

Board Diversity and Corporate Governance in Emerging Markets: An Empirical Study of the Influence of Gender, Age, and Education on Stock Price Volatility and Firm Value in Saudi Listed Companies

Abdulrazak Balilah

King Abdulaziz University, Saudi Arabia

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Board Diversity, Corporate Governance, Emerging Markets, Firm Value, Gender Representation, Stock Price Volatility

Abstract

Board diversity has emerged as a central element of corporate governance, shaping how firms manage risk, create value, and respond to stakeholder expectations. Yet, while its effects are well documented in developed markets, evidence from emerging economies remains limited and often inconclusive. This study examines the Saudi context, where ongoing reforms under Vision 2030 have increased attention to board composition – particularly gender, age, and educational diversity.

Using a panel dataset of companies listed on the Saudi Stock Exchange between 2019 and 2023, the analysis employs fixed-effects regression and system GMM estimators to address heterogeneity and endogeneity concerns. Control variables such as firm size, leverage, and industry type are included to isolate the influence of board characteristics.

The results reveal that gender diversity is associated with higher firm value and lower stock price volatility, underscoring the role of female directors in enhancing monitoring and risk management. Age diversity produces mixed effects, although boards with balanced representation appear better equipped for strategic oversight. Educational diversity is consistently linked to improved performance, as varied academic backgrounds broaden perspectives and strengthen problem-solving capacity.

These findings carry significant implications for both theory and practice. For policymakers and corporate leaders, fostering diversity is not merely a matter of fairness but rather a strategic lever for building transparent, stable, and effective governance systems. For investors, the study offers insights into the governance mechanisms that drive firm value in emerging markets.

In conclusion, the evidence demonstrates that board diversity functions as a strategic driver of governance quality and organizational performance. Its impact is especially critical in economies undergoing transition, where aligning governance practices with global standards is essential for sustaining growth and investor confidence.

Introduction

Research Background and Context

Corporate governance forms a cornerstone of contemporary business practice, providing the structures through which firms are directed, monitored, and held accountable. At the center of these mechanisms, the board of directors plays a decisive role in shaping strategy, overseeing risk, and fostering transparency. In recent years, growing attention has turned to the composition of boards, with a particular focus on diversity in gender, age, and education. Such diversity can enrich deliberations, reduce groupthink, and enhance long-term organizational performance.

While extensive evidence from developed economies demonstrates a positive association between board diversity, governance quality, and firm value, the picture in emerging markets remains less conclusive. Saudi Arabia offers a particularly pertinent context, as under its Vision 2030 reforms, the Kingdom has enacted policies to strengthen governance frameworks and expand female participation in corporate leadership. Yet, important questions remain as to whether these initiatives have translated into tangible improvements in firm value and risk management—especially given the country's distinctive cultural and institutional landscape.

Research Problem and Motivation

Most prior research on board diversity has centered on gender, with comparatively little attention given to dimensions such as age and educational background. Moreover, much of the existing evidence originates from Western contexts, leaving important gaps in understanding how diversity functions in emerging markets. In Saudi Arabia, where corporate boards are undergoing change driven by regulatory reforms and evolving social expectations, it remains crucial to assess whether diversity enhances effectiveness, stabilizes stock prices, and contributes to firm value.

This study seeks to address these gaps by focusing on firms listed on the Saudi Stock Exchange, offering context-specific evidence that can inform both academic debate and policy development.

Research Objectives

This study is designed to pursue four specific objectives:

1. To analyze the extent to which gender diversity influences firm value and stock price volatility.
2. To examine how age diversity shapes board effectiveness and contributes to organizational stability.
3. To evaluate the role of educational diversity in strengthening governance quality and enhancing financial outcomes.
4. To investigate the ways in which institutional and cultural factors in Saudi Arabia may condition or moderate these relationships.

Contribution of the Study

This research makes four principal contributions:

- Contextual insight: It extends the diversity–performance debate to a non-Western emerging market by focusing on Saudi Arabia’s evolving governance landscape.
- Multi-dimensional perspective: This study moves beyond gender to incorporate age and education, offering a more nuanced and comprehensive view of board diversity.
- Policy relevance: It provides practical recommendations for regulators and corporate leaders engaged in implementing Vision 2030 reforms.
- Investor outlook: This research establishes benchmarks for evaluating governance quality and firm resilience among Saudi-listed companies.

While earlier Saudi-based studies have primarily examined gender diversity in isolation (e.g., Al-Ajmi, 2021; Al-Azmi & Khamis, 2021), the present study contributes originality by addressing three dimensions of diversity: gender, age, and education. It further advances the literature by applying system-GMM estimation to mitigate endogeneity concerns, representing a methodological improvement over previous work that relied mainly on cross-sectional or static designs.

Taken together, these contributions distinguish the study from existing scholarship and provide stronger evidence on how board diversity influences firm value and risk management in the Saudi context.

The remainder of this paper is structured as follows: Section 2 reviews the relevant literature, Section 3 outlines the research methodology, Section 4 presents the empirical results, and Section 5 discusses the conclusions and policy implications.

Literature Review

Corporate Governance and Firm Value

Corporate governance is widely acknowledged as a cornerstone of firm performance and value creation. Robust governance frameworks help align managers’ and shareholders’ interests, reduce agency conflicts, and enhance transparency, thereby fostering investor confidence. Empirical evidence consistently shows that firms with strong governance practices such as independent boards and effective oversight achieve higher profitability, enjoy lower financing costs, and maintain more stable market valuations (Bebchuk & Cohen, 2005; Claessens & Yurtoglu, 2013).

In Saudi Arabia, governance reforms have accelerated under Vision 2030 and the regulatory initiatives of the Capital Market Authority, with particular emphasis on strengthening accountability and promoting transparency through enhanced disclosure. This evolving institutional environment makes the Saudi

market a highly relevant setting in which to examine the extent to which governance – and especially board composition – contributes to firm value in an emerging economy.

Board Diversity: Definitions and Perspectives

Board diversity refers to the demographic and cognitive differences among directors, including gender, age, and educational background. Its importance is often explained through three main theoretical perspectives:

Agency Theory: Diversity strengthens monitoring functions and reduces groupthink, thus enhancing board independence (Fama & Jensen, 1983).

Resource Dependence Theory: Diverse boards offer access to wider networks, knowledge, and resources that improve strategic decision-making (Pfeffer & Salancik, 1978).

Social Identity Theory: Diversity can foster creativity and innovation, but may also generate conflict if poorly managed (Tajfel & Turner, 1986).

Building on these perspectives, gender diversity enhances representation and broadens viewpoints, age diversity balances innovative thinking with experience, and educational diversity enriches analytical capacity and problem-solving (Post & Byron, 2015; Bøhren & Staubo, 2016).

Board Diversity and Board Effectiveness

Empirical evidence indicates that board diversity can enhance effectiveness by strengthening oversight and improving responsiveness to stakeholder demands. Heterogeneous boards encourage broader debate, mitigate bias, and facilitate more rigorous evaluation of management strategies (Terjesen, Sealy, & Singh, 2016).

Nonetheless, diversity also presents challenges. Excessive heterogeneity may slow decision-making and create communication barriers – particularly when boards lack inclusive governance practices (Huse, Nielsen, & Hagen, 2009). In emerging markets, where institutional safeguards are often less developed, the role of diverse boards in ensuring effective monitoring and strategic control becomes especially critical (Al-Janadi, Abdul Rahman, & Omar, 2013).

Board Diversity and Stock Price Volatility

Stock price volatility is often used as a proxy for how markets perceive firm risk and stability. Boards with greater diversity are generally better positioned to anticipate risks and respond effectively to external shocks, thereby mitigating volatility. Prior studies show that gender-diverse boards are linked to lower volatility and a stronger long-term orientation (Low, Roberts, & Whiting, 2015). Similarly, educational diversity enhances boards' capacity to interpret complex information and manage uncertainty (García Martín & Herrero, 2020).

In the Saudi context, where investor sentiment is closely tied to perceptions of governance quality, board diversity may serve as a stabilizing factor that helps maintain credibility during periods of market fluctuation.

Board Diversity and Firm Value in Emerging Markets

In developed markets, board diversity is frequently associated with higher firm value. In emerging economies, however, the evidence is more mixed and strongly context dependent. Institutional frameworks, cultural norms, and appointment practices play a decisive role in determining whether diversity translates into improved performance (Ntim, Opong, & Danbolt, 2018).

In the Middle East, governance reforms have reshaped boardrooms, with Saudi Arabia in particular witnessing greater inclusion of female and younger directors. Early evidence indicates that gender and educational diversity are positively correlated with firm performance, especially when reinforced by stronger governance standards (Al-Ajmi, 2021). Moreover, recent studies stress that genuine participation – rather than symbolic appointments – is what drives sustainable value creation (Oba & Fodio, 2013; Issa & Fang, 2022).

Comparative evidence from other emerging economies points to similar trends: diversity tends to enhance corporate reputation and attract international investors when meaningfully embedded in

governance processes (Khan et al., 2020; Alda, 2023). More broadly, cross-country reviews confirm that board diversity strengthens governance quality and firm resilience in emerging markets, even where institutional barriers persist (Alda, 2023).

Research Gap and Hypotheses

Despite growing scholarly interest in board diversity, several important gaps remain. First, most studies continue to focus primarily on gender, with limited exploration of age and educational diversity. Second, little attention has been given to how these dimensions interact within the Saudi institutional and cultural context. Finally, research examining the link between board diversity and market-based indicators – such as stock price volatility – remains scarce in emerging economies.

To address these gaps, this study investigates the following hypotheses:

H1: Gender diversity on boards is positively associated with board effectiveness and firm value.

H2: Age diversity enhances decision-making and contributes positively to performance and organizational stability.

H3: Educational diversity strengthens governance quality and reduces stock price volatility, thereby enhancing firm value.

Research Methodology

Data and Sample Selection

This study employs a balanced panel of 94 non-financial firms listed on the Saudi Stock Exchange (Tadawul) over the period of 2019–2023. This timeframe was chosen to capture the impact of governance reforms introduced under Vision 2030, which emphasized transparency, board independence, and increased female participation in corporate leadership.

Firms were included in the sample if they met the following criteria: (i) continuous listing on Tadawul throughout the study period, (ii) availability of consistent financial statements and annual reports, and (iii) public disclosure of board characteristics such as gender, age, and education. Banks and insurance firms were excluded because of their distinct governance structures and regulatory requirements. These criteria ensure comparability across firms and are consistent with best practices in corporate governance research (Al-Janadi, Abdul Rahman, & Omar, 2013; García Martín & Herrero, 2020).

Variables

Dependent Variables:

- **Firm Value:** Measured using Tobin's Q, defined as the ratio of market value to the book value of assets. This metric is widely employed to capture investor perceptions of firm performance (Chhaochharia & Grinstein, 2007).
- **Stock Price Volatility:** Calculated as the annualized standard deviation of daily stock returns, serving as a proxy for perceived market risk and stability.

Independent Variables (Board Diversity)

- **Gender Diversity:** The proportion of female directors on the board.
- **Age Diversity:** The range in years between the youngest and oldest board members.
- **Educational Diversity:** Measured using a normalized Herfindahl–Hirschman Index (HHI), where lower values indicate greater heterogeneity in educational backgrounds.

Control Variables:

Firm size (log of total assets), leverage (debt-to-equity ratio), board independence (proportion of non-executive directors), profitability (return on assets, ROA), and industry dummies to capture sector-specific effects.

Econometric Approach

This study applies two complementary econometric techniques:

- **Fixed Effects Regression (FE):** Used to control for unobserved, time-invariant firm characteristics by focusing on within-firm variation over time (Wooldridge, 2010).

- System Generalized Method of Moments (GMM): Employed to address potential endogeneity arising from reverse causality and omitted variables, relying on internal instruments to produce consistent estimates (Arellano & Bover, 1995; Blundell & Bond, 1998).

This combined approach has been widely adopted in corporate governance research to enhance the robustness of causal inference (Adams & Ferreira, 2009; Ntim et al., 2017; Ullah et al., 2020).

Robustness Checks

Several robustness procedures were implemented to ensure reliability of the results:

- Lagged independent variables to minimize simultaneity bias.
- Alternative model specifications, including random-effects estimations.
- Alternative measures of both board diversity and firm value.
- Interaction terms between diversity indicators and firm size.
- Industry-fixed effects to account for sectoral heterogeneity.

These procedures are consistent with recent best practices in corporate governance research (Mahadeo et al., 2012; Wintoki, Linck, & Netter, 2012; Al-Hadi, Al-Yahyaee, & Hussain, 2021).

Findings and Results

Descriptive Statistics and Correlations

The descriptive statistics (Table 1) provide an overview of board diversity and firm outcomes for Saudi-listed companies over the period of 2019–2023. On average, women account for approximately 19% of board members. Age diversity, measured as the range between the youngest and oldest directors, has a mean of 16 years. The educational diversity index averages 0.43, reflecting moderate heterogeneity in academic backgrounds. In terms of firm performance, Tobin's Q averages 1.74, while stock price volatility averages 7.5%, with substantial variation observed across firms.

Table 1. Descriptive Statistics of Key Variables (2019–2023)

Variable	Mean	Median	Std. Dev.	Min	Max
Gender Diversity (%)	19.2%	18.5%	7.1%	5.0%	35.0%
Age Diversity (Range)	16.3	15.8	4.5	8.0	24.0
Educational Diversity (Index)	0.43	0.40	0.12	0.15	0.70
Tobin's Q (Firm Value)	1.74	1.71	0.45	1.0	2.8
Stock Price Volatility (%)	7.5%	6.9%	2.1%	3.5%	12.5%

Correlation analysis (Table 2) indicates that gender diversity and educational diversity are positively associated with firm value, while both are negatively associated with stock price volatility. Age diversity also shows a positive correlation with Tobin's Q, although the relationship appears weaker in comparison.

Table 2. Correlation Matrix

Variable	Gender Diversity	Age Diversity	Educational Diversity	Firm Value (Tobin's Q)	Stock Price Volatility
Gender Diversity	1.000	0.322**	0.210*	0.411**	-0.365**
Age Diversity	0.322**	1.000	0.245*	0.267*	-0.211*
Educational Diversity	0.210*	0.245*	1.000	0.374**	-0.285**
Firm Value (Tobin's Q)	0.411**	0.267*	0.374**	1.000	-0.476**
Stock Price Volatility	-0.365**	-0.211*	-0.285**	-0.476**	1.000

Regression Analysis

Gender Diversity

The regression results (Table 3) indicate that gender diversity is significantly linked to both higher firm value and lower stock price volatility. A 1% increase in female board representation is associated with a 0.05 increase in Tobin's Q ($p < 0.01$) and a 0.04 reduction in volatility ($p < 0.05$).

Table 3. Regression Results – Gender Diversity

Variable	Model 1: Tobin's Q (Firm Value)	Model 2: Stock Price Volatility
Gender Diversity (%)	0.052** (0.014)	-0.045* (0.018)
Firm Size (Log)	0.210* (0.082)	-0.130* (0.065)
Leverage	-0.134** (0.045)	0.098* (0.050)
Constant	1.354** (0.280)	8.750** (0.672)
Adjusted R-Squared	0.482	0.355

Age Diversity

The regression results (Table 4) suggest that age diversity contributes positively to both firm value and board effectiveness. A wider age range among directors is positively associated with Tobin's Q ($\beta = 0.032$, $p < 0.05$) and is also found to significantly enhance board decision-making.

Table 4. Regression Results – Age Diversity

Variable	Model 1: Tobin's Q (Firm Value)	Model 2: Board Effectiveness
Age Diversity (Range)	0.032* (0.015)	0.049* (0.020)
Firm Size (Log)	0.150* (0.068)	0.210* (0.074)
Board Independence	0.184** (0.051)	0.243** (0.045)
Constant	1.654** (0.338)	5.453** (0.738)
Adjusted R-Squared	0.395	0.512

Educational Diversity

The regression results (Table 5) show that educational diversity is significantly associated with both higher firm value and lower stock price volatility. A one-unit increase in the diversity index corresponds to a 0.045 rise in Tobin's Q and a 0.029 reduction in volatility, confirming that cognitive heterogeneity enhances strategic decision-making and risk management.

Table 5. Regression Results – Educational Diversity

Variable	Model 1: Tobin's Q (Firm Value)	Model 2: Stock Price Volatility
Educational Diversity (Index)	0.045** (0.012)	-0.029* (0.016)
Firm Size (Log)	0.182* (0.069)	-0.123* (0.072)
Constant	1.754** (0.291)	7.650** (0.690)
Adjusted R-Squared	0.435	0.380

Comparative Insights

The findings align with evidence from other emerging economies – such as Brazil and India – where gender and educational diversity have been shown to strengthen governance practices and enhance firm value (Gupta et al., 2019; Khan et al., 2020). At the same time, the Saudi context reflects a distinctive

institutional environment. While reforms under Vision 2030 have accelerated the pace of board diversification, cultural and regulatory factors continue shaping the extent to which diversity translates into improved governance and performance outcomes.

Discussion

Interpretation of Results

The findings confirm that board diversity exerts a significant influence on firm outcomes in the Saudi market. Among the different dimensions, gender diversity shows the strongest effect: female representation is associated with higher firm value and lower stock price volatility. This supports the argument that women bring distinctive perspectives to strategic oversight, enhance monitoring functions, and enrich stakeholder engagement (Adams & Ferreira, 2009; Terjesen et al., 2016).

Age diversity also contributes positively by stabilizing stock prices and strengthening decision-making. The combination of innovative ideas from younger directors with the accumulated experience of senior members generates a more balanced and effective governance process (Harrison & Klein, 2007; Post & Byron, 2015).

Educational diversity further enhances firm value by broadening the board's cognitive resources. Varied academic backgrounds improve problem-solving capacity and enable boards to adapt more effectively to regulatory reforms and dynamic market conditions (Carter et al., 2010; Mahadeo et al., 2012).

Taken together, these results are consistent with resource dependence theory, which posits that diverse boards provide access to broader networks, knowledge, and capabilities. This, in turn, strengthens governance quality and offers firms a sustained competitive advantage (Hillman et al., 2000).

5.1 Implications for Theory and Practice

This study contributes to the literature by integrating gender, age, and educational diversity into a single framework and providing empirical evidence from an emerging market that is often underrepresented in governance research. From a theoretical perspective, it demonstrates that multiple dimensions of diversity collectively enhance board effectiveness and firm outcomes, thereby extending the scope of corporate governance scholarship.

From a practical standpoint, the findings highlight that diversity should be viewed not only as a matter of social responsibility but also as a strategic resource. For firms, diverse boards can mitigate risk, strengthen resilience, and enhance investor confidence. For policymakers, the results reinforce the goals of Vision 2030, which emphasizes inclusivity and strong governance as essential drivers of economic transformation. Saudi companies that actively embed diversity into board practices are more likely to attract foreign investment and achieve sustainable growth.

5.2 Contextual Considerations in Saudi Arabia

Saudi Arabia's institutional and cultural environment plays a critical role in shaping how board diversity translates into firm outcomes. Reforms introduced under Vision 2030 have accelerated the shift toward more inclusive governance structures; however, deeply rooted cultural norms continue to influence the pace of change. While female participation on boards is steadily increasing, it remains relatively low compared to international benchmarks (Nawaz et al., 2022). This suggests that the full benefits of diversity are more likely to materialize when regulatory reforms are accompanied by organizational commitment and broader cultural acceptance.

Policy Recommendations

To strengthen board diversity and governance effectiveness in Saudi Arabia, several policy measures are proposed:

- **Regulatory Support:** Introduce clear guidelines or soft quotas to accelerate female participation on boards, drawing on practices adopted in advanced economies.
- **Capacity Building:** Implement training programs and awareness initiatives for board members to emphasize the strategic value of diversity and inclusion.
- **Incentives:** Motivate firms to adopt diversity policies by linking recognition awards and governance ratings to compliance with best practices.

- **Integration into Strategy:** Ensure diversity is embedded into board processes and decision-making rather than being treated as a symbolic requirement. Collectively, these measures can enhance governance structures, improve firm performance, and support the Kingdom's long-term economic objectives under Vision 2030.

Conclusion

This study demonstrates that board diversity is not only a matter of fairness but also a strategic driver of firm value and market stability in emerging markets. In Saudi Arabia, the analysis shows that gender diversity strengthens oversight and reduces volatility, age diversity fosters balanced and forward-looking decision-making, and educational diversity equips boards with broader analytical capacities that enhance adaptability and innovation.

By situating these findings within the Kingdom's evolving governance framework under Vision 2030, this study extends global debates on corporate governance into a non-Western context. The evidence underscores that diverse boards are better positioned to manage risk, build investor confidence, and promote sustainable growth.

From a theoretical standpoint, this research advances the literature by integrating multiple dimensions of diversity of gender, age, and education into a single framework and testing them in an underexplored institutional setting. From a practical perspective, the findings provide actionable insights for firms, regulators, and investors seeking to strengthen governance practices, align with international standards, and support the broader objectives of economic diversification and inclusivity.

Limitations and Directions for Future Research

Limitations

Although this study provides valuable insights, several limitations should be acknowledged.

First, the analysis focuses exclusively on Saudi-listed firms during the period of 2019–2023, coinciding with the rollout of Vision 2030 reforms. While this timeframe is appropriate for examining governance changes, its narrow scope may limit the generalizability of the findings to other markets or longer periods.

Second, although the sample includes 94 non-financial firms from a range of sectors, it does not cover all industries. Results may differ in sectors with distinct governance structures or regulatory requirements.

Third, while the use of fixed-effects and system-GMM models enhances reliability, these methods cannot eliminate risks related to omitted variables or model specification errors—issues that remain common in governance research (Baker et al., 2018).

Finally, the study examines only three dimensions of board diversity—gender, age, and education—while excluding others such as ethnicity, nationality, and international experience, which may also play important roles in shaping governance effectiveness and firm outcomes (Post & Byron, 2015).

Future Research Directions

Future research could extend the present study in several ways.

First, incorporating additional dimensions of diversity like ethnicity, cultural background, or international experience would provide a more comprehensive understanding of how board composition influences organizational outcomes. Qualitative approaches, including interviews or case studies, could also help uncover the mechanisms through which diversity shapes board dynamics and decision-making processes.

Second, longitudinal studies that track changes in board composition over longer time horizons could strengthen causal inference and clarify how diversity affects firm strategy, resilience, and long-term performance (Hillman et al., 2000).

Finally, comparative analyses across emerging markets would be valuable for identifying how institutional contexts such as regulatory frameworks and cultural norms moderate the relationship between diversity and firm outcomes. Such research would contribute to a more nuanced understanding of governance effectiveness in different environments.

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