



Moderated Mediation Dynamics: Influence of Strategic Linkages and Policy Implementation on Corporate Leadership and Kenya Agricultural Research Organization's Performance

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Abstract

Global demand for safe, affordable, and accessible nutritious food currently exceeds governmental efforts, notwithstanding huge investments in enhancing capacity of organizations mandated to reverse such trends. With the projected 27% increase in global population by 2050, the need for corporate leadership and policy implementation efforts is urgent. The study explored the moderated mediation effect of strategic linkages and policy implementation on the relationship between corporate leadership and performance of Kenya Agricultural and Livestock Research Organization (KALRO). Rooted in organizational excellence, upper echelons, legitimacy, institutional, and stakeholder theories, the study employed a pragmatic philosophy, and mixed methods design to mitigate bias. The target population included 75 management organs, with 60 directors and 188 top leadership units as units of observation. Quantitative data was analyzed using SPSS, and qualitative data using NVivo. Cronbach's alpha ($\alpha \geq .700$) confirmed internal consistency. Both confirmatory factor and principal component analyses aided data reduction. Moderated mediation analysis, using Hayes' PROCESS Macro, showed significant interaction ($p = .004$) between policy implementation (mediator) and strategic linkages (moderator), indicating that the effect of

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policy implementation on KALRO's performance varies with levels of strategic linkages (set at -.229). Index below -0.229 shows significant relationships, and vice versa. Recommendations encompass gender diversity, inclusive leadership development, regular performance appraisals, an enhanced monitoring and evaluation system, and improved linkages. The findings provide valuable guidance for KALRO's leadership amid competing priorities and budgetary constraints.

Keywords: *Moderated mediation, policy implementation, strategic linkages, corporate leadership, KALRO*

1.0 Introduction

In today's rapidly evolving global landscape, ensuring safe, affordable, and accessible nutritious food exceeds governmental efforts. With the projected surge in global population by 2050, adept corporate leadership and regulated policy implementation aligned with endorsed standards are imperative (FAO, 2021) to reverse the alarming trends. An appeal on government agencies tasked with regulating national agricultural and livestock research systems is timely, and a review of the effectiveness of corporate leadership principles as well as robustness of policy implementation approaches is valuable. Studies have shown that the impact of corporate leadership on increasing organizational performance has garnered significant attention globally (Stephens, 2018).

Corporate leadership, comprising top management like directors, CEOs, and administrators, is essential for optimizing organizational performance by providing strategic direction, goal clarification, resource management, conflict resolution, and fostering an ethical culture (Ba, 2022; Haski-Leventhal, 2021). Drago et al. (2023) emphasize the significance of leadership style on organizational performance, while Pless et al. (2021) highlight leadership's role in strategic alignment and organizational success. Pureza and Lee (2020) underscore corporate leadership's responsibility in supporting policy implementation, knowledge sharing, and strategic alignment.

This study explores corporate leadership's influence on KALRO's performance, crucial for addressing food and nutrition insecurity. While Grindle (2017) opines that politics and policy implementation significantly influences organizational performance, Goyal (2021) stresses the role of policy implementation in overcoming organizational failures. These scholars support that organizational performance and policy implementation are correlated notwithstanding dearth in assessment of mediating role in policy implementation on the relationship between corporate leadership and organizational performance.

Strategic linkages with organizations, private sector, universities, agencies, governments, and donors are vital for increasing organizational performance. These linkages can be across departments, institutions, sectors as well as combining resources, expertise, and skills to achieve common objectives. Scholars like Vico and Hallonsten (2019), Sawitri et al. (2017), and Morales et al. (2017) noted that strategic linkages can include memoranda of understanding, letters of agreement, or collaborative framework. While research on moderating impact of strategic linkages on relationship between corporate leadership and organizational performance is limited, scholars such as Mattanini et al. (2017), Novicevic et al. (2017), Raelin (2018), and Döös and Wilhelmson (2021), have noted how such alliances bolster performance by providing access to resources, markets, and expertise, particularly in the agriculture sector.

Generally, organizational performance involves collective efforts from top leadership to junior staff, each playing specific roles to ensure achievement of predetermined targets. Scholars like Schwens and Wagner (2019) and Haider et al. (2018) noted that organizations with balanced

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leadership, prioritizing stakeholder satisfaction, and fulfilling strategic policy obligations generally exhibit high performance. Some of the indicators of organizational performance are financial viability, stakeholder access to services, stakeholder satisfaction with provided goods and enhanced social capital.

In Singapore, Howlett et al. (2015) cited a correlation between strong governance abilities and enhanced performance through consistent policy implementation overseen by corporate leadership. In France and Canada, Berthet and Hickey (2018) underscored the importance of robust strategic linkages and corporate leadership in achieving long-term objectives. While Whittington et al. (2019) emphasized corporate leadership's role in supporting policy implementation and facilitating organizational transformation in the UK, Almahasneh et al. (2023) documented how effective corporate leadership, coupled with consistent policy implementation, leads to improved organizational performance in Jordan.

However, in Africa, despite a wealth of agricultural research institutions, persistent challenges like conflicts, political instability, and economic setbacks hinder access to proven technologies, exacerbating food insecurity (Stephens, 2018). Suri and Udry (2022) noted that governments that incorporate corporate leadership in their agricultural research agenda and policy implementation end up stimulating innovation in service delivery. Within Africa, where numerous state-funded agricultural and livestock research organizations operate, corporate leadership's importance is pronounced. In Nigeria, Maduenyi et al. (2015) highlighted leadership's influence on organizational performance by enabling coordinated research and stakeholder satisfaction. Conversely, Akparep et al. (2019) found a nuanced relationship between leadership style and performance in Ghana.

In Kenya, Olaka et al. (2017) established a positive relationship between strategic leadership and policy implementation in commercial banks. Kitonga (2017) emphasized the need for strong corporate leadership in state-funded agricultural research institutions. Kilonzi et al. (2023) noted that effective corporate leadership enhances organizational performance and facilitates access to safe food, while Okech et al. (2021) highlighted the critical role of performance reviews in improving leadership effectiveness. However, challenges persist, as noted by Awino et al. (2017), attributing dwindling performance in agricultural and fisheries parastatals to leadership deficiencies and moderators like political interference. This study delves into the moderated mediating role of strategic linkages and policy implementation on the relationship between corporate leadership and the performance of the Kenya Agricultural and Livestock Research Organization (KALRO), the agency entrusted with ensuring national food security. The study employs organizational excellence theory as anchor theory, supplemented by upper echelons theory, legitimacy theory, institutional theory, and stakeholder theory.

Established by the Government of Kenya through the Kenya Agricultural and Livestock Research (KALR) Act, No. 17 of 2013, KALRO is under the Ministry of Agriculture and Livestock Development and is the principal national organization responsible for research and technology generation on crops, livestock, and soil and water management. The Act established 16 research institutes with full-fledged management organs. It was formed by merging four parastatals: Kenya Agricultural Research Institute, Coffee Research Foundation, Tea Research Foundation of Kenya, and Kenya Sugar Research Foundation with the aim of enhancing food security. Despite this legislative framework, the extent to which the combined effect of policy implementation and strategic alliances are leveraged within KALRO to drive performance and foster agricultural innovation remains unclear.

1.1 Statement of the Problem

The projected 27% increase in global population by 2050 (FAO, 2022), hence affecting over half a billion smallholder farmers calls for urgent and sustained corporate leadership, implementable policies as well as reliable strategic linkages that guarantee availability of balanced diets for all. While Kenya's average productivity of 9 tons per hectare surpasses that of East Africa's 6.8 and Africa's 7.1, it still falls below global average of 9.8. Similarly, Kenya's average monthly food consumption per capita of 35 kilograms compared to East Africa's 47, Africa's 44, and the world's 56 is the lowest. Inasmuch as the Kenyan government recognizes the role of corporate leadership in enhancing organizational performance, hence boosting of food and nutrition security, there is scant evidence of the mediating effect of policy implementation and the role of strategic linkage's moderating effect on the relationship between corporate leadership and organizational performance. Application of technologies and research findings on farmers' fields is low, while many farmers intended as beneficiaries record low productivity, with over 177 million (2 million in Kenya) facing starvation and lack access to markets and critical goods, products and services.

Effective corporate leadership is crucial for organizational success, with authenticity, decisiveness, focus, hands-on involvement, adept skills, and robust communication playing pivotal roles (Jaleha & Machuki, 2019). Despite the potential of agricultural and livestock research organizations in meeting escalating food demand, concerns persist regarding their performance. Disruptions like conflicts, civil unrest, and economic downturns continue to thwart efforts in increasing agricultural productivity, leaving millions at risk of starvation. This study aims to bridge conceptual and empirical gaps, exploring moderated mediation role of strategic linkages and policy implementation on the relationship between corporate leadership and KALRO's performance. Addressing these gaps offers insights for KALRO leaders to enhance organizational effectiveness.

1.2 Objectives of the Study

- i. To establish the effect of corporate leadership on performance of KALRO.
- ii. To assess moderated mediation effect of strategic linkages and policy implementation on the relationship between corporate leadership and performance of KALRO.

1.3 Hypotheses of the Study

H₀₁: There is no significant relationship between corporate leadership and performance of KALRO.

H₀₂: There is no significant moderated mediation of strategic linkages and policy implementation on the relationship between corporate leadership and performance of KALRO.

1.4 Justification of the Study

In response to the current challenges in Kenya's agricultural sector, particularly within KALRO, this study provides valuable insights into the role of corporate leadership and strategic linkages in addressing food production and nutritional issues. The findings aim to guide top leadership, policymakers, and regulatory bodies in making informed decisions to enhance agricultural productivity.

2.0 Literature Review

2.1 Theoretical Review/ Framework

Five theories offer a comprehensive framework for understanding corporate leadership and organizational performance. The organizational excellence theory coined by Peters (1999)

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focuses on the fact that organizational success relies on inbuilt cultures and policies, linkages and partnerships, as well as effective corporate leadership. It lobbies for involvement of top leadership in giving direction, ensuring policy adoption and implementation, as well as strengthening alliances and strategic linkages. The upper echelons theory by Hambrick and Mason (1994) supports the fact that top managements' background as a unit instead of individual members of staff influences organizational performance, besides providing policy and sustainable linkages and partnerships. The legitimacy theory proposed by Lindblom (1994) supports policy implementation and notes that performing organizations generally respect approved norms and social contract by stakeholders. Institutional theory by Meyer and Rowan (1977) supports strategic linkages and notes that survival of organizations depends on their adaptability to evolving socio-cultural expectations by partners. Stakeholder theory by Freeman (1984) links policy implementation and strategic linkages by stating that stakeholders have ownership rights and ought to benefit when corporate leaders observe laid-down rules.

2.2 Empirical Review

2.2.1 Corporate Leadership and Organizational Performance

Corporate leadership involves cultivating strategic thinking to manage organizational complexities and pursue a transformative agenda. Scholars like Iqbal et al. (2020) highlighted positive impact of strategic leadership principles on organizational performance, emphasizing the need for management control systems and practices like organizational structuring and research culture maintenance. In Indonesia, Gusmão et al.'s (2018) exploration of the influence of strategic leadership on organizational performance within the Ministry of Government showed a positive relationship between strategic leadership and organizational behaviour. Nyandika et al. (2022) in Kenya noted that organizations that adopt strategic leadership principles exhibit significant improvement in their performance compared to those that do not, while Montuori and Donnelly's (2018) study on the influence of workplace diversity in selected agencies in the United States emphasized the contribution of inclusive leadership and comprehensive diversity strategies in fostering inclusive organizational performance. Majority of reviewed literature had limited references to KALRO.

2.2.2 Corporate Leadership, Policy Implementation, Strategic Linkages, and Organizational Performance

The relationship between corporate leadership, policy implementation, strategic linkages, and organizational performance is multifaceted and interconnected. On one hand, effective corporate leadership sets the tone for organizational direction, culture, and decision-making processes, influencing the implementation of policies and strategies, while on the other hand, successful execution of policies relies on strong leadership support and guidance. Strategic linkages, encompassing collaborations, partnerships, and alliances, play a crucial role in enhancing organizational capabilities, resource access, and organizational positioning and branding. These linkages amplify the impact of both corporate leadership and policy implementation on organizational performance by leveraging external resources, knowledge, strategies, and opportunities (Shimengah, et al., 2019; Obuba, 2022; Basit, 2020). Ultimately, organizational performance is the culmination of these factors working in synergy, reflecting the effectiveness of leadership practices, the alignment of policies with strategic objectives, and the leveraging of strategic partnerships to achieve desired outcomes.

The dynamics of corporate leadership, policy implementation, strategic linkages, and organizational performance have been extensively explored in the literature. Studies such as those by Solomon (2013), Bonnyventure et al. (2022), Gusmão et al.'s (2018), Vico & Hallonsten (2019), and Oketch et al. (2021) have highlighted the pivotal role of effective

corporate leadership in positively influencing organizational performance. However, contrasting perspectives, as seen in the works of McConvill (2012) and Iraya et al. (2015), have pointed out instances of insignificant relationships and underperformance within organizations. Further research, exemplified by Haider et al. (2018) and Pang and Lu (2018), has delved into the mediating effects of factors like policy-regulated job satisfaction on performance. The absence of studies incorporating all these four variables within the agricultural and livestock research setting informed this study.

2.3 Conceptual Framework

In the first stage of the moderated mediation analysis conceptual framework, KALRO's performance (OP) served as the dependent variable, while corporate leadership (CL) acted as the independent variable. Policy implementation (PI) operated as the mediator, influencing the relationship between corporate leadership and KALRO's performance. Additionally, strategic linkages (SL) were introduced as the moderator, capable of altering the mediation process by influencing the relationship between policy implementation and KALRO's performance based on varying levels of strategic linkages. This framework aimed to elucidate the intricate interplay between corporate leadership, policy implementation, and strategic linkages in shaping organizational performance, highlighting the nuanced role of strategic linkages in moderating the mediation process (see Figure 1). Some of the indicators assessed included: level of effectiveness of corporate leadership, the degree of policy implementation at all levels of KALRO, and the strength of strategic linkages of KALRO with its assorted partners. Stakeholder satisfaction was assessed to gauge KALRO's ability to meet stakeholder expectations and foster positive relationships.

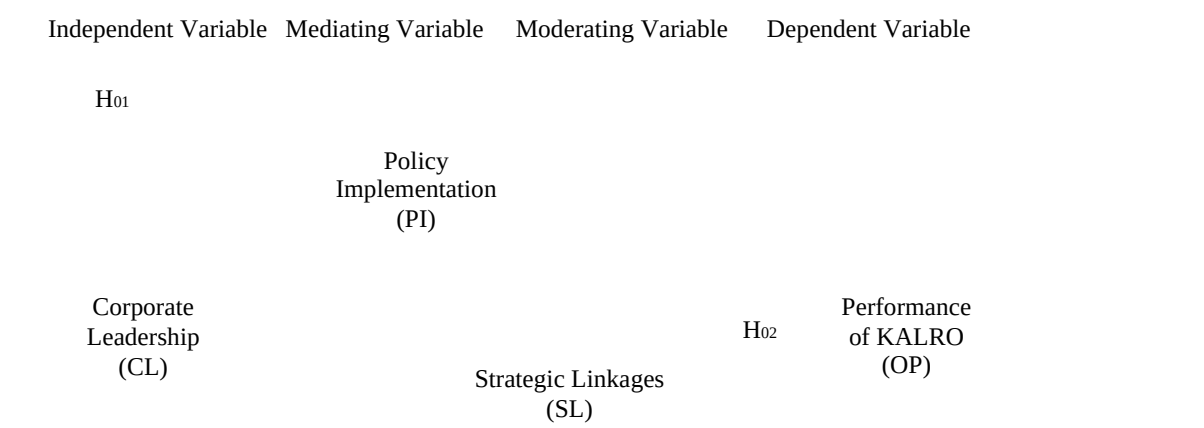


Figure 1: Conceptual Framework

3.0 Research Methodology
Research Philosophy

The study embraced a pragmatic research philosophy, employing mixed methods approach to provide practical solutions and mitigate personal biases (Khatri, 2020). Concurrent triangulation ensured comprehensive data collection, analysis, and interpretation, aligning with the philosophical assumptions of ontology, axiology, and methodology (Saunders et al., 2019).

Research Design

The study employed a mixed methods approach, utilizing concurrent triangulation to blend inductive and deductive thinking. Data collection involved a cross-sectional survey to examine variable relationships quantitatively and interpretive phenomenological analysis qualitatively, thereby ensuring comprehensive insights into respondents' experiences and interpretations.

Population of the Study

The target population comprised specific segments of KALRO's authorized management divisions, including the Board of Management, directorate, Secretariat, research institutes, research centres, and KALRO Seeds. A total of 75 institutions with 75 management organs formed the units of analysis. The unit of observation was 248 respondents, comprising 60 directors and 188 top leaders from various work locations.

Sampling and Sampling Techniques

Due to small size of target population, comprising 248 top leadership and managers, census was conducted. This ensured detailed assessment without sampling bias.

Data Collection and Instruments

Primary data was collected using online structured questionnaire and focus group discussions. The Likert scale assessed perceptions, while focus group discussions provided a platform for liberal opinions. Questionnaire covered data on 84 items within the study variables: corporate leadership, policy implementation, strategic linkages, and organizational performance.

Pilot Study

A pilot study with 16 respondents (6% of the unit of observation) helped improve quality of the questionnaire that was eventually shared with the 248 respondents in the main study.

Reliability and Validity Tests

Reliability test was done using Cronbach's coefficient alpha, while construct validity was done by selected experts. Diagnostic tests included assessments for homoscedasticity, normality, autocorrelation, and multicollinearity, all of which passed the acceptable threshold of significance. Levene's test of homogeneity of variable based on mean, and Durbin-Watson statistics of autocorrelation were used to ensure validity of data.

Data Analysis

Mixed methods approach was adopted for data analysis. Quantitative data was analyzed using SPSS, and qualitative data using NVivo. Cronbach's alpha, with a threshold of $\alpha = .700$ applied to affirm internal consistency reliability. Confirmatory factor analysis, multiple regression analyses and principal component analyses were used in data reduction and pattern recognition. Moderated mediation analysis was done using the approaches proposed by Baron and Kenny as well as Hayes' PROCESS Macro.

Diagnostic Tests

Homoscedasticity was confirmed via Levene's test ($p < .05$). Normality was assessed using t-tests, ANOVA, and regression analysis, with normal probability charts affirming a normal distribution. Autocorrelation was examined through residual scatterplots and Durbin-Watson statistics. Multicollinearity was addressed through zero-order correlations ($\geq .30$), Tolerance ($> .1$), and VIF (< 10). Confirmatory factor analysis utilized KMO and Bartlett's Test. PCA reduced data with eigenvalues, while factor loading ($> .3$) assessed relationships. Hayes' PROCESS Macro Model 14 was used to analyze moderation mediation effect.

Hypothesis Testing

The study adopted multivariate analyses, specifically confirmatory factor analysis, to assess formulated hypotheses. Composite indicators, widely used in research settings, were employed to gauge observable statistical significance and consolidate diverse dimensions. The Min-Max scaler was applied for normalization, and a weighted linear aggregation rule created common composite indicators. The researcher used data-driven weighting methods, incorporating numerical analysis for specific weights, ensuring objectivity in the process.

4.0 Results and Discussions

Reliability of Data Collection and Instruments

The study's response rate was 85.5%, hence ensuring reliability, validity, statistical power, ethical considerations, credibility, generalizability, and confidence in the findings. Average coefficients for Cronbach's Alpha and Cronbach's Alpha Based on Standardized Items were .854 and .855, respectively, indicating strong internal consistency reliability.

Demographic Characteristics

KALRO's top leadership exhibited a notable male majority at 67.9%, meeting the two-thirds gender rule. The ANOVA results indicated that age group of targeted leaders had a statistically significant effect on KALRO's performance ($F = 5.518$; $p = .020$). This suggests differences in leadership style, experience, and approaches across different age groups, thus impacting the organization's effectiveness. KALRO is poised to benefit from considering the age group of its leaders in strategic planning and leadership development to optimize performance and harness the strengths of different age groups. Similarly, 62% of leaders were aged 45 or older, revealing a mentoring gap for those under 25, here represented by less than one percent of the respondents (Table 1).

The leadership structure including 48.6% managers and technical theme leaders, 30.6% in the directorate group, and 18.4% in junior/middle-level roles showed a moderately balanced distribution of personnel, thus accounting for the moderately stable governance organ of the organization. To maintain some political linkages with the government, KALRO's board comprised a member of parliament. Of concern was the duration of leaders in their leadership positions. Over 45% of respondents held leadership positions for less than five years, while approximately 27% served for 5 to 9 years. These results suggest that if KALRO continues to engage leaders for relatively short tenures, there is a high risk of losing institutional memory and continuity during frequent leadership changes. Leaders require significant time to adjust before fulfilling their mandate. This observation aligns with Zubair et al.'s (2021) study, which noted a significant correlation between organizational performance and leaders' service duration.

Table 1: Demographics of Respondents

Profile	Category	Frequency	Percentages
Gender	Male	144	67.92
	Female	68	32.08
Age	Below 25	2	.94
	25 – 34	28	13.21
	35 – 44	50	23.58
	45 – 54	68	32.08
	55 and above	64	30.19
Titles	Honourable	1	.47
	Prof/Dr.	86	40.57
	Mr., Mrs., Ms.	125	58.96
Position	Board member	5	2.36
	Director	65	30.66
	Manager	103	48.58
	Officers	39	18.40
Duration of Leadership (Years)	Below 5	96	45.28
	5 – 9	57	26.89
	10 – 14	28	13.21
	15 – 19	18	8.49
	20 and above	13	6.13
Duty Station	Headquarters	72	33.96
	Research Institute	44	20.75
	Research Centre	96	45.28
Number of Staff Supervised	None	31	14.62
	Below 10	77	36.32
	11 – 20	31	14.62
	21 – 50	28	13.21
	51 – 100	24	11.32
	Over 100	21	9.91

Evaluation of correlation between organizational performance and supervision roles showed that 84.9% of respondents with supervisory responsibilities rated KALRO's performance as high, while 14.6% of non-commissioned respondents shared the same perception (Table 2).

Table 2: Cross-Tabulation of Supervisory Roles and Performance

Has Supervisory Functions?	Level of Performance (N/%)		Total
	Low	High	
Yes	7	174	181
	.5%	84.9%	85.4%
No	0	31	31
	.0%	14.6%	14.6%
Total	7	205	212
	.5%	99.5%	100%

Analysis of symmetrical measures on supervisory positions and organizational performance based on gamma values that serves as a metric for the correlation between performance levels (low or high) and leadership roles (yes or no) yielded a score of 1.000. This shows a perfect positive relationship between supervisory function and performance. The low asymptotic

standard error of .000 indicated a high level of precision in predicting the association ($p < .011$), while higher t-values of 2.530 implied greater significance (Table 3).

Table 3: Symmetric Measure of Supervision and Performance

	Value	Standard Error	T	Sig.
Kendall's tau-c	.019	.008	2.53	.011
Gamma	1.000	.000	2.53	.011

These results showed that those respondents with higher supervisory roles also expressed satisfaction with increased organizational performance. Pang and Lu (2018) confirmed this finding when their study on the relationship between organizational motivation, employee job satisfaction and organizational performance generated significant outcomes.

Reliability of Data Collection and Instruments

Corporate leadership, policy implementation, strategic linkages, and KALRO's performance were measured using 84 statements. Mean values for Cronbach's Alpha and Cronbach's Alpha Based on Standardized Items were .908 and .914, respectively, showing high internal consistency compared to the threshold of $\alpha \geq .700$ (Table 4).

Table 4: Reliability Statistics for Variables

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Cronbach's Alpha of Item Deleted	Number of Items
Corporate Leadership	.931	.934	.816	22
Policy Implementation	.847	.863	.845	26
Strategic Linkages	.919	.922	.806	19
Organizational Performance	.933	.938	.782	17
Total	0.908	0.914	0.812	84

Descriptive Statistics of Study Variables

A review of KALRO's corporate leadership showed a solid strategic orientation and a generally positive outlook supported by over 74% of respondents expressing favourable perceptions ($M = 3.79$; $SD = .493$). Regarding efforts to develop talents within KALRO, concerns centred around human capital evaluation ($M = 3.02$; $SD = .689$). Succession plan issues ranked high as needing attention, while feedback on management of corporate culture varied by age, with young scientists demanding for support and inclusion in management. Policy implementation via performance monitoring recorded consensus ($M = 3.72$; $SD = 0.951$), thus calling for robust framework for tracking and evaluating outcomes. Resource availability challenges were evident ($M = 3.02$; $SD = 0.689$), constraining implementation of policies, while implementation of identified policy barriers was not regular ($M = 2.90$; $SD = .823$).

Inasmuch as strategic linkages and effective collaboration with international organizations was reasonable ($M = 3.73$; $SD = .622$), there were calls to initiate joint research projects. Efforts

leading to political linkages evoked neutral response, while effectiveness of fund remittance and budget increases were dissatisfying, mainly from governmental bodies. However, positive feedback on institutional linkages (M = 3.80; SD = .674) and impactful media engagement (M = 3.84; SD = .596) underscored importance of strengthening strategic connections to enhance visibility and outreach efforts. Stakeholders also expressed satisfaction with organizational performance (M = 4.13; SD = .513) and effectiveness of innovation platforms (M = 4.11; SD = .764), notwithstanding need for improvements in communication and collaborative efforts.

Correlation Analysis

All Cronbach's alpha scores indicate strong internal reliability (Table 5). Significant correlations at $p < .05$ level (2-tailed) reject the null hypothesis, confirming associations between variables. Moderate positive correlations are observed, with organizational performance significantly associated with corporate leadership ($r = .613$), policy implementation ($r = .502$), and strategic linkages ($r = .798$).

Table 5: Pearson’s Correlation Coefficient of Variables

		Corporate Leadership	Policy Implementation	Strategic Linkages	Organization Performance
Corporate Leadership	Pearson	1			
	Correlation				
	Sig. (2-tailed)				
Policy Implementation	N	212			
	Pearson	.653**	1		
	Correlation				
Strategic Linkages	Sig. (2-tailed)	<.001			
	N	212	212		
	Pearson	.544**	.471**	1	
Organization Performance	Correlation				
	Sig. (2-tailed)	<.001	<.001		
	N	212	212	212	
	Pearson	.613**	.502**	.798**	1
	Correlation				
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	212	212	212	212

**. Correlation is significant at the 0.01 level (2-tailed).

Okech et al. (2021) demonstrated a robust correlation of .69 between leadership style and development partners, mirroring Kitonga's (2017) findings of $R = .283$ between strategic leadership and non-profit development partners.

Moderated Mediation Analysis

The study applied moderated mediation analysis to determine how corporate leadership affects KALRO’s performance at different values of the moderator – strategic linkages. In examining KALRO’s performance (outcome variable), the regression model demonstrates a robust association with the predictors: corporate leadership, policy implementation, and strategic linkages, and their interactions. The tested hypothesis states that there no significant moderated mediation effect of strategic linkages and policy implementation on the relationship between corporate leadership and performance of KALRO. Hayes' PROCESS macro and AMOS in SPSS were employed, utilizing the model proposed by Hayes (2022). Based on the significant p-values, the second hypothesis was rejected at 5% significance level. Therefore, the

alternative hypothesis, **H_{A2}**: There is significant moderated mediation effect of strategic linkages and policy implementation on the relationship between corporate leadership and performance of KALRO, was adopted. These results are supported by Twaissi and Aldehayyat (2021) whose study in Jordan on performance of manufacturing companies demonstrated positive significant moderation effect of stakeholder involvement in the relationship between formal strategic planning and organizational performance.

The two-stage process was adopted, with the first stage of the moderated mediation analysis taking the form as modelled:

$$PI = i_{PI} + a_{CL} + e_{PI} \dots\dots\dots (1)$$

Initial analysis revealed a relationship whereby corporate leadership significantly predicted policy implementation (coefficient = .487, $p < .001$). The significant constant term further suggested an estimated value of -1.854 for policy implementation when corporate leadership was zero. This constant term represented the baseline level of policy implementation when all predictors, including corporate leadership, were absent or at their lowest levels. The model's R-Square of 0.427 indicated that a substantial portion of the variance in policy implementation was explained by corporate leadership, while $F = 156.419$ ($p < .001$) showed the model's overall significance, hence suggesting a good model fit for the data. This model yielded a statistically significant effect fitted as follows:

$$\tilde{PI} = -1.854 + .487*CL \dots\dots\dots (2)$$

The second stage of analysis was modelled as follows:

$$OP = i_{OP} + c'_{CL} + b_1PI + b_2SL + b_3PI * SL + e_{OP} \dots\dots\dots (3)$$

Further analysis of the effect of all the variables on KALRO's performance showed some level of statistical significance. There was a high degree of explained variance ($R^2 = .695$), indicating substantial predictability. Notably, corporate leadership and strategic linkages emerge as significant predictors of KALRO's performance, with coefficients of .174 ($p=.001$) and .609 ($p<0.001$), respectively. While the effect of policy implementation on KALRO's performance is non-significant (coefficient = .097, $p = .131$), the interaction between policy implementation and strategic linkages yields a significant effect on KALRO's performance. This model yielded a statistically significant effect fitted as follows:

$$\tilde{OP} = 3.362 + .174*CL + .097*PI + .609*SL - .160(PI*SL) \dots\dots\dots (4)$$

With $R=.834$ and $R^2 = .695$, the model demonstrates a strong linear relationship, attributing 69.5% of performance variance to corporate leadership and policy implementation (Table 6).

Table 6: Model Coefficients for Moderated mediation Effect

Model	Coefficient	Se	T	P	LLCI	ULCI
Constant	3.362	.193	17.463	.000	2.982	3.741
Corporate Leadership (CL)	.174	.050	3.484	.001	.075	.272
Policy Implementation	.097	.064	1.517	.131	-.029	.222
Strategic Linkages (SL)	.609	.045	13.628	.000	.521	.698
CL * SL	-.160	.055	-2.923	.004	-.268	-.052

The moderated mediation analysis reveals a significant interaction ($p = .004$) between policy implementation (mediator) and strategic linkages (moderator) and explaining a proportion of variance in the dependent variable (R^2 change = .013). This indicates that the relationship between policy implementation (mediator) and KALRO’s performance is contingent upon the level of strategic linkages (moderator). The positive coefficient suggests an amplification of policy implementation's effect by strategic linkages, emphasizing the nuanced interplay between these variables in influencing changes in KALRO’s performance. The following path model (Figure 2) shows the details of the statistical diagram linking all the variables.

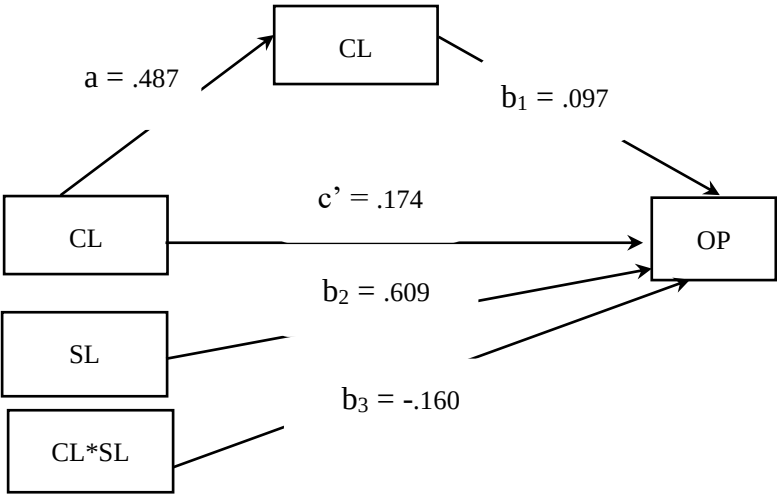


Figure 2: Statistical Model of Moderated Mediation Analysis

The conditional effects analysis shows that at different values of the mediator (SL), the effect of the focal predictor varies. When SL is $-.576$, the effect is significant ($p = .015$), with an effect size of 0.189 . However, when SL is 0 , the effect diminishes ($p = .131$, effect size = $.097$). At $SL = 0.576$, there is virtually no effect ($p = .944$, effect size = $.005$). These findings indicate that the relationship between the focal predictor and the dependent variable is contingent upon the level of the moderator, demonstrating a moderated relationship (Table 7).

Table 7: Conditional Effect of Corporate Leadership on Policy Implementation

Strategic Linkages	Effect	BootSE	BootLLCI	BootULCI
-.576	.092	.041	.004	.170
.000	.047	.032	-.017	.113
.576	.002	.029	-.056	.062

By mean-centering variables constituting interaction terms (CL*SL), these visualization of conditional effects of strategic linkages was generated. Results show that as strategic linkages (SL) increase, the impact of the mediator (PI) on the dependent variable (OP) becomes less significant due to the moderation effect. These findings are supported by bootstrapped standard errors (BootSE) and confidence intervals (BootLLCI and BootULCI) in Figure 3.

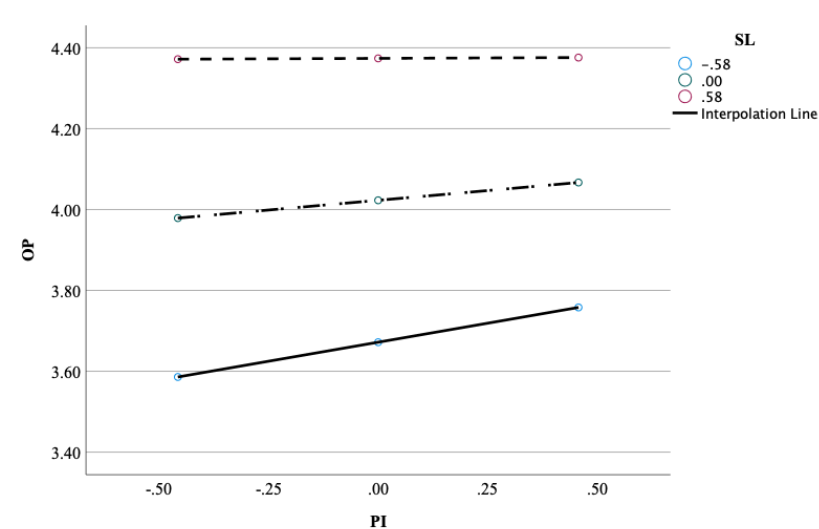


Figure 3: Conditional Effects of Strategic Linkages

The Johnson-Neyman significance region analysis identifies strategic linkages value at which relationship between policy implementation and KALRO’s performance becomes statistically significant. In this case, the significance region is defined by a moderator (strategic linkages) value of -.229. When strategic linkages value falls below this value (34.91% of cases), the variable relationship becomes statistically significant. Conversely, when this moderator value exceeds -.229 (65.1% of cases), the relationship becomes non-statistically significant.

Direct Effect of Corporate Leadership on KALRO’s Performance

The results of the direct effect of corporate leadership on KALRO’s performance (Table 8) reveal significant insights into that relationship, with a coefficient of .174 (p = .001). This indicates that for every one-unit increase in corporate leadership, KALRO’s performance increases by .174 units (SE = .050, t = 3.484, p = .001, 95% CI [.075, .272]).

Table 8: Direct Effect of Corporate Leadership on Performance of KALRO

Effect	Se	t	P	LLCI	ULCI
.174	.050	3.484	.001	.075	.272

Index of Moderated Mediation

With -.078 index of moderated mediation, standard error of .026 and 95% bootstrap confidence interval, ranging from -0.123 to -0.016, results showed statistical significance. This indicates that the conditional indirect effect is likely not to be due to random chance. The relationship between study variables holds significance, thus affirming influence of policy implementation (mediator) on KALRO's performance contingent on levels of strategic linkages (moderator).

Qualitative Data Analysis

The NVivo analysis systematically coded, queried, visualized, and interpreted data, uncovering key themes, relationships, and patterns that supported the quantitative findings. Deductive coding of board members' responses from focus group discussions revealed interconnections across strategic activities, policy coordination, and oversight. Positive ratings on the effectiveness of the previous five years of government support were noted, with recommendations targeting policy streamlining, capacity strengthening of personnel, strategic partnerships, and engaging Millennials in leadership. Results showed KALRO's success in research dissemination, policy formulation, resource mobilization, technology dissemination, and policy reviews, particularly in funding security and collaboration. Themes from focus group discussion included strategic planning, dealing with collaboration challenges, and identification of opportunities for innovation within KALRO. The board members stressed the importance of forming strategic linkages with government and development partners to enhance resource mobilization and generation of user-friendly technologies, as well as the need for continuous leadership training and knowledge-sharing. These qualitative findings significantly supported quantitative results generated from non-board members not targeted in the focus group discussion.

5.0 Conclusions

The study utilized moderated mediation analysis to examine the impact of corporate leadership on KALRO's performance across varying levels of strategic linkages. Notably, the regression model demonstrated robust associations among corporate leadership, policy implementation, strategic linkages, and their interactions. Contrary to the null hypothesis, a significant moderated mediation effect of strategic linkages and policy implementation on the relationship between corporate leadership and KALRO's performance was observed ($p < .05$). The results, bolstered by Hayes' PROCESS macro and AMOS in SPSS, align with Twaissi and Aldehayyat's (2021) findings on stakeholder involvement in organizational performance enhancement. Figures illustrating conditional effects further elucidate the intricate interplay between corporate leadership, policy implementation, and strategic linkages. Furthermore, the two-step moderated mediation effect model that tested the relationship between the targeted variables showed significant relationships ($p < .05$, $R^2 \geq 0.7$, VIF < 10 , Tolerance > 0), showing no multicollinearity. Thus, there was significant moderated mediation effect of strategic linkages and policy implementation on the relationship between corporate leadership and performance of KALRO. The study deduced a conditional indirect effect at the moderator variable's different levels, as the null value of 0.000 was situated beyond the lower (BootLLCI) and upper boundary (BootULCI) of 95% confidence interval.

6.0 Recommendations

It is recommended that KALRO should: prioritize gender diversity in leadership by setting specific targets for the two-thirds gender rule and actively recruiting women into leadership roles; support young professionals with structured mentorship programs and placements in research institutions; preserve institutional memory by appointing leaders for at least five years and implementing knowledge-sharing processes; conduct annual performance appraisals and

provide strategic leadership training for staff; strengthen resource mobilization efforts by establishing a dedicated team for funding opportunities and partnerships; prioritize infrastructure improvements and foster collaboration with political and development partners; appoint market analysts to identify economic opportunities and establish a task force to secure financial backing; and create a partnership development plan to explore effective partnerships and resource mobilization.

Implication of the Current Study

The study suggests avenues for enhancing policy agendas and corporate leadership, benefiting organizations like KALRO and others. It shapes theories and policies in agricultural research, aiding national food security. Robust sample selection and theoretical framework design ensure findings' generalizability. Insights support policymakers in advocating for supportive leadership and policies for agricultural research. Mechanisms for sustainable food production and stakeholder feedback are provided. Recommendations include gender diversity in leadership, young professional development, and monitoring systems. Policymakers are urged to conduct comprehensive policy analyses for balanced, diversified food production.

Suggestions for Further Study

The study's scope suggests some areas of corporate leadership and KALRO's performance remain unexplored, prompting future inquiries. Research could delve into mediating factors like gender mainstreaming, own-resourcing, and personnel motivation, as well as moderating elements such as research environment and engagement of development partners. Alternative methodologies, like case-control studies within KALRO or cross-sequential studies, could provide deeper insights. Meta-analysis, incorporating research from similar contexts like MUA, would enhance understanding, aiding in assessing causality and extending applicability beyond agriculture. This broader approach would enrich comprehension and applicability, potentially uncovering new avenues for enhancing organizational performance.

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