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Corporate Governance Structure and Agricultural Cooperative Efficiency: Evidence from Central Kenya

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Abstract
This study examined the effect of corporate governance structure on the efficiency of agricultural cooperative societies in Central Kenya. The study was anchored on Agency Theory and Resource Dependency Theory, which collectively explain how governance mechanisms influence organizational efficiency. A positivist research philosophy and a descriptive cross-sectional research design were adopted. The study utilized secondary data collected from audited financial statements and board profiles of agricultural cooperative societies in Kiambu, Murang'a, Kirinyaga, Nyeri, and Nyandarua counties. Data was available for 195 agricultural cooperatives, representing 64.7% of the target population. Cooperative efficiency was measured using Data Envelopment Analysis (DEA), while corporate governance structure was operationalized using board composition, board size, and chief executive officer characteristics. Fractional regression analysis was employed because the efficiency scores were bounded between zero and one. The findings revealed that corporate governance structure has a positive and statistically significant effect on the efficiency of agricultural cooperative societies. Specifically, cooperatives with stronger governance structures exhibited higher efficiency levels, underscoring the importance of competent board composition, appropriate board size, and capable chief executive leadership in enhancing organizational performance. The study concludes that effective corporate governance is a critical determinant of cooperative efficiency and recommends that policymakers, cooperative regulators, and members prioritize governance reforms that strengthen board quality, leadership competence, and governance oversight. These findings contribute to the growing body of literature on cooperative governance by providing empirical evidence from agricultural cooperatives in a developing-country context.
Keywords: *Corporate governance structure, agricultural cooperative societies, efficiency, board composition, board size, chief executive officer characteristics, Data Envelopment Analysis, Central Kenya.*

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I. INTRODUCTION

A. Background

Corporate governance provides the framework through which organizations are directed, controlled, and monitored to achieve their strategic objectives (Labie & Mersland, 2011). Effective governance structures establish clear responsibilities among stakeholders, strengthen oversight mechanisms, and facilitate sound financial and operational decision-making (Gregory, 1999). A well-designed governance system also minimizes opportunistic managerial behaviour, promotes efficient utilization of organizational resources, and enhances organizational efficiency (Fonteyne, 2007). Conversely, weak governance structures reduce accountability and encourage inefficient resource allocation, ultimately constraining organizational performance (Zelenyuk & Zheka, 2006). Naz et al. (2022) further argue that effective governance mechanisms create an environment that supports prudent financial and non-financial decisions, thereby improving organizational outcomes.

Agricultural cooperative societies are established to improve members' economic welfare through collective production, processing, marketing, and value addition activities (Food and Agriculture Organization of the United Nations [FAO], 2012). In Kenya, agricultural cooperatives play a significant role in promoting agricultural production and supporting rural livelihoods, with the country's development agenda recognizing them as key drivers of agricultural transformation (International Co-operative Alliance-Africa, 2021). Despite their importance, many agricultural cooperatives continue to experience governance challenges, including inadequate oversight, weak accountability systems, poor strategic planning, and ineffective monitoring of management activities, all of which undermine operational efficiency (County Government of Kiambu, 2021). These governance deficiencies have contributed to low productivity, obsolete operational systems, weak member participation, and declining member loyalty within many agricultural cooperatives (Kenya National Bureau of Statistics, 2020; County Government of Kiambu, 2021).

Although numerous studies have examined the relationship between corporate governance and organizational performance, empirical findings remain inconclusive, particularly within cooperative organizations (Hermalin & Weisbach, 2003). Some studies report that board characteristics improve organizational performance, whereas others find weak or insignificant relationships between governance attributes and organizational outcomes (Keeling, 2005; Bond, 2009). Furthermore, much of the existing literature has concentrated on investor-owned firms or savings and credit cooperatives, with relatively limited attention given to agricultural cooperatives, especially in developing countries (Cornforth, 2004; Franken & Cook, 2013a). Previous Kenyan studies have also largely examined the direct governance–performance relationship without considering the unique context of agricultural cooperatives or employing efficiency measures such as Data Envelopment Analysis (DEA), creating an important empirical gap that warrants further investigation (Mwanja et al., 2014; Ngugi & Afande, 2015; Otieno et al., 2015).

B. Problem Statement

Corporate governance is widely recognized as an important determinant of organizational efficiency because it influences strategic decision-making, managerial oversight, and resource utilization (Gregory, 1999). Nevertheless, many agricultural cooperative societies continue to experience governance challenges, including inadequate board oversight, weak accountability mechanisms, non-compliance with governance requirements, unclear roles and responsibilities of board members, and inadequate board training, all of which undermine organizational efficiency (Ali et al., 2018; Ngugi & Afande, 2015). These governance deficiencies have contributed to poor service delivery, low member participation, and inefficient utilization of cooperative resources despite the critical role that agricultural cooperatives play in supporting agricultural production and rural livelihoods.

Although numerous empirical studies have examined the relationship between corporate governance and organizational performance, their findings remain inconclusive. While some studies report that board characteristics improve organizational performance, others report weak or insignificant relationships between governance attributes and organizational outcomes (Hermalin & Weisbach, 2003; Keeling, 2005; Bond, 2009). Moreover, most existing studies have concentrated on investor-owned firms, mixed cooperative types, or savings and credit cooperatives, making it difficult to generalize their findings to agricultural cooperatives in developing countries (Cornforth, 2004; Franken & Cook, 2013a). In Kenya, previous studies have largely assessed governance using financial performance measures and have rarely evaluated the effect of corporate governance structure on technical efficiency using Data Envelopment Analysis (DEA), which is considered a more appropriate measure of cooperative efficiency (Mwangi, 2014).

Consequently, there is limited empirical evidence on the effect of corporate governance structure on the efficiency of agricultural cooperative societies in Kenya. This study sought to address this gap by examining the influence of corporate governance structure on the efficiency of agricultural cooperative societies in Central Kenya.

II. LITERATURE REVIEW

A. Theoretical Review

Agency Theory, developed by Jensen and Meckling (1976), provides the principal theoretical foundation for explaining the relationship between corporate governance structure and organizational efficiency. The theory argues that conflicts of interest arise because managers (agents) are entrusted with managing organizational resources on behalf of owners (principals), yet managers may pursue personal interests that are inconsistent with those of the owners. Such agency conflicts create monitoring costs and may lead to inefficient utilization of organizational resources if appropriate governance mechanisms are not established (Jensen & Meckling, 1976). Consequently, effective corporate governance structures are necessary to align managerial actions with organizational objectives through monitoring, accountability, and strategic oversight.

Within agricultural cooperative societies, members are the principals, while the board of directors and management act as agents responsible for safeguarding members' interests and ensuring efficient resource utilization (Wakaisuka, 2017). The board performs an oversight role by establishing policies, monitoring management decisions, and ensuring accountability in financial and operational activities. Dagsson and Larsson (2011) argue that Agency Theory is particularly applicable where boards are expected to monitor management and improve organizational performance. Similarly, Aminu and Zainudin (2015) contend that effective governance mechanisms enhance financial management practices by strengthening oversight over organizational resources, thereby improving operational efficiency. The theory therefore suggests that agricultural cooperatives with stronger governance structures are more likely to achieve higher efficiency through improved monitoring and decision-making.

Resource Dependency Theory, advanced by Pfeffer and Salancik (1978), explains organizations as entities that depend on critical resources from their external environment for survival and growth. The theory posits that boards of directors provide valuable resources such as knowledge, professional expertise, experience, networks, and strategic advice that enable organizations to respond effectively to environmental uncertainties and improve organizational performance. Consequently, board composition becomes an important governance mechanism because directors with diverse competencies enhance the organization's capacity to acquire and utilize critical resources effectively.

The theory is particularly relevant to agricultural cooperative societies because board members influence strategic decisions regarding financial management, operational efficiency, and long-term sustainability. Cooperatives with boards possessing appropriate professional qualifications, industry experience, and managerial competence are better positioned to formulate effective policies, monitor management performance, and allocate organizational resources efficiently. As noted by Yobe et al. (2020), board characteristics provide appropriate indicators of governance quality and significantly influence organizational outcomes. Resource Dependency Theory therefore complements Agency Theory by explaining how board competencies strengthen organizational capabilities and contribute to improved cooperative efficiency.

B. Empirical Review

Empirical studies examining the relationship between corporate governance structure and organizational efficiency have produced mixed findings across different institutional and geographical contexts. One of the most widely investigated governance attributes is board size. Gunderson et al. (2009) argued that relatively smaller boards enhance decision-making efficiency by reducing coordination challenges and agency conflicts. Similarly, Hermalin and Weisbach (2003) observed that smaller boards strengthen monitoring effectiveness and improve organizational efficiency. In contrast, Bond (2009), studying agricultural cooperatives, found that larger boards enhance organizational performance by broadening member representation and incorporating diverse skills into strategic decision-making. Likewise, Hakelius (2013) reported that larger cooperative boards improve governance effectiveness by accommodating the democratic principles inherent in cooperative organizations.

Recent empirical evidence suggests that the relationship between board size and organizational efficiency may not be linear. Alzahrani and Rao (2021) found that board effectiveness improves with increases in board size up to an optimal threshold, after which additional board members reduce organizational efficiency because of coordination difficulties and slower decision-making processes. Similarly, Mwangi and Wanjala (2022) established that excessively large boards within Kenyan cooperatives experience reduced accountability and diminished governance effectiveness. These findings suggest that the influence of board size on organizational efficiency depends on organizational and institutional contexts rather than a universally optimal board size.

Board composition has also attracted considerable empirical attention. Tomislava et al. (2018) reported a negative association between female board representation and firm performance among Croatian insurance firms. Conversely, Bonn et al. (2004) found that the relationship between board diversity and organizational performance differed across Australia and Japan, indicating that institutional and cultural environments shape governance outcomes. More recent studies provide stronger support for board diversity. Odhiambo and Ouma (2021) found that gender-inclusive boards with diverse professional backgrounds significantly improved organizational efficiency among Kenyan SACCOs through enhanced oversight and strategic decision-making. Likewise, Amankwah and Frimpong (2023) established that cooperative boards with greater female representation demonstrated superior organizational performance and governance compliance. However, Cho and Park (2022) cautioned that board diversity alone does not improve organizational outcomes unless supported by effective governance practices and inclusive boardroom cultures.

Empirical evidence regarding chief executive officer (CEO) characteristics is equally inconclusive. Van Toor et al. (2016) found that CEO education and gender had no significant influence on the performance of cooperative banks in the Netherlands. In contrast, Khan et al. (2021) reported that CEO education significantly enhanced organizational performance among Pakistani financial institutions. Within the African context, Njeru and Murungi (2020) found that CEO tenure and managerial experience positively influenced the efficiency of Kenyan agricultural cooperatives by strengthening strategic leadership and regulatory compliance. Similarly, Mulewa and Ndegwa (2024) established that CEO education and cooperative-specific experience significantly improved the efficiency of Kenyan marketing cooperatives. However, Ayodele and Ayuba (2021) observed that CEO duality reduced organizational efficiency because the concentration of leadership responsibilities weakened governance oversight and accountability.

Although numerous studies have examined corporate governance and organizational performance, relatively few have measured efficiency using approaches that adequately reflect the objectives of cooperative organizations. Most previous studies have relied on profitability indicators such as return on assets and return on equity, despite cooperatives primarily pursuing member welfare and service delivery rather than profit maximization (Franken & Cook, 2013; Mwangi, 2014). More recent studies have adopted context-appropriate efficiency measures. Tadesse and Demissie (2023) employed DEA to evaluate technical efficiency among Ethiopian agricultural cooperatives, while Kinyanjui and Abuga (2022) incorporated both financial and non-financial performance indicators when assessing Kenyan dairy cooperatives. These studies demonstrate the growing recognition that cooperative efficiency should extend beyond conventional profitability measures.

Overall, the empirical literature demonstrates that the relationship between corporate governance structure and organizational efficiency remains inconclusive because of differences in governance models, institutional settings, organizational objectives, and measurement approaches. Furthermore, most existing studies have focused on investor-owned firms, developed economies, or savings and credit cooperatives, with limited evidence from agricultural cooperatives in developing countries such as Kenya. This study addresses these empirical and contextual gaps by examining the effect of corporate governance structure, measured through board size, board composition, and CEO characteristics, on the efficiency of agricultural cooperative societies in Central Kenya using DEA as a context-appropriate measure of cooperative efficiency.

III. METHODOLOGY

This study adopted a positivist research philosophy and employed a descriptive cross-sectional research design to examine the effect of corporate governance structure on the efficiency of agricultural cooperative societies in Central Kenya. The target population comprised 301 agricultural cooperative societies operating in Kiambu, Murang'a, Kirinyaga, Nyeri, and Nyandarua counties. Secondary data were collected from audited financial statements and board members' profiles maintained by the respective cooperatives. Complete data were available for 195 agricultural cooperative societies, representing 64.7% of the target population, and these cooperatives formed the basis of the analysis.

Corporate governance structure constituted the independent variable and was operationalized using board composition, board size, and chief executive officer characteristics. The dependent variable was cooperative efficiency, which was measured using DEA. DEA was considered appropriate because it measures the relative efficiency of decision-making units by simultaneously incorporating multiple inputs and outputs, making it more suitable for cooperative organizations than conventional profitability measures such as return on assets and return on equity (Mwangi, 2014; Habibullah et al., 2005). The efficiency scores generated by DEA were bounded between zero and one.

Data were analyzed using descriptive statistics, correlation analysis, and fractional regression analysis. Descriptive statistics summarized the characteristics of the study variables, while Pearson correlation analysis assessed the association between corporate governance structure and cooperative efficiency. Fractional regression analysis was employed to estimate the effect of corporate governance structure on efficiency because the dependent variable comprised fractional efficiency scores bounded within the unit interval. Model specification tests and marginal effects were also conducted to assess model adequacy and facilitate interpretation of the regression results.

IV. RESULTS AND DISCUSSION

A. Descriptive Results

The descriptive statistics presented in Table 1 summarize the governance characteristics of the 195 agricultural cooperative societies included in the study together with their technical efficiency scores. A total of 1,389 board members served in the sampled cooperatives. Regarding educational attainment, 43.99% (611) of board members had secondary school education, 22.61% (314) possessed post-secondary certificates, 18.80% (261) had primary education, while only 3.67% (51) held bachelor's degrees and 0.43% (6) possessed postgraduate qualifications. Most board members were aged 46–55 years (38.44%), followed by those aged 56–65 years (28.94%), whereas only 2.95% were aged between 26 and 35 years and none were below 25 years. In terms of governance experience, 34.20% had served for 4–6 years, 29.59% for 1–3 years, 22.89% for 7–9 years, and only 13.32% had served for more than ten years. The boards were predominantly male, with 84.59% (1,175) male directors compared to 15.41% (214) female directors. Most cooperatives (62.05%) operated with seven-member boards, consistent with the governance structures prescribed under Kenya's cooperative legislation.

Table 1: Descriptive Statistics of Corporate Governance and Cooperative Efficiency

Variable	Category/Statistic	Frequency	Percentage
Board education (n = 1,389)	Master's degree and above	6	0.43
	First degree	51	3.67
	Diploma	146	10.50
	Post-secondary certificate	314	22.61
	Secondary	611	43.99
	Primary	261	18.80

Variable	Category/Statistic	Frequency	Percentage
Board age (n = 1,389)	Below 25 years	0	0.00
	26–35 years	41	2.95
	36–45 years	178	12.82
	46–55 years	534	38.44
	56–65 years	402	28.94
	Above 65 years	234	16.85
Board experience (years) (n = 1,389)	1–3 years	411	29.59
	4–6 years	475	34.20
	7–9 years	318	22.89
	Above 10 years	185	13.32
Board gender (n = 1,389)	Male	1,175	84.59
	Female	214	15.41
Board size (n = 195)	5 members	28	14.36
	6 members	6	3.08
	7 members	121	62.05
	8 members	3	1.54
	9 members	37	18.97
CEO education (n = 195)	Master's degree and above	7	3.59
	First degree	23	11.79
	Diploma	41	21.03
	Post-secondary certificate	87	44.62
	Secondary	37	18.97
CEO experience in cooperative movement (n = 195)	1–3 years	56	28.72
	4–6 years	48	24.62
	7–9 years	29	14.87
	Above 10 years	62	31.79
Years served as CEO (n = 195)	Mean (SD)	6.57 (5.60)	
	Minimum–Maximum	1–28 years	
CEO gender (n = 195)	Male	157	80.51
	Female	38	19.49
Cooperative efficiency (DEA) (n = 195)	Mean (SD)	0.62 (0.03)	
	Minimum–Maximum	0.53–0.70	

B. Hypothesis Testing
To examine the effect of corporate governance structure on the efficiency of agricultural cooperative societies in Central Kenya, a fractional probit regression model was estimated because the dependent variable (DEA efficiency score) was bounded between zero and one. The hypothesis tested was:
H_0: Corporate governance structure has no significant effect on the efficiency of agricultural cooperative societies in Central Kenya.

Table 2: Fractional Probit Regression Results for Corporate Governance Structure and Cooperative Efficiency

Variable	Coefficient	Robust S.E.	z	p-value
Corporate governance structure	0.000439	0.000205	2.14	0.032
Constant	0.260689	0.024518	10.63	<0.001

Model Statistics	Value
Observations	194
Wald $\chi^2(1)$	4.59
Prob > χ^2	0.0321
Log pseudolikelihood	-128.573
Pseudo R^2	0.0001

Dependent variable: Cooperative efficiency (DEA score).

The results in Table 2 indicate that corporate governance structure has a positive and statistically significant effect on the efficiency of agricultural cooperative societies ($\beta = 0.000439$, $z = 2.14$, $p = 0.032$). The positive coefficient implies that improvements in governance practices, reflected through board composition, board size, and chief executive officer characteristics, are associated with higher levels of cooperative efficiency. The overall model was statistically significant (Wald $\chi^2 = 4.59$, $p = 0.0321$), indicating that corporate governance structure significantly explains variations in cooperative efficiency.

The estimated marginal effect further showed that a one-unit improvement in the corporate governance index increased cooperative efficiency by approximately **0.0192%** ($dy/dx = 0.000192$, $p = 0.006$), suggesting that although the magnitude of the effect is relatively small, it is practically meaningful and statistically significant. In addition, the fractional regression specification test revealed no evidence of model misspecification since the squared fitted values were statistically insignificant ($p = 0.741$), confirming the adequacy of the estimated model.

Accordingly, the null hypothesis was rejected, and the study concluded that corporate governance structure has a positive and statistically significant effect on the efficiency of agricultural cooperative societies in Central Kenya. The findings suggest that strengthening governance practices through appropriately constituted boards and competent chief executive leadership can enhance the operational efficiency of agricultural cooperatives.

V. CONCLUSION

This study examined the effect of corporate governance structure on the efficiency of agricultural cooperative societies in Central Kenya. The findings demonstrate that corporate governance structure has a positive and statistically significant effect on cooperative efficiency, indicating that improvements in board composition, board size, and chief executive officer characteristics contribute to enhanced organizational efficiency. The study therefore concludes that effective corporate governance is an important determinant of agricultural cooperative efficiency. Strengthening governance structures by ensuring competent and experienced boards, maintaining appropriate board sizes, and appointing qualified chief executive officers can improve oversight, strategic decision-making, and resource utilization, thereby enabling agricultural cooperatives to operate closer to their optimal efficiency frontier.

VI. RECOMMENDATIONS

Based on the findings, agricultural cooperative societies should strengthen their corporate governance structures by appointing competent and experienced board members, maintaining appropriately sized boards, and recruiting qualified chief executive officers with relevant cooperative management expertise. Such governance practices are likely to enhance strategic oversight, improve decision-making, and promote more efficient utilization of organizational resources.

Policymakers and cooperative regulators should develop and enforce governance frameworks that emphasize board competence, leadership development, and continuous governance training rather than focusing solely on member representation. Capacity-building programmes for board members and chief executive officers should also be strengthened to improve governance effectiveness and, ultimately, the operational efficiency of agricultural cooperative societies.

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