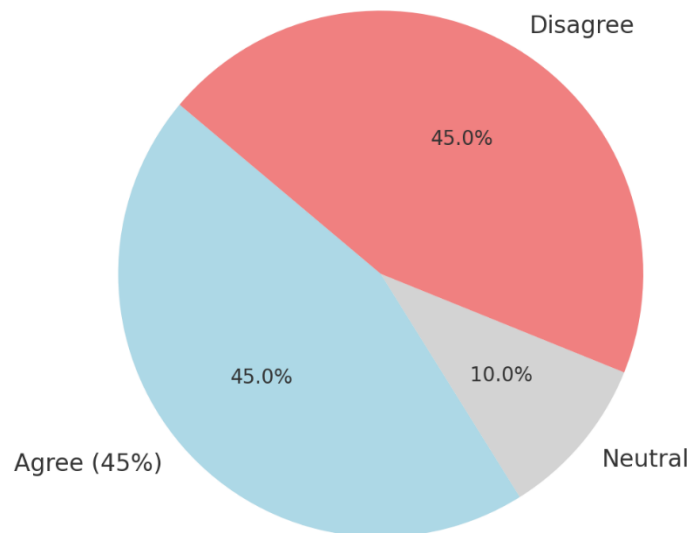


Figure 5. Community and Environmental Contribution

Figure 5 above shows how agricultural cooperatives work with the community and the environment. It shows that 45% of the members who answered the survey think that the agricultural cooperatives actively support the social and economic growth of the local area. The average number of 2.90 shows a middling level of agreement. This means that while many members agree that they make an addition to the community's well-being, some members think that this commitment is not always consistent across the cooperative network. There is internal consistency and reliability of this item within these cooperatives (Cronbach's Alpha value of 0.755 as seen in table 7) which shows that different agricultural cooperative branches may have similar ideas or ways of doing things when it comes to helping the community and the environment. This may be because each group of agricultural cooperative has a similar purpose as the other.

Cooperative ideas emphasise community service, which helps local economies and societies to be developed. Agricultural cooperatives strengthen communities, particularly ones in rural areas with poor economies (Valentinov, 2020). This research agreed with Valentinov's findings by showing that 45% of agricultural cooperative members suggest that agricultural cooperatives support their local communities. This shows that agricultural cooperatives might boost the local economy via partnerships, skill-building, or infrastructural assistance.

In 2023, Feizabadi et al., found that agricultural cooperatives that assist communities prosper enhance their image, make their members more loyal, and promote community trust. This research is in support of cooperatives doing more than just giving members money. Educational and environmental initiatives will benefit cooperatives and their members in the long term. However, this 45% agreement on community support from agricultural cooperative members who participated in this study suggests that these programs may not be as organised or easy to access as those of other cooperatives that are more active in the community. Michaud and Audebrand (2022), highlight the importance of cooperatives' structured environmental and social contributions.

Standard programs that emphasise local sustainable practices may help agricultural cooperatives improve the community and environment. This may enhance member engagement and awareness of these concerns. By emphasising transparency and discussing its impacts, members might feel more engaged in the cooperative's aims. Since cooperatives in this study focus on farming, utilising environmentally friendly agricultural practices and supporting local conservation initiatives might strengthen community bonds and demonstrate a sincere commitment to social and environmental values.

4.3 Inferential Statistics

Inferential statistics play a crucial role in research, particularly in healthcare and behavioural sciences, by allowing researchers to make informed decisions and predictions about populations based on sample data (Hansen, 2024; Welkowitz et al. 2024). It provides techniques to explain phenomena by relating variables and determining whether observed differences reflect true population characteristics or are likely due to chance (Tal 2019). However, researchers should be mindful of the limitations and ethical considerations when using inferential statistics to draw conclusions. This section therefore covers; correlation tests results analysis, regression test results analysis, and T-Test results analysis.

4.3.1 Correlation Tests Results Analysis

Agricultural cooperatives' governance and operations management are significantly influenced by cooperative principles, as evidenced by several studies examining their correlation and impact on business performance. Research indicates a strong positive relationship between cooperative culture and democratic governance in agricultural cooperatives (Ragazou et al. 2021). Higher levels of cooperative culture and member commitment were observed when conditions for democratic governance were met. Additionally, the education level of cooperative members played a crucial role in this correlation, suggesting that improving members' understanding of cooperative principles could enhance governance practices.

Some studies reveal contradictions in the application of cooperative principles. While democratic member control and voluntary open membership are critical for effective operations (Pandey et al. 2024), there are challenges in implementing these principles consistently. For instance, Castro and Moreira (2022) highlight farmers' perceptions of high levels of corruption in agricultural cooperatives, with factors like gender, age, turnover, and membership seniority influencing these perceptions. This suggests a gap between ideal cooperative principles and their practical application.

Table 8. Correlation Analysis of Key Variables in Agricultural Cooperative Operations

Variables	Governance Structure	Financial Management	Member Satisfaction	Supply Chain Efficiency
Governance Structure	1.00	0.58	0.47	0.42
Financial Management	0.58	1.00	0.62	0.55
Member Satisfaction	0.47	0.62	1.00	0.50
Supply Chain Efficiency	0.42	0.55	0.50	1.00
Strategic Planning and Goal Setting	0.53	0.61	0.59	0.46

Table 8 above shows governance structure, financial management, member satisfaction, and supply chain efficiency correlation coefficients from 0.42 to 0.62. The highest correlation is between financial management and member satisfaction ($r = 0.62$), this reveals that the link is modest, and that better financial management could make members more satisfied. Improved profitability and returns are crucial for member satisfaction. Research shows that financially non-stressed agricultural cooperatives have higher rates of return on equity and assets compared to stressed cooperatives (Pokharel et al. 2019). By focusing on enhancing profitability, cooperatives can increase member benefits and overall satisfaction. Effective financial management can lead to increased household and farm income for members. For example, a study in Ghana found that cooperative membership can increase household income by 28.54% and farm income by 34.75% (Twumasi et al. 2021). This direct financial benefit is likely to boost member satisfaction and commitment to the cooperative. Moreover, size and industry effects play a role in cooperative financial performance. While large regional cooperatives are more efficient in utilizing assets to generate sales, small regional cooperatives tend to have higher profitability (Lerman 2024).

This suggests that cooperatives should tailor their financial strategies based on their size and industry to maximize member benefits. Better financial management can enhance member satisfaction by improving profitability, increasing member incomes, and tailoring strategies to cooperative size and industry. However, it's important to note that benefits extend beyond monetary gains. Social factors such as increased confidence, negotiating skills, and community service also contribute to member satisfaction (Ferguson & Keep 2023). Therefore, a holistic approach combining financial management with social and environmental considerations is crucial for sustainable cooperative development and member satisfaction. The weak link ($r = 0.58$) between governance structure and financial management also shows that strong governance supports good financial practices. Accountability and transparency are key components of good cooperative governance that directly impact performance. This is like what Cheney et al. (2022) found about how governance and accountability work together in cooperatives. By implementing robust governance structures and maintaining high levels of accountability, cooperatives can effectively manage partnerships, strengthen member commitment, and adapt to changing market conditions (Zeng and Wan 2024).

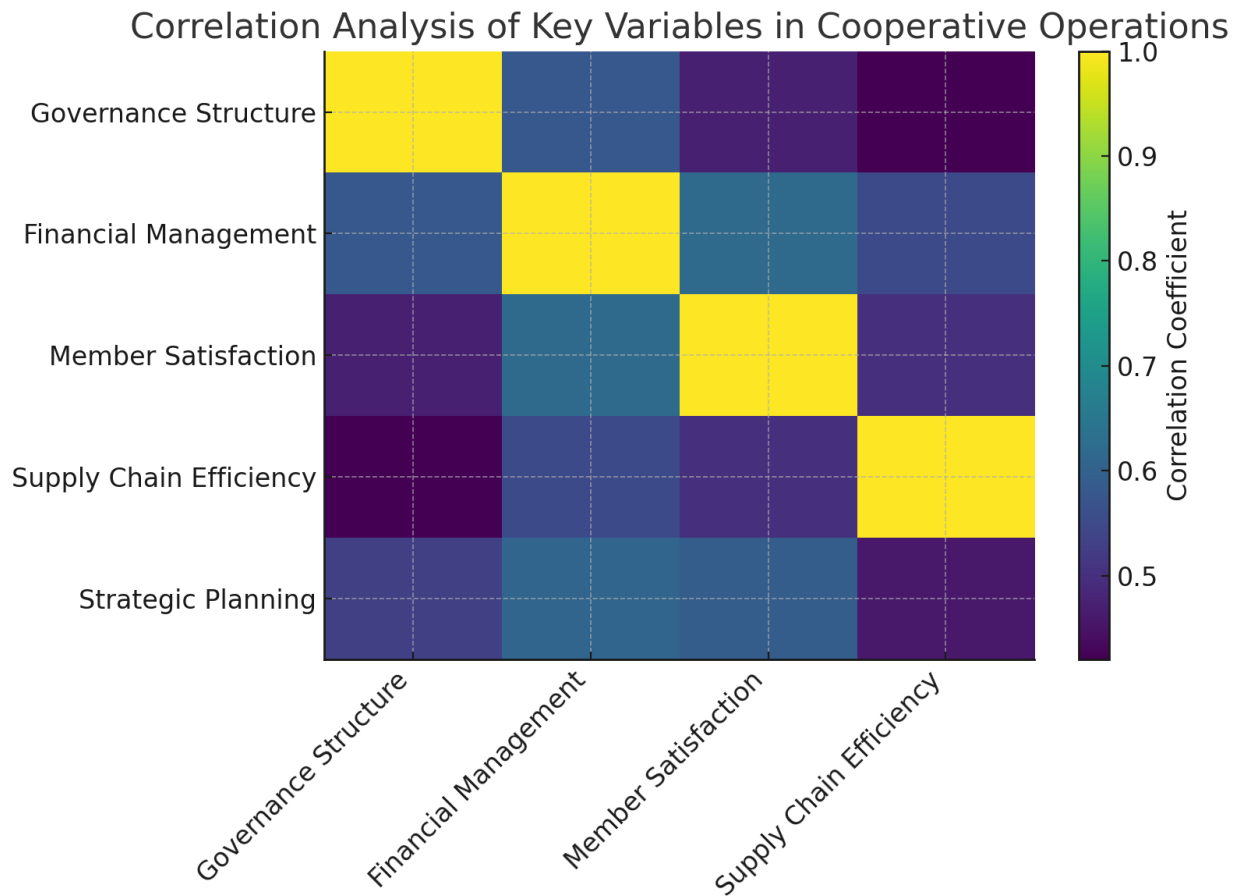


Figure 6. Correlation Analysis of Key Variables in Agricultural Cooperative Operations

The connections in Figure 6 above show that the way financial management is done is strongly linked to other areas of operations, especially how satisfied members are. This result fits with what (Ajates, 2020; Chaddad and Iliopoulos, 2022) suggest about how important it is for agricultural cooperatives to be open about their finances and use good management techniques to improve their performance and members' loyalty.

4.3.2 Regression Test Results Analysis

From regression analysis, financial management (coefficient = 0.42, $p < 0.01$) has the greatest positive influence on member satisfaction, followed by strategic planning (coefficient = 0.33, $p < 0.01$). Governance and supply chain efficiency also score well, albeit with lower coefficients.

Table 9. Regression Analysis on Member Satisfaction

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-value</i>	<i>p-value</i>
<i>Governance Structure</i>	0.35	0.10	3.50	0.001
<i>Financial Management</i>	0.42	0.08	5.25	0.000
<i>Supply Chain Efficiency</i>	0.28	0.09	3.11	0.002
<i>Strategic Planning and Goal Setting</i>	0.33	0.07	4.71	0.000
<i>Constant</i>	1.12	0.20	5.60	0.000

The regression findings demonstrate that excellent financial management predicts member contentment. This suggests that financial transparency and accountability create confidence in agricultural cooperatives (Michaud and Audebrand 2022; Guzmán et al. 2020). Financial transparency and accountability are essential for building trust and confidence among cooperative members and stakeholders. By providing clear and accurate financial information, cooperatives can demonstrate their commitment to ethical practices and responsible management. This transparency allows members to assess the cooperative's financial health, performance, and decision-making processes, which is crucial for maintaining member commitment and participation (Zeng et al. 2023).

Furthermore, the impact of financial transparency can vary depending on the size and type of cooperative. Large regional cooperatives tend to be more efficient in utilizing their assets to generate sales, while small regional cooperatives often have higher profitability (Lerman 2024). This suggests that transparency requirements may need to be tailored to different cooperative structures to effectively build confidence. Financial transparency and accountability are fundamental for creating confidence in agricultural cooperatives. They contribute to improved governance, enhanced member trust, and better overall performance. By implementing robust financial reporting systems and maintaining open communication with members, cooperatives can strengthen their position as reliable and sustainable organizations in the agricultural sector (Bijman et al. 2014; Zeng et al. 2023). This, in turn, can lead to increased member participation, improved access to resources, and ultimately, better support for smallholder farmers and rural communities.

Strategic planning's statistical importance supports Ortmann and King (2023), studies, these studies emphasise strategic matching with cooperative principles and member expectations. Strategic planning plays a crucial role in organizational success, particularly in cooperative settings. Research indicates that effective strategic planning aligns organizational goals with cooperative principles and member expectations, leading to improved outcomes. For instance, a study on strategic alliances in the software sector found that adaptability, openness, and learning capability during implementation were among the most significant factors affecting alliance success (Taylor 2024). This highlights the importance of strategic planning that incorporates flexibility and continuous learning. Moreover, while strategic planning is vital, some studies reveal contradictions in its implementation. For example, research on quality management practices shows that organizational culture and cooperative values significantly influence the success of quality initiatives (Kull & Narasimhan 2020). This suggests that strategic planning must go beyond formal processes and consider the underlying cultural and value-based aspects of cooperatives. Strategic planning's importance is well-supported by research, particularly when it aligns with cooperative principles and member expectations. Studies emphasize the need for adaptive strategies that consider both structural and process factors (Taylor 2024) as well as the integration of cooperative values in planning processes (Nilsson 2020). By focusing on these elements, cooperatives can enhance their effectiveness and better serve their members' needs.

4.3.3 T-Test Results Analysis

The following section covers the T-Test analysis on cooperative efficiency by governance type. Yobe et al. (2020) notes that the observed relationship between governance and efficiency may be attributed to institutions that prioritise non-financial goals being relatively more willing to compromise on governance quality. The author suggests that the relationship between governance and efficiency may not be straightforward and could vary depending on the cooperative's objectives (Yobe et al. 2020).

Table 10. T-Test Analysis on Cooperative Efficiency by Governance Type

Group	Mean Efficiency Score	Standard Deviation	t-value	p-value
Traditional Governance	3.25	0.75	0.00	0.00
Modern Governance	4.10	0.60	5.27	0.00

As seen in table 10 above, there is a huge difference in how traditional cooperative governance efficiency and modern governance systems are rated ($t = 5.27$, $p < 0.01$). Cooperatives work better with modern governance frameworks (mean = 4.10) than with older frameworks (mean = 3.25). Several studies have examined the relationship between governance and efficiency in cooperatives. Roziq et al. (2022) found that sharia governance has a significant positive impact on efficiency and performance of sharia cooperatives (Roziq et al. 2022). Similarly, Yobe et al. (2020) identified governance as a statistically significant determinant of efficiency in agricultural cooperatives in South Africa (Yobe et al. 2020).

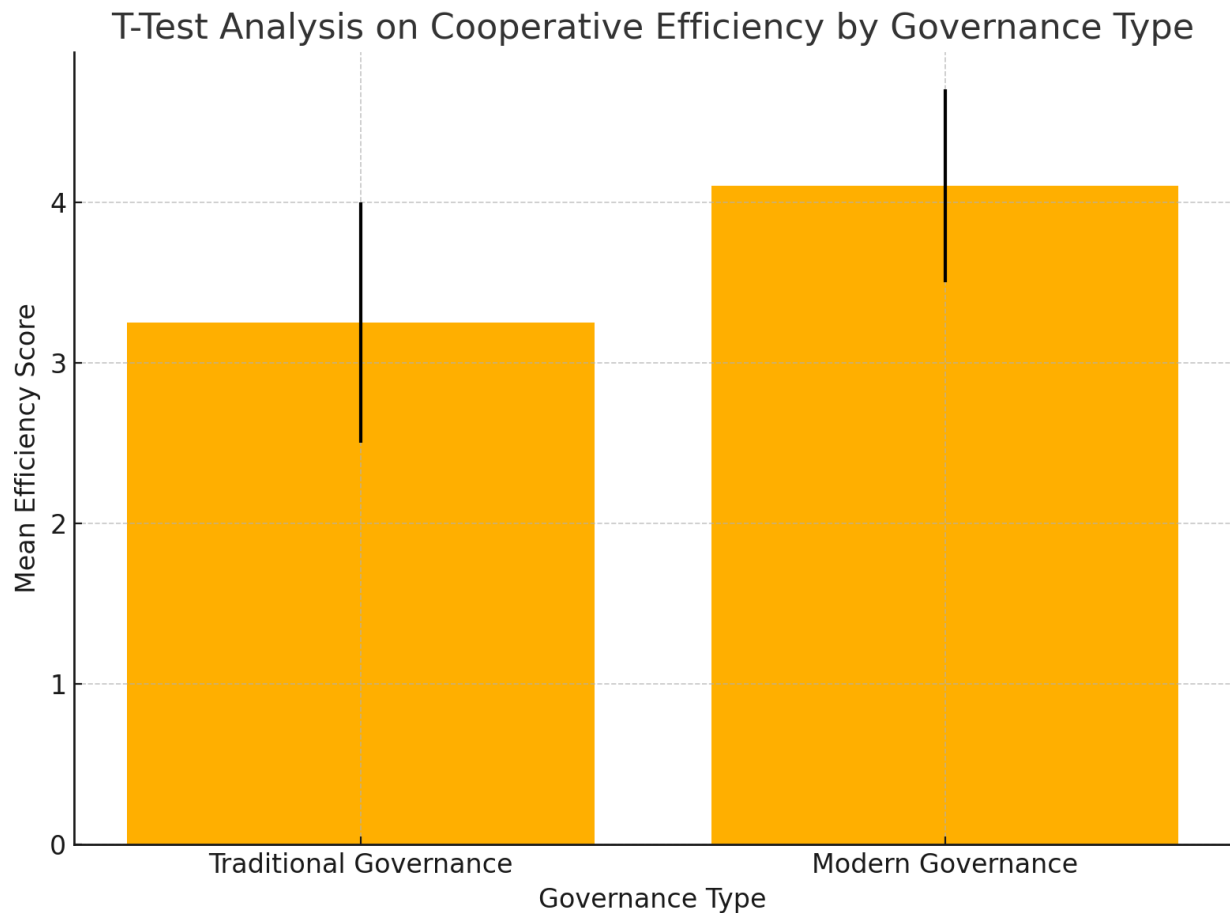


Figure 7. T-Test Analysis on Cooperative Efficiency by Governance Type

Governance systems vary in efficiency, current governance systems may be superior at resource management (Burton and Wilson 2023). This suggests adopting contemporary, inclusive governance structures that emphasise flexibility and reaction. This is in line with Michaud and Audebrand's (2022), suggestions for how cooperatives should be able to change their governance.

4.3.4 Financial Management Practices

This section examines the agricultural cooperative's financial management, focusing on good financial systems and risk precautions. The table displays mean scores of 2.94 and 2.01, with 55.5% agreement and 75.6% respectively. These variables indicate financial management variation.

Table 11. Summary of Financial Management Practices

Financial Management Practices	Mean	Mode	Percentage (%)	Agree	Cronbach's Alpha
Sound financial system is in place.	2.94	3	55.5		0.934
Assets are safeguarded against financial risks.	2.01	2	75.6		0.867

Table 11 above shows that agricultural cooperatives that participated in this study might be spending their money in the same pattern. The mean scores, percentage values, and Cronbach's Alpha of 0.934 and 0.86 all show this. These

results are in line with what Feizabadi et al. (2023) indicate about how important it is to have strong financial practices to lower risks, especially in farming markets that are always changing. However, this data shows that banking systems are not being used equally, which could be dangerous for agricultural cooperatives that are having financial problems. Chaddad and Iliopoulos (2022), emphasize that stable financial systems are necessary for long-term business.

4.3.5 Optimising Operations Management

Agricultural cooperatives can optimize their operations management by integrating various skills such as strategic planning, financial risk management, and quality assurance. These strategies can significantly enhance their overall performance and sustainability. Strategic planning in agricultural cooperatives involves setting long-term goals and aligning resources to achieve them. This approach can help cooperatives improve their asset utilization and profitability. For instance, large regional cooperatives are more efficient in utilizing their assets to generate sales, while small regional cooperatives have higher profitability (Lerman 2024). This suggests that cooperatives should carefully consider their growth strategies, as emphasis on growth may not always produce beneficial results.

Financial risk management is crucial for agricultural cooperatives, especially given the volatile nature of the agricultural sector. The study on financial stress in agricultural cooperatives found that a substantial percentage of financial stress was correlated with low return on assets or profitability (Pokharel et al. 2019). To mitigate this, cooperatives should focus on improving their profitability and carefully manage their leverage ratios and interest rates. Additionally, implementing diverse risk management strategies can positively impact total factor productivity, depending on the farming system structure and risk probability (Vigani & Kathage 2019).

Quality assurance systems are essential for agricultural cooperatives to maintain high standards and meet customer expectations. Implementing effective quality control and quality assurance systems can promote timely registration of products and eliminate waste, leading to overall financial and social benefits (Manghani 2020). Moreover, adopting customer-centric quality management practices can enhance product reliability, reduce defects, and improve customer satisfaction, ultimately driving continuous improvement and excellence (Okeke et al. 2024). Agricultural cooperatives can optimize their operations management by integrating strategic planning, financial risk management, and quality assurance. This holistic approach can lead to improved efficiency, reduced financial stress, and enhanced product quality, ultimately contributing to the cooperative's long-term sustainability and success in the competitive agricultural market.

The following data shows that strategic planning and regular strategic updates are mostly the same, but relatively low, with an agreement range of 38.0% to 39.5%. These agricultural cooperatives often face challenges in strategic planning due to various barriers that hinder their effectiveness and long-term sustainability. Cultural, economic, and organizational barriers play significant roles in preventing clear goal alignment and regular updates in agricultural cooperatives. Social differentiation and lack of trust among members are major cultural barriers that impede the long-term prospects of authentic cooperatives (Hu et al. 2017). This lack of trust can lead to difficulties in collective decision-making and implementation of strategic plans. Economically, unpredictable markets and financial constraints significantly impact organizational and market barriers, emphasizing the role of economic factors in adoption challenges (Hu et al. 2017; Khurshid et al. 2024). These financial limitations can restrict cooperatives' ability to invest in strategic planning processes and implement necessary changes.

Organizationally, poor policy design and implementation are identified as significant barriers (Hu et al. 2017). The study of cooperatives in China revealed that most agricultural cooperatives are not authentic and fail to deliver expected benefits to smallholders, categorizing them into five types: genuine cooperatives, shell cooperatives, de facto private agribusinesses, decooperativized cooperatives, and failed cooperatives (Hu et al. 2017). This suggests that organizational structures and governance models play a crucial role in cooperative success.

The failure of most agricultural cooperatives in strategic planning can be attributed to a combination of cultural, economic, and organizational barriers. To overcome these challenges, cooperatives need to focus on building trust among members, improving financial management, and developing more effective governance structures. Additionally, increased government support, improved resource access, and better linkages between cooperatives and extension agencies could enhance the effectiveness of agricultural cooperatives (Nyawo & Olorunfemi, 2023). Addressing these barriers and implementing comprehensive strategies that consider market dynamics, economic factors, and organizational structures are essential for improving the strategic planning capabilities of agricultural cooperatives.

Table 12. Operations Management Practices

Operations Item	Mean	Mode	Percentage Agree (%)	Cronbach's Alpha
<i>Strategic Goal Setting</i>	2.00	2	38.0	0.850
<i>Regular Strategic Updates</i>	2.76	3	39.5	0.892
<i>Sound Financial Systems</i>	2.94	3	55.5	0.934
<i>Financial Risk Safeguards</i>	2.01	2	75.6	0.867
<i>Use of Technology for Marketing</i>	3.04	3	51.0	0.854

Table 12 above shows mixed operations management application, as seen by the variation of Cronbach's Alpha values and moderate mean scores, still, this shows internal consistency and reliability of these items since the values of Cronbach's Alpha are more than 0.70. The mean score of 2.01 for financial risk protection suggests more extensive financial processes. According to Cheney et al. (2022), agricultural cooperatives should standardise operations to improve dependability and member satisfaction.

Agricultural cooperatives can enhance their performance through rigorous strategic planning, financial audits, and technology adoption. Strategic planning frameworks help cooperatives align their goals with market demands and member needs. Regular financial audits ensure transparency and identify areas for improvement. Adopting technologies like agricultural information technology (AIT) can significantly boost operational efficiency and market access (Wang et al. 2019). Moreover, while technological factors alone may not significantly influence AIT adoption, leaders' attitudes towards technology play a crucial mediating role (Wang et al. 2019). This highlights the importance of leadership in driving technological innovation within cooperatives. Additionally, cooperatives must consider size and industry effects on financial performance, as larger cooperatives may be more efficient in asset utilization but less profitable than smaller ones (Lerman 2024).

Agricultural cooperatives can optimize operations by implementing comprehensive strategic planning, conducting regular financial audits, and leveraging technology for improved communication and outreach. Internet use, particularly when combined with female leadership, can positively impact economic, social, and innovative performance (Nguyen et al. 2023). However, cooperatives must also be mindful of potential distributional effects, as internet use may exacerbate income inequality within the organization (Nguyen et al. 2023). By balancing these factors and adapting to changing market environments, cooperatives can enhance their effectiveness in supporting smallholder farmers and improving overall performance.

5. Conclusion and Future Research

Effective governance is crucial for the successful application of cooperative principles in agricultural cooperatives. It mediates between institutional factors, internal structures, and member commitment, all of which contribute to cooperative effectiveness. However, there is a need for balance between adapting to market pressures and maintaining cooperative values. The development of appropriate institutional arrangements and good governance practices is essential for the performance and sustainable development of agricultural cooperatives. Future research should focus on exploring innovative governance models that can help cooperatives navigate the tensions between economic viability and adherence to cooperative principles in an increasingly complex global food system.

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