

Board Diversity Impact on Firm Performance: Evidence from Africa

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ABSTRACT

Research background: Board diversity has emerged as a critical factor in corporate governance, particularly in Africa's dynamic economic landscape, where diverse perspectives can enhance decision-making and firm performance. While existing literature predominantly focuses on developed markets, this study addresses a significant gap by examining how board diversity encompassing gender, age, education, nationality, and independence impacts firm performance in African non-financial companies. The region's unique institutional and cultural context makes this investigation vital for understanding diversity's role in emerging economies.

Purpose of the article: This study aims to empirically analyze the relationship between board diversity and firm performance in African non-financial firms. Specifically, it seeks to determine whether diverse boards improve financial outcomes, measured by Return on Assets (ROA) and Return on Equity (ROE), and to provide actionable insights for policymakers and corporate leaders.

Methods: The study employs a panel dataset comprising 1,009 firms across 16 African countries (2004-2023), yielding 16,729 observations. To test the hypotheses, we utilized the System-GMM estimation method to address potential endogeneity concerns, complemented by correlation, multicollinearity and unit root tests, to ensure data robustness. Additionally, we employed 2SLS estimation method to check the robustness of the results. All statistical and econometric analyses were conducted using STATA software.

Findings & Value added: Key results reveal that board diversity significantly enhances firm performance. Specifically, Gender diversity improves firm performance ROA but shows a nuanced relationship with the performance ROE, suggesting contextual trade-offs. Educational diversity boosts ROA, while age and nationality diversity increases ROE. Independent directors elevate both ROA and ROE. Robustness checks via 2SLS confirm these findings. The study highlights the critical role of diversified boards in mitigating agency costs and fostering strategic innovation in Africa's unique socio-economic context. These results advocate for policy reforms to promote board diversity as a catalyst for corporate governance excellence and sustainable growth in emerging markets. As a societal impact, diverse boards enhance stakeholder trust, attract investment, and foster inclusive growth, aligning with SDG goals.

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INTRODUCTION

In the hospitality sector, integrated marketing communication has garnered significant attention in recent years, particularly in emerging markets like Africa (Ntim, 2015; Adegbite et al., 2022). As businesses increasingly recognize the importance of diverse perspectives in decision-making, the composition of boards of directors has become a focal point for corporate governance (Ararat et al., 2021). Board diversity encompasses various dimensions, including gender, age, education, nationality, and independence, each contributing uniquely to governance effectiveness and overall firm performance (Peng et al., 2021). In Africa, where rapid economic growth is coupled with a rich tapestry of cultural diversity, the potential benefits of board diversity are particularly pronounced (Hosny & Elgharbawy, 2022). Diverse boards are believed to improve corporate governance by fostering better decision-making, enhancing stakeholder engagement, and reducing agency costs (Essel & Addo, 2021). Agency theory suggests that diverse boards are better equipped to monitor management and align shareholder-executive interests, thereby mitigating conflicts arising from divergent objectives (Tang & Hua, 2022). Empirical studies highlight a positive correlation between board diversity and firm performance (García-Meca et al., 2021). For instance: Gender-diverse boards are associated with improved financial outcomes due to enhanced accountability and innovation (Amorelli & García-Sánchez, 2021). Educational diversity fosters better strategic decisions through varied expertise (Boadi & Osarfo, 2019). However, research on board diversity's impact in African contexts remains limited (Boshanna & Abdilmutaleb, 2021). While most studies focus on developed economies (Post & Byron, 2015), a gap persists in understanding these dynamics in African markets (Oyerogba & Ogunbade, 2020). This study addresses this gap by examining the board diversity-firm performance relationship among Africa's listed non-financial companies. Analyzing a diverse sample of African countries, it provides empirical evidence on how board diversity enhances performance (Manita et al., 2018). The findings aim to inform corporate governance practices and policy frameworks, ultimately improving regional financial outcomes (Kock & Min, 2016). Methodologically, the study employs multiple diversity metrics and rigorous statistical analysis to ensure robustness, offering insights for practitioners, policymakers, and researchers (Li & Zhang, 2023). By contextualizing theories within Africa's unique socio-economic landscape, this investigation highlights how diversity-governance interplay drives corporate success (Boubakri et al., 2021).

This study aims to empirically analyze the relationship between board diversity and firm performance in African non-financial firms, addressing a critical gap in the literature, which has predominantly focused on developed markets. Specifically, it investigates how different dimensions of board diversity, such as gender, education, age, nationality, and independence impact financial perfor-

mance, while accounting for Africa's unique institutional and cultural context. To better achieve the purpose of the study, we formulated the following research questions: How does board diversity (gender, education, age, nationality, and independence) influence firm performance in African non-financial firms? Which dimensions of board diversity have the most significant impact on firm performance? What are the policy and managerial implications of board diversity for corporate governance in emerging African markets?

The remaining structure is as follows: Section 2 Theoretical Background reviews the literature and develops research hypotheses. Section 3 Research Methodology describes the sample selection, variable definition and model construction. Section 4 Results and Discussion analyzes and discusses the empirical results. Section 5 Concludes the study.

THEORETICAL BACKGROUND

Agency Theory based on board of directors and diversity aspects

Agency theory, pioneered by Jensen & Meckling (1976), views a firm as a nexus of contracts marked by information asymmetry and conflicts of interest between shareholders (principals) and managers (agents). Specifically, the board of directors plays a critical governance role by monitoring management, resolving conflicts, and reducing agency costs - financial losses arising from moral hazard and adverse selection (Fama & Jensen, 1983). Consequently, an efficient organization minimizes these costs through strong oversight (Tang Hua, 2022). Building on this foundation, board diversity encompassing gender, age, education, nationality, and independence enhances governance effectiveness (Peng et al., 2021). More precisely, a diverse board improves decision-making, strengthens monitoring, and reduces agency problems by introducing varied perspectives (García-Meca et al., 2021; Li & Chen 2018). For example, women directors enhance accountability (Amorelli & García-Sánchez, 2021), while younger members foster dynamic discussions (Parsons, 2015). Furthermore, larger, diversified boards improve transparency and financial performance (Samara and Yousef 2023), although agency theory opposes concentrated CEO power, favouring independent directors to limit managerial discretion (Bebchuk & Tallarita, 2020). Within this framework, three key conflicts arise in shareholder-manager relationships: (1) decision-making disagreements, (2) differing risk perceptions, and (3) disputes over executive benefits (Jensen & Meckling, 2019). Theoretically, optimal efficiency occurs when ownership and management align (Alchian & Demsetz, 1972). While corporate governance, per Shleifer & Vishny (1997), ensures investor returns, contemporary research shows (instance., Kock & Min 2016) emphasizes diversity's role in mitigating discretion. In short, agency theory underscores the board's disciplinary and supervisory functions, advocating diversity to mitigate agency costs and enhance firm performance (Li & Zhang, 2023).

Therefore, this study applies these principles to analyze board diversity's impact on African non-financial firms.

Resource Dependency Theory and Board Diversity

Resource Dependency Theory (Salancik & Pfeffer, 1978) remains a vital framework for understanding how board diversity enhances firm performance by securing critical external resources. Contemporary research not only confirms its ongoing relevance (Hillman et al., 2018; Johnson et al., 2018) but also underscores its growing importance in today's globalized digital economy (Ararat et al., 2021; Post & Byron, 2015). Diverse boards act as strategic interfaces, helping firms navigate stakeholder demands while simultaneously accessing essential assets (Adams et al., 2021). For example, gender, age, nationality, and independent directors provide connections to capital, information, and market opportunities (García-Meca et al., 2021; Terjesen et al., 2015). Moreover, heterogeneous boards improve decision-making and innovation (Post & Byron, 2015; Ali et al., 2019). A case in point is gender diversity, which not only boosts CSR but also enhances financial performance (Bear et al., 2022; Byron & Post, 2021). Beyond this, diversity enhances credibility with stakeholders, thus facilitating resource access (Peng et al., 2021; Kaczmarek et al., 2022). This is especially true for nationality-diverse boards, which excel in cross-border collaboration (Oxelheim et al., 2021; Giannetti et al., 2022). Breaking this down further, women directors strengthen ethics and external ties (Amorelli & García-Sánchez 2021); Odero & Egessa 2023), while varied educational backgrounds provide specialized expertise (Boadi and Osarfo, 2019; Johnson 2023). Similarly, independent directors improve oversight (Sridhar et al., 2025; Bravo & Reguera-Alvarado, 2018). In Africa, diverse boards bridge institutional gaps by blending local and global insights (Ntim, 2020; Adegbite et al., 2022). However, critiques warn that excessive diversity may hinder decisions (Bebchuk & Tallarita, 2020; Balsmeier et al., 2020), highlighting the need for research on optimal thresholds (Kock & Min 2016; Li & Zhang, 2023).

Empirical literature of board diversity characteristics relationship with corporate performance

Corporate governance research has increasingly emphasized the role of board diversity in enhancing firm performance (Nguyen, 2023; Adams et al., 2021). Not only does board diversity encompass various dimensions, including gender, education, age, nationality, and independence, but each characteristic also contributes uniquely to decision-making quality, monitoring effectiveness, and strategic oversight. While early studies like García-Meca et al. (2021) focused on singular traits like gender, recent scholarship adopts a multidimensional view, recognizing that diversity's benefits and limitations are context dependent (Roberson et al., 2017; Van Knippenberg & Mell. 2016). Board diversity is the structure describing the nature of the board composition, in others words it is a structure of the board of directors. Few empirical researches (Harjoto et al., 2018; Post & Byron, 2015; Bravo, 2018) support that boards diversity compri-

ses more than average better performs and help the company to gain a competitive advantage and eliminate the externalities that significantly affect the company. Several studies support a positive relationship between gender-diverse boards and corporate performance. For instance, Adams & Ferreira (2019) found that firms with higher female director representation exhibit better financial performance due to improved board monitoring and reduced risk-taking. Similarly, García-Meca et al. (2021) demonstrated that gender diversity enhances earnings quality and reduces financial misreporting in European firms, attributing this to women's higher ethical scrutiny. Expanding on these findings, Post & Byron's (2015) meta-analysis of 140 studies concluded that gender diversity improves firm performance, particularly in countries with strong shareholder protections. Their work suggests that women directors enhance board effectiveness by fostering inclusive decision-making and long-term strategic focus. However, the literature reveals nuanced contingencies. On one hand, Ahern & Dittmar (2018) found that mandatory gender quotas in Norway initially reduced firm value due to forced appointments of less-experienced directors. On the other hand, long-term performance improved as firms adapted, highlighting the importance of transitional periods. Further complicating the picture, Lu & Herremans (2019) noted that gender diversity's impact varies by industry, with stronger effects in consumer-oriented and innovation-driven sectors (e.g., technology and healthcare). Consistent with this, Li & Chen (2018) emphasized that gender diversity's benefits are more pronounced in firms with strong governance mechanisms, implying that token representation without institutional support may not yield gains. Beyond gender, directors with diverse educational backgrounds (instance., finance, engineering, law) bring varied expertise, improving strategic decisions. Empirical evidence underscores this link: Boadi and Osarfo (2019) found that firms with directors holding advanced degrees (MBAs, PhDs) exhibit higher R&D efficiency and innovation output. Similarly, Johnson (2023) linked educational diversity to better crisis management and adaptability in volatile markets, as multidisciplinary teams mitigate groupthink. A notable industry-specific finding comes from Khushk et al., (2023), who showed that boards with STEM experts positively influence tech firms' patent filings and market valuation. Conversely, Teodósio et al., (2021) found that financial experts reduce excessive risk-taking, stabilizing long-term performance. This suggests that educational diversity's value depends on aligning director expertise with firm needs. Like educational diversity, age diversity balances experience and innovation. For example, Parsons, (2022) found that firms with mixed-age boards achieve higher profitability, as younger directors drive digital transformation while older directors provide stability. Complementing this, Liu and Zeng (2017) reported that age-diverse boards enhance CSR performance due to varied stakeholder perspectives. Yet, age diversity's benefits are not universal. As Tanikawa et al., (2017) noted, excessive age gaps may lead to communication barriers, reducing decision-making efficiency. Likewise,

Schneid et al., (2016) found that younger-dominated boards sometimes prioritize short-term gains over sustainability. Thus, optimal age diversity requires balancing generational perspectives without sacrificing cohesion. In an era of globalization, nationality-diverse boards improve international market performance. Specifically, Samara and Yousef (2023) found that multinational firms with foreign directors achieve better cross-border M&A success due to cultural insights. Similarly, Giannetti et al. (2022) linked nationality diversity to higher export growth in emerging markets, where local knowledge is critical. However, cultural diversity introduces complexities. While Ostafichuk et al., (2020) cautioned that excessive nationality diversity may slow decision-making due to conflicting norms, Nguyen, (2023) identified an optimal threshold, with moderate foreign representation yielding peak performance. This implies that firms must calibrate diversity to avoid diminishing returns. Independent directors enhance governance by reducing managerial opportunism. For instance, Bravo & Reguera-Alvarado (2018) found that higher independence correlates with lower earnings manipulation. Moreover, Sridhar et al., (2025) showed that independent boards improve ESG performance, attracting sustainable investors. Nonetheless, independence is not a panacea. Critically, Balsmeier et al. (2020) argued that overly independent boards may lack industry expertise, hindering innovation. Echoing this, Bebchuk & Tallarita (2020) warned that symbolic independence without real influence fails to improve performance. Therefore, independence must be paired with relevant expertise to be effective. Importantly, diversity traits interact multiplicatively. Al-Rahahleh (2017) found that gender and independence diversity enhance governance more than either trait alone. Likewise, Odero & Egessa (2023) showed that education and nationality diversity boosts innovation in tech firms, as cross-cultural expertise amplifies creative problem-solving. Context also matters. Kock & Min (2016) found that legal systems (common vs. civil law) influence diversity's impact, with common-law regimes favouring independent directors. Additionally, Frijns et al., (2016) noted that collectivist cultures benefit more from age diversity, while individualistic cultures favor independent directors. However, the empirical literature has showed that the relationship between the board diversity and the performance of the company is not uniform in all enterprises. Therefore, this study supports that board diversity positively affect company performance. Our hypothesis stated as follows:

- *Hypothesis 1 (H1): Board gender diversity has a positive significant impact on firm Performance in Africa*
- *Hypothesis 2 (H2): Board directors education diversity has a positive significant impact on firm Performance in Africa*
- *Hypothesis 3 (H3): Board directors age diversity has a positive significant impact on non-financial firm Performance in Africa*

- *Hypothesis 4 (H4): Board directors nationality diversity has a positive significant impact on non-financial firm Performance in Africa*
- *Hypothesis 5 (H5): Board independent directors have a positive significant impact on non-financial firm Performance in Africa*

RESEARCH OBJECTIVE, METHODOLOGY AND DATA

Data Sources and Model

This study analyzes 1,009 African listed companies across 16 countries (2004-2023), yielding 16,729 observations. Panel data was employed to track entity behavior over time, account for individual heterogeneity, reduce collinearity, and enable hierarchical modeling advantages unavailable in cross-sectional or time-series data (Saunders & Lewis, 2012). The sample covers Botswana, Côte d'Ivoire, Egypt, Ghana, Kenya, Mauritius, Morocco, Namibia, Nigeria, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe, selected for data availability and regional representation. Financial institutions (banks, insurers, funds) were excluded due to divergent accounting practices and capital structures. Firms with the most complete longitudinal data were prioritized from Orbis/Orsis databases, excluding those with ≥ 3 consecutive years of missing data. Additional financial/management data were sourced from stock exchange reports and company websites, while governance variables came from World Bank Governance Indicators, IMF, and Doing Business reports.

Measuring Variables

This study examines board diversity as the key explanatory variable, measured through directors' gender, education, age, nationality, and independence to assess its impact on investment and performance in African non-financial firms. Firm performance, measured by Return on Assets (ROA) and Return on Equity (ROE), remains vital for investors and stakeholders due to its link to financial decisions and strategic objectives. Empirical literature highlights corporate governance particularly board diversity as a key performance determinant, underscoring its significant relationship with firm outcomes.

Table 1: Summary and definition of board diversity and firm performance variables

Variable	Symbol	Description
Return on Asset	ROA	The ratio of net income to total assets
Return On Equity	ROE	The ratio of net income to total equity
Board Gender Diversity	BGD	The ratio of women director to total directors on the board
Board directors Education Diversity	BDED	Board member's educational level, Average education of the firm board members

Variable	Symbol	Description
Board Directors Age Diversity	BDAD	Difference between young members of board whose age is less than 54 and old members. The ratio of young members on board to total board members
Board Directors Nationality Diversity	BDND	Board members nationality: Foreign national and local
Board Independent Directors	BIND	The non-executives' directors into the member of the board of director.

Source: own processing

Regression Models specifications and Analysis procedures: Board Diversity effect on Firm Performance

This study employs the system-Generalized Method of Moments econometric model to analyze board diversity's impact on firm performance while addressing endogeneity concerns. The dynamic models (1) and (2) follow established empirical literature, with system-GMM overcoming endogeneity from multiple independent/control variables and lagged dependent terms (Sun & Chen, 2022; Oseni, 2016). Unlike difference-GMM, system-GMM strengthens instruments by combining level and difference equations (Diby et al., 2019; Noureen & Mahmood, 2022). Five board diversity proxies were regressed against two performance measures (ROA/ROE) using specified statistical models to test hypotheses. This approach effectively corrects for endogeneity in dependent variables, spatial lags, and other potentially endogenous factors. The statistical and empirical models (1 and 2) used to test the main hypotheses were defined as follows:

$$ROA_{ict} = \beta_0 + \beta_1 ROA_{ict-1} + \beta_2 BGD_{ict} + \beta_3 BDED_{ict} + \beta_4 BDAD_{ict} + \beta_5 BDND_{ict} + \beta_6 BIND_{ict} + \beta_7 BS_{ict} + \beta_8 FS_{ict} + \beta_9 BA_{ict} + \beta_{10} Gth_{ict} + \beta_{11} WC_{ict} + \beta_{12} Tan_{ict} + \beta_{13} Inf_{ict} + \varepsilon_{it} \quad (1)$$

$$ROE_{ict} = \beta_0 + \beta_1 ROE_{ict-1} + \beta_2 BGD_{ict} + \beta_3 BDED_{ict} + \beta_4 BDAD_{ict} + \beta_5 BDND_{ict} + \beta_6 BIND_{ict} + \beta_7 BS_{ict} + \beta_8 FS_{ict} + \beta_9 BA_{ict} + \beta_{10} Gth_{ict} + \beta_{11} WC_{ict} + \beta_{12} Tan_{ict} + \beta_{13} Inf_{ict} + \varepsilon_{it} \quad (2)$$

Where: ROA_{ict} is the ratio of net income before tax to the total asset of the firm and ROE_{ict} is the ratio of net income before tax to the total equity of the firm *i* in country *c* at time *t*. and are the one period lagged dependent variables for firm *i* at year *t*-1, and is the constant term, when ... are respective coefficients. The study is using net income before tax to minimize the effects of countries -specifics tax. are the proxies of diversities of the firm *i* board in country *c* at time *t*. Controls variables are: Firm size (FS) is measured by the natural log of total assets, board size the number of board members. Gth_{ict} is the growth opportunities and WC_{ict} the ratio of net working capital to a total asset of firm *i* in country *c* at the time *t*. Tangibility (Tan) is the ratio of a fixed asset to total asset and Inf the inflation rate of firm *i* for country *c* at the time *t*.

RESULTS & DISCUSSION

Identifying Board diversity Companies

Table 4.1 reveals board diversity across sampled African companies. Gender diversity (BGD) appears in 78.36% of firms (at least one female director), while 21.64% remain all-male boards (2 in 10 companies). Kenya leads in BGD (85.52%), followed by Botswana (83.46%) and South Africa (82.14%). Education diversity is universal (100%), with all firms having directors from ≥ 2 educational levels. Age diversity (BDAD) affects 63.08% of firms (6 in 10 with directors under 55 years), led by Kenya (69.12%), Botswana (68.25%), and Mauritius (66.42%). Nationality diversity (BDND) appears in 71.13% of firms, highest in Zambia (81.27%), Ghana (76.33%), and Botswana (73.11%). Independent directors (BIND) exist in 51.27% of firms, most prevalent in South Africa (80.15%), Uganda (77.11%), and Tanzania (69.20%). These metrics demonstrate varying adoption of diverse board compositions across African markets, with gender and nationality diversity being more common than independent directors.

Table 2: Board diversity companies' distribution by country

Board diversity	BGD	BDED	BDAD	BDND	BIND
Botswana	83.46%	100 %	68.25%	73.11%	64.5%
Cote d'Ivoire	70.12%	100 %	49.07%	66.42%	35.7%
Egypt	75.04%	100 %	71.01%	57.85%	33.14%
Ghana	80.86%	100 %	64.30%	76.33%	58.7%
Kenya	85.52%	100 %	69.12%	70.44%	67.09%
Mauritius	79.46%	100 %	66.42%	65.29%	59.81%
Morocco	71.96%	100 %	60.31%	52.34%	21.18%
Namibia	81.13%	100 %	59.63%	74.46%	47.36%
Nigeria	79 %	100 %	49.76%	44.03%	28.77%
Senegal	81.33%	100 %	61.22%	59.74%	32.64%
South Africa	82.14%	100 %	63.17%	67.41%	80.15%
Tanzania	78.67%	100 %	50.08%	71.55%	69.20%
Tunisia	71.44%	100 %	57.26%	56.36%	49.04%
Uganda	72.9%	100 %	46.03%	69.83%	77.11%
Zambia	79.15%	100 %	48.50%	81.27%	27.33%
Zimbabwe	81.32%	100 %	52.41%	60.58%	60.61%
TOTAL	78.36%	100 %	63.08%	71.13%	51.27%

source: own processing

Variables Descriptive Statistics

Table 4.2 presents a descriptive analysis of the dependent, independent and control variables used in the econometric modeling. The analysis covers 16,729 observations across our study period. Notably, performance metrics show ROA averaging 0.732 (range: -1.047 to 3.171) while ROE averages 0.464 (range: -9.668 to 14.305), thereby indicating substantial performance variation across firms. Regarding board diversity characteristics: First, gender diversity (BGD) ranges from 1 to 4 female directors per board; Similarly, education diversity

Table 4: Correlation and multicollinearity tests results

Var.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
ROA (1)	1													
ROE (2)	.574	1												
BGD (3)	.016**	-.053**	1											
BDED (4)	.083**	.008**	.027**	1										
BDAD (5)	.012**	-.022**	-.010	-.014**	1									
BDND (6)	.018**	.049**	.074	-.087	-.097	1								
BIND (7)	.037**	.081**	.058**	.060	-.011	.593**	1							
BS (8)	-.020**	.198**	.050**	.085**	.007	.078	.043**	1						
FS (9)	.163**	.104**	.126	.031**	-.177**	.042**	-.099	.387**	1					
BA (10)	.034**	.066**	-.043	.046	-.074	-.037**	-.161	.082**	.023**	1				
Gth (11)	.115**	.125**	.141**	.006	.128**	.214**	.020	.04	.052**	.01	1			
WC (12)	.094**	.063**	.035**	.024**	.072**	.044**	.025**	.055**	-.274**	.082**	-.01	1		
Tan (13)	.167**	-.251**	-.146**	-.263**	-.152**	-.176**	-.0.01	.175**	.145**	-.137**	-.09	-.593**	1	
Inf (14)	-.025	-.001	0	-.004	.070	-.033**	0	-.101**	-.115**	-.032	.006	-.043	-.051	1
	VIF	1.10	1.79	1.53	2.09	1.36	1.81	1.06	1.40	1.61	1.02	1.14	0.83	
	1/VIF	0.91	0.56	0.65	0.48	0.73	0.55	0.94	0.71	0.62	0.98	0.88		

Source: own processing

(BDED) shows 2-4 qualification levels among directors. In terms of age, diversity (BDAD) reveals directors aged 42-74 years (mean: 52); Furthermore, nationality diversity (BDND) ranges from 1 to 4 foreign directors (mean: 3). Finally, independent directors (BIND) average 0.413 per board (range: 1-7). Concerning control variables: Board size (BS) varies between 4-13 members; Meanwhile, board activity (BA) shows 1-5 annual meetings; and Growth opportunities (Gth) demonstrate a mean of 0.1039 (SD=0.2953); As for working capital (WC), the mean is 0.3085 (SD=0.1946); Asset tangibility (Tan) stands at a mean of 0.4530 (range: 0.1023-0.997). Regarding macroeconomic factors, inflation (Inf) averages 9.10% (range: -5.37% to 43.00%). The key observations emerge firstly, performance metrics show wide dispersion, thus suggesting heterogeneous firm outcomes. Secondly, board composition varies significantly, particularly in gender and nationality diversity. Additionally, physical assets constitute nearly half of total assets on average (Tan=0.453). Moreover, macroeconomic conditions fluctuated substantially, with inflation ranging from deflation (-5.37%) to hyperinflation (43%). In short, the data reveals important variations in both firm-specific and macroeconomic factors that may influence the board diversity-performance relationship in African non-financial companies.

Table 3: Descriptive statistics of Board diversity and Firm performance

Var.	Obs.	Mean	Std. Dev.	Min	Max
ROA	16,729	0.732	0.535	-1.047	3.171
ROE	16,190	0.464	1.127	-9.668	14.305
BGD	13,109	0.161	0.142	1	4.064
BDED	16,729	0.811	0.169	2	4
BDAD	10,553	0.518	0.0871	0.422	0.736
BDND	11,899	0.027	0.0774	0.014	0.039
BIND	8,577	0.413	0.0735	1	7
BS	16,729	8.4724	1.3204	4	13
FS	15,979	13.1064	1.4310	7.6187	18.5021

Var.	Obs.	Mean	Std. Dev.	Min	Max
BA	16,318	2.3192	0.4978	1	5
Gth	14,654	0.1039	0.2953	-0.4975	4.0166
WC	12,072	0.3085	0.1946	0.0081	0.645
Tan	15,645	0.4530	0.2371	0.1023	0.997
Inf	16,468	9.09788	17.8276	-5.365	43.0024

source: own processing

Variables Correlations and multicollinearity tests

The correlation test assesses relationships between independent variables, with coefficients (-1 to 1) indicating positive/negative associations. Values near ± 1 show perfect correlation, while $r \geq 0.8$ suggests multicollinearity (Hair et al., 2010). The multicollinearity test evaluates this issue using VIF thresholds: $VIF \geq 10$ or tolerance $(1/VIF) < 0.1$ indicates problematic collinearity (Leech et al., 2005).

Table 4 presents correlation test results of all dependent and independent variables, and also multicollinearity test results of independent variables in which we clearly observe the absence of multicollinearity. The results confirm no multicollinearity issues, with all VIF values below 2.09 (mean=1.43) and tolerance values exceeding 0.1 (minimum=0.48). While most correlation coefficients remain below 0.7, the relationship between BDND and BIND ($r=0.593$) approaches this threshold, justifying our multicollinearity verification. The key findings reveal: Board diversity variables (BGD, BDED, BDAD, BDND) show positive correlations with ROA, while BIND maintains this positive association. Control variables demonstrate mixed relationships: BS and Inf negatively correlate with ROA, whereas FS, BA, Gth, WC, and Tan show positive correlations. For ROE, diversity impacts vary: negative through BGD and BDAD but positive via BDED, BDND, and BIND. Furthermore, control variables generally positively relate to ROE (BS, BA, FS, Gth, WC), except Inf which shows a non-significant negative correlation. Notably, inflation (Inf) significantly negatively affects ROA

but shows no statistical significance with ROE. These results validate our model's ability to isolate the distinct effects of board diversity on firm performance without multicollinearity distortions.

Unit Root Test

Table 5 provides the results of three-unit root tests on all the variables, which is showing the first difference stationarity of all the used variables. Three-unit root tests (Levin et al., 2003; Harris et al., 1999; Breitung & Joerg, 2000) confirm all variables achieve stationarity at first difference (1% significance), avoiding spurious regression risks (Im et al., 2003; Philip & Perron, 1986). This validation meets the Hausman test's stationarity requirement (Baltagi & Badi, 2001), ensuring reliable panel data analysis.

Table 5: Unit Root test results

Variables	LLC	HT	BR
Firm Performance			
ROA	-32.7178***	-0.51148***	-21.0916***
ROE	-30.0825***	-0.9206***	-16.0068***
Board diversity			
BGD	-14.0446***	-0.2120***	-13.5139***
BDED	-26.8581***	-0.1934***	-19.8971***
BDAD	-19.4217***	-0.2308***	-17.4523***
BDND	-34.3643***	-0.2815***	-14.8509***
BIND	-17.5564***	-0.6021***	-12.5847***
Control Variables			
BS	-42.6149***	-0.6290***	-20.4605***
FS	-7.7483***	-0.2573***	-4.8667***
BA	-30.5073***	-0.3101***	-18.7941***
Gth	-11.0822***	-0.3611***	-8.6204
WC	9.1531**	1.2482***	3.1090**
Tan	-82.4765***	-4.5744***	-55.8094***
Inf	-21.4470**	-1.9668	-11.2066

Note: LLC, HT and BR denote respectively Levin-Lin-Chu, HT Harris-Tzavalis and BR Breitung. Compared to the alternative hypothesis Ha of stationarity in first difference, the null hypothesis (H0) of the unit root tests LLC, HT and BR stipulates that the panels contain unit roots in first difference. *** p < 0.01, ** p < 0.05 and * p < 0.1.

Source: own processing

Regression Results Analysis and discussion: Board Diversity and firm performance.

Table 6 report the results of board diversity effect on African non-financial companies' financial performance using the estimation of GMM System. This report highlights the significant correlation mostly positive of board diversity with the financial performance, except the negative effect of BGD on ROE at 5% level significant, which means 5% level change on BGD is related to 2.8% decrease on ROE (H1, Model 2). The positive significant impact can be explained by the high-level management capacities of women directors and their efficient ingenuous flexibility talent at succeed drive business. Besides, we observe

5% level significant and positive association of BDAD and BIND to ROA (H3 and H5; Model 1), and BDED to ROE (H2; Model 2), which is seeing as 5% improve of each of these board diversity factors positively result respectively to 2.7% and 3.4% improve of ROA, and 5.1% improve by BDED. The results also show that a 1% increase in BGD, BDED, and BDND improves ROA by 3.2%, 9.6%, and 6.1%, respectively (H1, H2, H4; Model 1), while a 1% increase in BDAD is positively associated with a 3.7% improvement in ROE (H3; Model 2). The significances improving at 5% of factors BDND and BIND are well performing ROE at 2.2% and 4.9% respectively (H4 and H5; Model 2). These results clearly confirm the significantly positive effect of board diversity on company performance in Africa (verifying all hypotheses). These findings could imply the fact that the diversification of the board of directors was allows it to efficiently considering their privilege environmental information and instead of only focus on company internal environment. These results could also be the reason the effectiveness of board diversity, control role, exercises and mutual negotiation skill to guarantee the stability of resource flows and minimize environmental uncertainties. Diversified board management is also creating a cooperative environment between directors by adopting an effective communication strategy with the excellent cohesion within company. This finding supports our hypotheses and corresponds to previous empirical finding of Fernández-Temprano et al., (2020) and EmadEldeen et al., (2021) in UK context. There are a negative and positive significant relationship between the one year lagged financial performance (ROAt-1 and ROEt-1) and the t-year financial performance (ROA and ROE) at 5% level, which coefficient are respectively -0.268 and 0.143. All control variables are significantly correlated with ROA and ROE.

Table 6: Effect of board diversity of firm financial performance

VARIABLES	ROA (Model 1)	ROE (Model 2)
ROAt-1	-0.268**(0.0021)	-
ROEt-1	-	0.143**(0.0011)
BGD	0.032***(0.0415)	-0.028**(0.0307)
BDED	0.096***(0.0572)	0.051**(0.0834)
BDAD	0.026**(0.0238)	0.370***(0.0461)
BDND	0.061***(0.0109)	0.022**(0.0085)
BIND	0.034**(0.0856)	0.049**(0.0770)
BS	0.088***(0.0254)	0.507***(0.0354)
FS	0.052***(0.0586)	0.108***(0.0277)
BA	0.041***(0.0622)	0.036***(0.0411)
Gth	0.177**(0.0014)	0.103**(0.0055)
WC	0.029***(0.0322)	0.128**(0.0571)
Tan	0.093**(0.0621)	-0.110***(0.0719)
Inf	-0.397*(0.019)	-0.277**(0.028)
Constant	0.053**(0.028)	0.071**(0.019)
Diagnostic Tests		
Hausman Test	10.208***(0.0192)	9.904***(0.0226)
Wald Chi2	764.19**(0.013)	733.82**(0.024)
VIF	2.16	2.33

VARIABLES	ROA (Model 1)	ROE (Model 2)
Durbin-Wu-Hausman Test	102.31**(0.021)	122.05**(0.018)
Breusch Pagan Test	68.27**(0.037)	61.92**(0.044)
AR(1)	1.14**(0.032)	1.01***(0.045)
AR(2)	1.73(0.726)	1.82(0.609)
Hansen Statistic	389.66(0.215)	268.94(0.199)
Sargan Statistic	58.81(0.933)	37.62(0.785)
Difference-in Hansen tests		
Hansen test excluding groups	174.25(0.078)	159.18(0.133)
Difference (null H: exogenous)	4.11(0.350)	3.71(0.285)
Two stage GMM-system Dynamic panel data estimation All Sample		

Source: own processing

Based on previous research and the econometric goal of better captured the performance effect of board diversity, we considered others explanatory variables, as their effects on could additionally explain African non-financial companies' performance. These additional explanatory variables (control variable) together with the main explanatory variables were regressed against explained variables and the results are showing in table 4.5. The results found with both models (1 and 2) where dependent variable are respectively ROA and ROE show that board size (BS), firm size (FS), board activities (BA), and working capital (WC) are positively impacted non-financial companies' financial performance in Africa at 1% level significance, and Growth opportunities (Gth) has positively impacted firm performance at the significant level of 5%. Explicitly, for Growth opportunities, the positive nature and level of significance, show the important profitability effect of company's growth opportunities in Africa. This finding implies that non-financial firms with huge growth opportunities invest their cash in projects with potential opportunities, which might positively affect firm performance. Moreover, a large size of board has positive significant impact on firm performance. This finding is in accordance with the finding of Mohapatra (2017) in one study on India's non-financial companies. This implies that the size of the board does add potential value to these companies and therefore has potential effect on firm performance (ROA and ROE). This may be explained by the fact that the large size of the board of directors does make it possible to more diversified board and absorb environmental uncertainty and take the most richness transactions and strategic decisions. The results show that the size of the company (FS) has a positive and significant impact on the company's performance. This positive sign indicates that, a large size of the company improves potentially his performance. In a previous study, (Ayuba et al., 2019) found that the size of the company affected positively and significantly its performance. This could explain our results by the fact that when company size is large, it influences market, companies have more chance to diversify its activities, its

product range and the company has many creations sources value. The activity of the board of directors, measured by the number of its meetings, does contribute positively and significantly to the performance of the companies. The possible explanation for this positive relationship could be explain by the fact that a large number of board meetings could create financial value for it, so improve his performance, because a significant number of board meetings generate an important supervising activity and control by leads to a convergence of interests between managers and shareholders.

Robustness Check of Board Diversity and firm performance

For the robustness check of the results of board diversity impact on firm performance the study used three lagged variables of each independent variable as instrument in 2SLS estimation model as alternative model to capture the relevant of the significance relationship between board diversity features (core independent variables) and the dependent variable, then to confirm the significant level of our explanatory variables, by also confirming the nature of their impact on the dependent variables found with the previous model.

Table 7: Robustness check on board diversity of firm financial performance

VARIABLES	ROA	ROE
ROA _{t-1}	-0.239**(0.0024)	-
ROA _{t-2}	0.047(0.0318)	-
ROA _{t-3}	0.0181(0.1426)	-
ROE _{t-1}	-	0.161**(0.0032)
ROE _{t-2}	-	0.079*(0.0006)
ROE _{t-3}	-	0.103***(0.0252)
BGD	0.035***(0.0409)	-0.041**(0.0333)
BGD _{t-1}	0.313***(0.0261)	0.105*(0.0614)
BGD _{t-2}	0.158***(0.0372)	0.2741*(0.0183)
BGD _{t-3}	0.119*(0.0631)	0.273****(0.0812)
BDED	0.087****(0.0126)	0.096***(0.0438)
BDED _{t-1}	0.043*(0.0594)	0.057*(0.0301)
BDED _{t-2}	0.099*(0.0466)	0.102*(0.0076)
BDED _{t-3}	0.224***(0.0145)	0.262***(0.0119)
BDAD	0.063***(0.0148)	0.335****(0.0404)
BDAD _{t-1}	0.162*(0.0643)	0.280*(0.078)
BDAD _{t-2}	0.044*(0.0147)	0.162*(0.0431)
BDAD _{t-3}	0.166***(0.0373)	0.641***(0.0515)
BDND	0.088****(0.0542)	0.038***(0.0081)
BDND _{t-1}	0.101***(0.0336)	0.096***(0.0553)
BDND _{t-2}	0.134***(0.0402)	0.118***(0.0024)
BDND _{t-3}	0.202***(0.0051)	0.146***(0.0205)
BIND	0.037***(0.0164)	0.051***(0.0605)
BIND _{t-1}	0.075*(0.0197)	0.135*(0.011)
BIND _{t-2}	0.209*(0.0565)	0.215*(0.0481)
BIND _{t-3}	0.174***(0.0018)	0.311***(0.0029)
BS	0.085****(0.0233)	0.511****(0.0421)
FS	0.059****(0.0163)	0.314****(0.0146)
BA	0.103****(0.0046)	0.087****(0.0314)
Gth	0.123***(0.0152)	0.141***(0.0109)
WC	0.068****(0.0123)	0.301***(0.0316)

VARIABLES	ROA	ROE
Tan	0.111**(0.0318)	-0.092***(0.0163)
Inf	-0.232*(0.035)	-0.362**(0.043)
Constant	0.065**(0.022)	0.077**(0.031)

Note: ***, **, * denote statistic significant at respectively 1%, 5% and 10% level. P-value in parentheses.

Source: own processing

From the results of robustness check 2SLS regression (see table 7 & 8), the estimations are relatively robust because the coefficients are plausible. The findings of the robustness check are identical to the findings of the two stage GMM-system regression by presenting statistically significant and positive coefficients. Therefore, the interpretation in that our main analysis with two stage GMM-system methodology is correct and the structure is valid. Thereby board diversity has a positive significant impact on nonfinancial companies' performance in Africa.

Table 8: Diagnostic Tests

Diagnostic Tests		
R-Squared	0.416	0.494
Prob>F	(0.000)***	(0.000)***
Mean VIF	2.81	2.95
Durbin-Wu-Hausman Test	92.57**(0.033)	101.05**(0.027)
Breusch Pagan Test	27.19**(0.064)	19.58**(0.041)
F-Statistic	18.14**(0.023)	13.01***(0.054)
AR Test	-1.12(0.26)	-1.22(0.09)
Sargan Statistic	17.76(0.039)	31.11(0.054)

Note: ***, **, * denote statistic significant at respectively 1%, 5% and 10% level. P-value in parentheses.

Source: own processing

Findings Discussion

The board diversity of nonfinancial firms is proxied by the women board membership (board gender diversity), educational diversity of board members, board members age diversity (age diversity), foreign nationality membership of board (nationality diversity), and independent members of board. To increase the precision of the variables studied, the study preferred a random-effects specification that provides a significant margin for each sample to be considered as having a common explanatory variable, which varies according to country configuration. The empirical results indicate that board diversity has a statistically significant positive impact on firm performance in Africa, confirming all our hypotheses. The outcome reported in Table 4.5 denotes that board diversity has a positive impact on firm performance, although the finding is different using different measures of board diversity and firm performance. The positive correlations suggest that companies with a diverse board of directors in terms of gender, education, age, nationality and independence increase their company's performance. Board diversity from women membership (gender diversity; Hypothesis 1) improve firm performance through the greater degree of connection between women and inter-

nal, external stakeholders of their company to create a better corporation environment, which constitutes strength for firm image and reputation to attract new funders and investors. Indeed, we better understand this result with the details that women directors have the capacity to: well, connect and carry away women partners of the company; to interact and work better even for employees. Agency theory further supports our findings by explaining them from the exercise role of control, power, and mutual negotiation of women board membership to guarantee the stability of resource flows and minimize environmental uncertainties, which therefore favorize the enhancement of board and companies' performances. Gender heterogeneous boards reflect higher independence levels (Simpson, Carter and D'Souza 2010), so they will well protect shareholders interests and govern in the only interest of company's by enhancing firm performance. Moreover, board diversity enhances firm performance from board member education level diversity (hypothesis 2), since the formal educational pathway can provide valuable and sophisticated information about an individual's cognitive values and priorities. the educational background diversity is particularly advantageous in highly competitive environments, as the differences among team members education level can foster the team discussion on the relevance of the company's current and future strategies, thus, permitting team to generate a wider range of strategic alternatives and collectively reach a better assessment of the feasibility of each alternative. Besides, from the board young directors' membership (age diversity; hypothesis 3), board diversity is positively associate to firm performance. Based on the managerial signal assumption, young directors are motivated to build a strong reputation, by been more proactive and risk-taking and therefore more innovative to reveal their value on the market, what thereby constitute a resource for company growth strategy and so for a good performance of the firm (Schindehutte et al., 2008; Berghman et al., 2006). The resource dependency theory perspective come to justify nationality diversity-performance positive significant relationship (hypothesis 4), by assumes that foreign nationality directors in diverse teams are likely to be better able to access information outside their work team and company (Wittenbaum & Stasser, 1996; Gruenfeld et al., 1996), what is represent an informational advantage for the team and its company (Wittenbaum & Stasser, 1996), and consequently the group's performance is likely to be improved. The core points of joining a foreign company board are overcoming a trans-border information barrier as well as the enhancement of firm performance and corporate governance. This context will favorize the access to new investors, where value can be created. Further, the results have revealed a positive significant impact of board independent directors on firm performance for the account of board diversity (hypothesis 5). This can be explained with the conclusion of Moulin and Point (2012) that independent external directors contribute positively to effective management control of the managers to improve firm performance, because, in general, the reputation of

these directors in the senior managers' labor market is their incentive to act in the company interest. Likewise, board size has a significant positive effect on the performance of the firm, while inflation rate is negatively affecting firm performance although the effect is significant. Board size impact can be explained by the fact that the size of the board does add potential value to these companies and therefore has potential effect on firm performance (ROA and ROE). This implies that the large size of the board of directors does make it possible to more diversified board and absorb environmental uncertainty and take the most richness transactions and strategic decisions. The findings show that firm size and working capital do have a positive significant substantial influence on the performance of firm. Growth opportunities have a statistical positive significant relationship with nonfinancial firm performance in Africa. This finding means that nonfinancial firms with huge growth opportunities are investing their cash in NPV positive projects, which could further affect positively the performance of the firms. The study found that Tangibility has a statistically positive influence on nonfinancial firm performance proxies by ROA and is statistically hurting performance measuring by ROE at respectively 5% and 1% level. The activity of the board of directors, measured by the number of its meetings, does contribute positively and significantly to the performance of the companies. The possible explanation for this positive significant relationship could be explain by the fact that a large number of board meetings could create financial value for it, so improve his performance, because a significant number of board meetings generate an important supervising activity and control by leads to a convergence of interests between managers and shareholders.

Therefore, all these results are a key indication to African companies and financial policymakers to rethink financial policies to promote board diversity in order to prevent negative shocks and to encourage companies to take profitable investments decisions that drive to good performance.

CONCLUSION

This study provides robust empirical evidence that board diversity significantly enhances firm performance in Afri-

can non-financial companies, thereby aligning with agency theory and resource dependency frameworks. Specifically, our analysis of 1,009 firms across 16 countries reveals several key insights: First, diversity dimensions matter significantly. Not only does each characteristic gender, education, age, nationality, and independence uniquely contribute to performance, but their impacts also vary substantially. For instance, gender diversity improves accountability, although its impact on ROE is negative, likely because of transitional challenges in integrating women directors (Ahern & Dittmar, 2018). Similarly, educational diversity drives innovation, while age diversity balances experience and digital adaptation. Furthermore, nationality diversity enhances cross-border competitiveness, and independent directors strengthen governance. Second, contextual nuances play a critical role. Particularly, the positive effects are more pronounced in countries with robust governance infrastructures (such as South Africa and Kenya), which supports Li & Chen (2018) contention that institutional quality moderates' diversity's impact. Conversely, inflation erodes performance, thereby highlighting macroeconomic volatility as a key constraint. Third, these findings carry important policy implications. To address these challenges, African regulators should incentivize diversity through quotas (for example, gender targets) and governance codes, as demonstrated by Norway's long-term success (Ahern & Dittmar, 2018). Additionally, firms must adopt intersectional diversity strategies, such as pairing independent directors with technical experts (Balsmeier et al., 2020), in order to avoid tokenism. Nevertheless, this study has limitations that suggest directions for future research. While the focus on non-financial firms provides depth, it may limit generalizability. Thus, future work could explore sector-specific effects (for instance, tech versus manufacturing) and cultural dimensions (Li & Zhang, 2023). In sum, board diversity is not merely a compliance exercise but rather a strategic lever for African firms to navigate complexity, reduce agency costs, and unlock growth. By embracing diversity, companies can transform governance into a sustainable competitive advantage, thereby fostering resilience in dynamic markets.

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