Corporate Board Diversity and Profitability of Construction and Allied Firms Listed at the Nairobi Securities Exchange, Kenya.

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ABSTRACT

Construction and allied firms are central to Kenya's economic development, yet several companies listed on the Nairobi Securities Exchange (NSE) have in recent years faced serious financial distress linked to weaknesses in board oversight, including limited diversity in board composition. This study examines the relationship between corporate board diversity and the profitability of construction and allied firms listed on the NSE, focusing on four dimensions of diversity: board age, gender composition, education, and nationality. Anchored in agency, stewardship, and stakeholder theories, the study adopted a descriptive research design and a census of all five construction and allied firms listed on the NSE, drawing secondary panel data from audited annual reports for the period 2017 to 2023. Data were analysed using panel regression in STATA, following a battery of diagnostic tests for multicollinearity, normality, heteroscedasticity, autocorrelation, stationarity, and model specification. The fixed-effects model, estimated with robust standard errors, indicates that board age and board gender composition have a positive but statistically insignificant association with profitability, measured by return on equity. In contrast, board education and board nationality both exert a statistically significant, positive effect on profitability. The findings suggest that the substantive expertise and international exposure that directors bring to the boardroom matter more for firm profitability than demographic markers such as age or the numerical presence of women. The study recommends that regulators and firms prioritise minimum educational thresholds for directors and actively pursue the recruitment of internationally experienced board members, while continuing to pursue gender-inclusive governance for reasons beyond short-term profitability alone.

Introduction

The construction and allied industry is a major engine of economic growth worldwide, and its global output is projected to rise sharply through the current decade. Turner and Townsend (2018) estimated that the sector was expanding by roughly USD 0.3 trillion a year, with global construction output projected to reach USD 13.3 trillion by 2025. Despite this growth trajectory, the sector's financial performance has often lagged behind its scale. High-profile corporate failures, from WorldCom to Philipp Holzmann, illustrate how governance weaknesses can undermine even long-established construction enterprises (Kabando, Wepukhulu & Otinga, 2021; Strischek & McIntyre, 2018).

Sub-Saharan Africa's construction sector has grown at an average annual rate of about 6.6 percent between 2018 and 2020 (Alape et al., 2023), yet many firms in the region continue to struggle with cost overruns, stalled projects, and weak long-term financial planning (Omopariola, Windapo, Edwards & El-Gohary, 2021). In Kenya, construction and allied firms operate at a technical efficiency of approximately 52 percent, compared with roughly 88 percent for comparable Malaysian firms (KIPPRA, 2018), raising concerns about the sector's capacity to support Vision 2030. Several NSE-listed construction firms have been placed under receivership, restructured, or delisted in recent years, with governance shortcomings, including limited board diversity, frequently cited among the contributing factors.

Boards of directors sit at the centre of corporate governance, and a growing body of research links the demographic composition of boards, spanning age, gender, education, and nationality, to firm outcomes (Kagzi & Guha, 2018; EmadEldeen, Elbayoumi, Basuony & Mohamed, 2021). A more diverse board is theorised to broaden the range of perspectives, networks, and expertise available for strategic decision-making, and thereby to strengthen oversight of management (Hsu, Lai & Yen, 2019; Ozgur, 2020). However, empirical findings on whether board diversity translates into higher profitability remain mixed across countries and sectors, and evidence specific to Kenya's construction and allied firms has been notably scarce. Prior studies have tended to examine board diversity in isolation from context-specific measures of performance, to focus on a single dimension of diversity, or to draw on samples from other sectors and jurisdictions (Scholtz & Kieviet, 2018; Adegboyegun & Igbekoyi, 2022; Ilogho, 2020). This study addresses that gap by examining, in a single integrated model, how board age, gender composition, education, and nationality relate to the profitability of the five construction and allied firms listed on the NSE.

The general objective of the study was to examine the effect of corporate board diversity on the profitability of construction and allied firms listed on the NSE in Kenya. Specifically, the study sought to: (i) examine the effect of board age on profitability; (ii) analyse the influence of board gender composition on profitability; (iii) establish the effect of board education on profitability; and (iv) examine the effect of board nationality on profitability.

Literature Review

The study is anchored in three complementary theories. Agency theory, developed by Jensen and Meckling (1976), frames the board as the principal mechanism through which shareholders monitor management and mitigate conflicts of interest arising from the separation of ownership and control. A diverse board, drawing on a wider pool of viewpoints and areas of competence, is theorised to strengthen independent oversight and reduce the scope for managerial opportunism. Stewardship theory, advanced by Donaldson and Davis (1991, 1993), offers a contrasting lens, portraying directors and managers as stewards who are intrinsically motivated to protect and grow shareholder value rather than purely self-interested agents; under this view, board diversity supports stewardship by broadening the competencies available for value-maximising decisions. Stakeholder theory, rooted in Freeman's (1984) work, extends the analysis beyond shareholders to the wider network of employees, suppliers, communities, and other parties affected by the firm; a diverse board is argued to be better positioned to interpret and balance these varied interests, strengthening the firm's legitimacy and long-run performance (Hatami & Firoozi, 2019).

Similar Studies

Age diversity is thought to combine the institutional memory of older directors with the adaptability of younger ones. Using qualitative data from Australian firms, Islam, French and Ali (2022) found that age-diverse boards were associated with stronger corporate social responsibility spending and improved organisational performance. Menicucci and Paolucci (2022), studying Italian banks, similarly reported a significant positive relationship between board age diversity and firm performance, while Bustamante, Arenas and Campos (2021) found a favourable link between age diversity and profitability among Chilean listed firms. These studies, however, were conducted in contexts markedly different from Kenya's construction sector.

The performance implications of female board representation have attracted extensive research attention. Kinasih, Nurmasari and Prayogi (2024) found that female directorship was associated with reduced firm risk among Indonesian listed companies, while Kahloul, Sbai and Grira (2022) reported that gender-diverse boards among French listed firms moderated the relationship between corporate social responsibility disclosure and profitability. Islam, French and Ali (2022) likewise found that gender diversity enhanced CSR-related performance outcomes in Australian firms. These studies point to a generally favourable, though context-dependent, relationship between gender diversity and firm outcomes.

Board members' educational qualifications are held to shape the quality of strategic decision-making. Adegboyegun and Igbekoyi (2022), studying Nigerian manufacturing firms, found that diversity in financial expertise had a positive, sustained association with corporate performance. Nwaorgu and Iormbagah (2021), however, found that educational diversity had no significant effect on the leverage position of Nigerian listed firms, and Hassan, Saleh and Ibrahim (2020) similarly reported no significant link between educational diversity and the financial stability of Malaysian listed firms. The mixed evidence underscores the importance of examining this relationship within the specific institutional context of Kenyan construction firms.

Foreign directors are theorised to bring international networks, exposure to global best practice, and market knowledge that can strengthen board advisory capacity (Odero & Egessa, 2023). In a systematic review spanning 2010 to 2022, Odero and Egessa (2023) found that the bulk of prior studies reported a significant positive association between board nationality and organisational performance. Awen and Yahaya (2023) found that Nigerian firms with foreign directors pursued audit quality more aggressively, while Ilogho (2020), using data from Nigerian non-financial firms, found no significant relationship between board nationality and profitability. This divergence in findings, together with the near-absence of Kenya-specific evidence, motivates the present investigation.

The study conceptualises corporate board diversity, comprising board age, gender composition, education, and nationality, as the independent variable, and profitability, measured by return on equity, as the dependent variable. Board age is operationalised as the average age of directors; gender composition as the proportion of female directors; education as the number of directors holding industry-specific qualifications; and nationality as the proportion of foreign directors on the board.

Methods

The study adopted a descriptive research design to compare board diversity attributes against the profitability of NSE-listed construction and allied firms. The target population comprised the five construction and allied firms listed on the NSE as at 31 December 2023: Crown Paints, Bamburi Cement, Athi River Mining Company, EA Portland Cement, and East African Cables. Given the small size of the population, a census approach was adopted rather than sampling.

Secondary panel data were extracted from firms' audited annual reports, NSE publications, and relevant government sources covering the financial years 2017 to 2023, using a structured data-extraction form. The relationship between board diversity and profitability was modelled using the following panel regression specification:

$$PRit = \beta 0 + \beta 1BAit + \beta 2GDit + \beta 3BEit + \beta 4BNit + \varepsilon$$

Where PR is profitability (return on equity); BA is board age; GD is board gender diversity; BE is board education; BN is board nationality; i indexes firm and t indexes time; β0 is the intercept; β1–β4 are estimated parameters; and ε is the error term.

Table 1 Operationalization and Measurement of Variables

Variable	Operationalization	Measurement	Scale
Profitability (DV)	Return on Equity	Net Income / Total Equity	Ratio
Board Age	Average age of directors	Ages of board members	Nominal
Board Gender Composition	Female directors / total directors	Proportion of female directors, firm i, year t (%)	Ratio

Variable	Operationalization	Measurement	Scale
Board Education	Directors with industry-specific qualification	1 = undergraduate; 0 = postgraduate	Ratio
Board Nationality	Foreign directors / total directors	Proportion of foreign directors, firm i, year t (%)	Ratio

Source: Researcher (2024)

Prior to estimation, the data were subjected to diagnostic tests for multicollinearity (variance inflation factor), normality (Shapiro-Wilk), heteroscedasticity (Breusch-Pagan), autocorrelation (Breusch-Godfrey / Wooldridge), stationarity (Fisher-type unit-root test), and model specification (Hausman test), each assessed at the conventional 0.05 significance threshold. All analyses were conducted in STATA, which accommodates unbalanced panel data.

Results

Descriptive Statistics

Table 2 summarises the descriptive statistics for the 35 firm-year observations. Mean profitability across the sample period was 5.15 percent, with a standard deviation of 6.96, a minimum of −6.66 percent, and a maximum of 23.28 percent, indicating substantial variation in financial performance across firms and years. The average board age was approximately 52 years, ranging narrowly from 45 to 62 years, pointing to a relatively mature and age-homogeneous board composition across the sector. On average, women constituted about 37 percent of board membership, with considerable variation between firms (from 2 percent to 74 percent). The mean education score of 0.86 suggests that most directors held higher qualifications, while the mean nationality score of 0.13 indicates comparatively limited representation of foreign directors on these boards.

Table 2 Descriptive Results

Variable	Obs	Mean	Std. Dev.	Min	Max
Profitability	35	5.1456	6.9635	-6.6646	23.2756
Board Age	35	51.9429	4.3246	45	62
Board Gender Composition	35	0.3716	0.2159	0.0153	0.7423
Board Education	35	0.8571	0.3550	0	1
Board Nationality	35	0.1335	0.0637	0.0461	0.25

Source: Study Data (2024)

Diagnostic Tests

Variance inflation factors for all four explanatory variables were well below the threshold of 5 (mean VIF = 1.67), indicating that multicollinearity was not a material concern. The Shapiro-Wilk test indicated that profitability, board education, and board nationality departed significantly from normality ($p < 0.05$), while board age and board gender composition did not ($p = 0.094$ and $p = 0.072$, respectively); robust standard errors were applied throughout to accommodate this. The Breusch-Pagan test returned a chi-squared statistic of 2.44 ($p = 0.118$), supporting the null hypothesis of constant variance and indicating no material heteroscedasticity. The Breusch-Godfrey test, however, indicated the presence of serial correlation in the residuals ($F = 4.047$, $p = 0.029$), which was similarly addressed through robust standard error estimation. The Fisher-type unit-root test confirmed that all series were stationary ($p < 0.05$ in each case). Finally, the Hausman test returned a chi-squared statistic of 31.49 ($p = 0.000$), favouring the fixed-effects specification over the random-effects alternative; the fixed-effects model with robust standard errors was therefore adopted for the final estimation.

Correlation Results

Pearson correlation results, shown in Table 3, reveal a strong, statistically significant positive relationship between board age and profitability ($r = 0.8136$) and a strong, significant negative relationship between board gender composition and profitability ($r = −0.7387$). Board education ($r = 0.1069$) and board nationality ($r = −0.2029$) were both weakly and insignificantly correlated with profitability at the bivariate level. Board nationality was, however, significantly positively correlated with board gender composition ($r = 0.3420$).

Table 3 Correlation Results

	Profitability	Board Age	Gender Comp.	Education	Nationality
Profitability	1.0000				
Board Age	0.8136*	1.0000			
Board Gender Comp.	-0.7387*	-0.7042*	1.0000		
Board Education	0.1069	0.1478	0.0725	1.0000	
Board Nationality	-0.2029	-0.2720	0.3420*	0.2090	1.0000

*Source: Study Data (2024). * denotes significance at the 5% level.*

Regression Results

Table 4 presents the fixed-effects regression results. The model explains approximately 33.6 percent of the variation in profitability ($R^2 = 0.3364$) and is statistically significant overall ($F = 55.53$, $p = 0.0009$).

Table 4 Regression Results (Dependent Variable: Profitability)

Variable	Coefficient	Robust Std. Err.	z	P>|z|
Board Age	0.3402	0.1378	2.47	0.069
Board Gender Composition	19.3673	7.3453	2.64	0.058
Board Education	2.2618	0.6735	3.36	0.028
Board Nationality	141.3139	36.2364	3.90	0.018

Variable	Coefficient	Robust Std. Err.	z	P>|z|
Constant	-40.5238	14.0613	-2.88	0.045

Source: Study Data (2024). $R^2 = 0.3364$; $F(4,4) = 55.53$; Prob > F = 0.0009.

Board age was positively but not significantly associated with profitability (β = 0.340, p = 0.069), as was board gender composition (β = 19.367, p = 0.058). Board education had a statistically significant positive effect on profitability (β = 2.262, p = 0.028), as did board nationality (β = 141.314, p = 0.018), the latter representing the largest standardised effect in the model.

Hypotheses Testing

Table 5: Summary of Hypothesis Testing

Hypothesis	Outcome	Decision
H01: Board age has no significant effect on profitability	No significant influence found	Fail to reject H0
H02: Board gender composition has no significant effect on profitability	No significant influence found	Fail to reject H0
H03: Board education has no significant effect on profitability	Significant positive effect found	Reject H0
H04: Board nationality has no significant effect on profitability	Significant positive effect found	Reject H0

Source: Study Data (2024)

Discussion

The finding that board age has no significant effect on profitability suggests that the relatively narrow age range observed among directors of NSE-listed construction and allied firms (45 to 62 years) may limit the intergenerational diversity of thought that is theorised to drive performance gains. This result diverges from Menicucci and Paolucci (2022) and Bustamante, Arenas and Campos (2021), who reported significant positive effects of age diversity in the Italian and Chilean contexts respectively, and points to the importance of the age range itself, rather than age per se, in generating performance benefits.

Similarly, board gender composition showed a positive but statistically insignificant relationship with profitability, in contrast to Kinasih, Nurmasari and Prayogi (2024), Kahloul, Sbai and Grira (2022), and Islam, French and Ali (2022). One plausible explanation is that female representation on the boards of construction firms, a traditionally male-dominated sector, may in some cases reflect symbolic inclusion rather than the deployment of specific sector-relevant expertise, muting its influence on financial outcomes. This does not diminish the broader governance or equity case for gender-balanced boards, but it does suggest that numerical representation alone may be an incomplete lever for profitability in this sector.

By contrast, board education emerged as a significant, positive driver of profitability, consistent with Adegboyegun and Igbekoyi (2022) but at odds with Nwaorgu and Iormbagah (2021) and Hassan, Saleh and Ibrahim (2020). This suggests that directors with industry-relevant qualifications bring analytical capabilities and technical understanding that translate into more effective strategic oversight in the construction context specifically, even where similar effects are not observed in other sectors or jurisdictions.

Board nationality produced the strongest effect in the model, aligning with the findings of Odero and Egessa (2023) and Ilogho (2020) in respect of the former's review conclusions, though contrasting with Ilogho's (2020) own empirical result for Nigerian non-financial firms. Given the internationally exposed nature of large construction projects, foreign directors may bring access to global supply chains, cross-border project experience, and international financing relationships that are disproportionately valuable to this sector relative to others.

Implications

This study set out to examine how corporate board diversity relates to the profitability of construction and allied firms listed on the Nairobi Securities Exchange. The evidence indicates that not all dimensions of board diversity carry equal weight for profitability in this sector. Board age and gender composition, while positively associated with profitability, do not exert a statistically significant effect, suggesting that demographic diversity alone is an incomplete lever for financial performance. Board education and board nationality, in contrast, are significant, positive drivers of profitability, underscoring the value of substantive expertise and international exposure at board level.

Three recommendations follow from these findings. First, regulators and industry bodies should consider establishing minimum educational qualification thresholds for directors of construction and allied firms, particularly in fields relevant to the sector, alongside incentives such as tax relief for continuing professional development. Second, policymakers should encourage the recruitment of internationally experienced directors, for example through guidelines promoting a minimum proportion of foreign board membership and incentives for firms that diversify their boards along national lines. Third, firms themselves should pursue partnerships with universities and professional bodies to build a pipeline of qualified, internationally networked director candidates, while continuing to broaden gender representation as part of an inclusive governance culture, even where the immediate profitability effect is not yet statistically detectable.

The study contributes to the corporate governance literature by testing agency, stewardship, and stakeholder theory in the specific context of Kenya's listed construction and allied firms, and by offering an integrated empirical model linking four dimensions of board diversity to profitability. Future research could extend this analysis to other Kenyan sectors, such as manufacturing, agriculture, and banking, and could draw on primary data to explore the mechanisms underlying the limited influence of board age and gender composition observed in this study.

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