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RESEARCH ARTICLE

Board Gender Diversity, Board Composition, CEO Duality, Firm Size, and Liquidity: Impact on Financial Performance of Non-financial Listed Firms in Pakistan

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Abstract: This study aims to investigate whether board structure (i.e. board size, board independence, CEO duality) and board gender diversity affect financial performance of non-financial listed firms in Pakistan. Moreover, this study investigates whether theories related to corporate governance provide any support to understand the impact of board structure and board gender diversity on firm performance. To estimate the results data were taken from annual reports of non-financial firms related to cement, food & personal care products and pharmaceutical sectors over a period of 6 years from 2018 to 2023. Panel data techniques namely pooled OLS, fixed effects and random effects methods used to estimate the results. Results show that board size is positively related to firm performance. The positive relation confirms the predictions of resource-based view. Interestingly, board independence is inversely related to firm value. The negative relation might be due to excessive involvement of independent directors in strategic decisions. Moreover, undue deliberations on strategic issues may lead to delay in decision making which inversely affect the firm performance. CEO duality is positively related to profitability and firm value. Finally, board gender diversity is positively related to firm performance. Findings provide support to researchers, academicians, managers and creditors to understand the difference between theory and practice.

Keywords: Board Size, Board Gender Diversity, CEO Duality, Board Independence

Introduction

With the advent of the modern complex global environment, corporate governance has received heightened interest, especially in terms of board structure and gender diversity on boards. Competent governance practices are essential to strengthening corporate financial performance, ensuring accountability, and gaining investor trust (Birindelli et al., 2024). This structure is an important point of focus as it will determine the board set in place which directly contributes to decision-making, risk management, and strategic direction (Saeed et al., 2024). One of the most important aspects of corporate governance reforms around the globe has been board gender diversity, given that greater diversity at the top level allows companies to better tackle complex business challenges and helps make innovative decisions leading to superior financial performance (Upadhyay & Zeng, 2014).

The issue of an efficient board structure continues to play an important role in emerging markets including Pakistan. For this reason, earlier works enjoy a positive association between independent directors and firm financial performance (Farag & Mallin, 2016). Nevertheless, one of the major problems of doing business in these markets is the lack of women on boards. Even though Pakistan has promoted women in corporate governance there is still a lack of enough representation as compared to international standards.

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Gender diversity is the recognition and acceptance of the wide range of identities that people have beyond the traditional categories of male and female. It acknowledges that gender is not strictly binary and that individuals may identify as transgender, non-binary, genderqueer, gender fluid, or another identity outside of the male-female binary (Compton et al., 2019). Gender diversity in corporate governance refers to the inclusion of individuals of diverse genders, including women, men, and non-binary individuals, in leadership positions and decision-making roles within companies and organizations (Wu et al., 2024). Traditionally, corporate governance structures have been dominated by men, particularly in executive and board positions (Kirsch, 2018). Gender diversity initiatives seek to address this imbalance by promoting the representation of women and other gender-diverse individuals in corporate leadership (Firew, 2024).

The relationship between independent directors and a firm's financial performance is complex and nuanced. Corporate independent directors can rebuild firm value through monitoring and advisory functions in the crises and their impact can be different in the different markets and conditions (Fogel et al., 2021).

Independent directors enhanced firm value during the Great Recession, whereby the firms benefited from enhanced firm value through 4.29% a standard deviation increase with the independent directors (Jenwittayaroje & Jiraporn, 2019). The observations above suggest that they are useful to offer professional recommendations when people go through stress such as during calamities (Jenwittayaroje & Jiraporn, 2019).

Firm size and liquidity significantly influence financial performance and firm value, though their effects can vary across industries. Larger firms often experience a negative impact on firm value, as indicated by (Azmi & Setyowati, 2023). Firm size can moderate the relationship between liquidity and profitability, although its effectiveness varies (Wulandari & Wulandari, 2024). Liquidity has been shown to positively affect firm value, particularly in the pharmaceutical sector (Sulistiani et al., 2024) . Liquidity also influences financial performance, which in turn affects firm value, as seen in banking studies (Burhani & Prajawati, 2023). Financial performance mediates the effects of both liquidity and firm size on firm value, highlighting its critical role in financial analysis (Yulianson & Hastuti, 2024). While firm size and liquidity are crucial, their impacts can differ based on industry context and the specific financial metrics considered, suggesting a nuanced relationship that deserves further exploration (Reschiwati et al., 2020).

Literature Review

Impact of Board Gender Diversity on Profitability and Firm Value

In analyzing the influence of gender diversity on financial performance, recent research by (Singhania et al., 2024) employed fixed-effects panel data regression models to examine diversity's effect both on corporate boards and board committees. To obtain strong results, this research frequently utilises the Blau and Shannon diversity indexes. Findings demonstrate that gender diversity on important board committees, especially salary and nominating committees, favorably improves business performance when evaluated using market-based indicators. However, this effect is statistically negligible when examined by accounting-based performance indicators. In recent years, the link between board gender diversity and financial success has attracted substantial scholarly attention. (Xie et al., 2024) emphasize that this link may not be linear but rather follows an inverted U-shaped pattern, indicating that while increasing gender diversity on boards initially increases company performance, this beneficial effect reduces beyond a certain threshold of diversity. (Conyon & He, 2017) employed yearly data on over 3000 US companies from 2007 to 2014, it is evident that having some women on the board has a beneficial influence on company performance, and this effect changes at different regions of the performance distribution. Critically, it was demonstrated that the inclusion of women directors modifies the dispersion of business performance. (A. N. Khan et al., 2024) explored the impact of board gender diversity (BGD) on the performance of listed energy corporations in Pakistan from 2010 to 2019. Utilizing the system generalized method of moments (GMM) estimator and logit models, the research tries to discover the underlying links between board qualities and business performance.

The data reveal that the presence of female directors tends to be mostly symbolic until a crucial level of representation is achieved since only the quadratic term of BGD significantly affects business performance. Notably, the study demonstrates that female directors do not significantly impair working capital management (WCM) efficiency. Furthermore, the data imply that BGD promotes a conservative approach to Working Capital Management, whereas board financial expertise (BFE) recommends a more moderate approach. Hence, it can be hypothesized that

H_1: Board gender diversity is positively linked to profitability and firm value

Impact of Board Composition on Profitability and Firm Value

(Abubakar et al., 2023) focused on the board of directors' contribution to the financial performance of 14 Nigerian listed banks for a period of five years from 2018 to 2022. The research employs several proxies used to estimate board characteristics such as the board size, the proportion of independent directors, the proportion of female board members, and the number of meetings held. To measure financial performance, Return on Assets (ROA) is selected as the key variable. Data was obtained from the annual reports and financial statements of the selected banks in the sample. Since correlational designs were used to examine the board characteristics on the financial performance, panel data regression was used as the analysis method in this research. A negative link between the variables of board meetings, board gender, and board independence and the dependent variable, that is, the financial performance of the banks under consideration proves insignificant in this research. (Andoh et al., 2023) seek to make a relative comparison of the relationship between board characteristics and financial performance of non-financial firms and 63 listed commercial banks in Ghana. The paper not only explains fixed and random effects models with generalized least square specifications and lagged models of board variables have been employed to provide efficient estimates. Research evidence shows that there is both convergence and divergence in the effects of board features on organizational performance by business segments. (Karim et al., 2024) researched Malaysian listed firms that have adopted accounting and market-performance measures, utilizing dynamic models such as GMM to overcome endogeneity and existing heterogeneity issues. This evidence implies that risk management committee-related factors like size, independence, and meeting frequency have a negative relationship with accounting performance and a positive relationship with market performance. Hence, it can be hypothesized that

H_2: Board composition is positively linked to profitability and firm value

Impact of CEO Duality on Profitability and Firm Value

(Duru et al., 2016) analyzed the sample of 6848 firm-year observations from 950 firms in the United States and disclosed important findings about the link between firm performance and board leadership structure. Using the system GMM, this study established that CEO duality is statistically significantly negatively related to firm performance. However, this negative effect is partially offset positively by the independent board members thereby showing that board independence decreases the negative effects of CEO duality. (Alves, 2023) using agency theory as the theoretical framework of this research focuses on how CEO duality affects the quality of earnings, as measured by discretionary accruals. It also explores whether board independence has a moderating role in the above relationship. Cross-sectional fixed effects regression analysis is employed by the study to analyze the effect of CEO duality on earnings quality in non-financial listed Portugal firms for the years 2002 to 2016. The results support the agency theory whereby CEO duality bears a negative relationship with the earnings quality. (Le et al., 2023) using agency and stewardship theories to analyze the effects of corporate governance on firm performance, especially concerning CEO duality and board size. Several findings are derived from research on the 200 leading firms on the Vietnam Stock Exchange for 2014 and 2015 and include the following, observing CEO duality may limit the board's monitoring, thereby reducing accountability and oversight. (Alabdullah et al., 2023) examined the relationship between CG mechanisms and financial profitability in 60 listed firms in Kuwait utilizing data from the financial year 2020. With a

cross-sectional research design approach and the aid of SPSS 20 statistical program for the data analysis, the study shows that CEO duality is not useful in explaining variations in financial performance. Hence, it can be hypothesized that

H_3: CEO duality is positively linked to profitability and firm value

Impact of Firm Size on Profitability and Firm Value

In evaluating the elements determining firm value, recent study by (Marliyana et al., 2024) emphasized profitability, leverage, and firm size as significant drivers, notably within the food and beverage industry listed on the Indonesia Stock Exchange (IDX) from 2019 to 2021. One quantitative research on this issue employed a purposive sample of 23 organizations, evaluating secondary data to find how these financial aspects interact. The research provided numerous crucial observations. Firm size worked as a moderating variable, strengthening the beneficial influence of profitability on firm value. Firm size also regulated the leverage-firm value link, lessening the unfavorable characteristics associated with increasing leverage. (Marliyana et al., 2024) emphasized profitability, leverage, and firm size as significant drivers, notably within the food and beverage industry listed on the Indonesia Stock Exchange (IDX) from 2019 to 2021. Firm size worked as a moderating variable, strengthening the beneficial influence of profitability on firm value. Firm size also regulated the leverage-firm value link, lessening the unfavorable characteristics associated with increasing leverage. Firm size and liquidity significantly influence financial performance and firm value, though their effects can vary across industries. Larger firms often experience a negative impact on firm value, as indicated by (Azmi & Setyowati, 2023). Firm size can moderate the relationship between liquidity and profitability, although its effectiveness varies (Wulandari & Wulandari, 2024). Liquidity has been shown to positively affect firm value, particularly in the pharmaceutical sector (Sulistiani et al., 2024). Hence, it can be hypothesized that

H_4: Firm size is positively linked to profitability and firm value

Impact of liquidity on profitability and firm value

Another significant factor to firm value is liquidity, the capacity of a firm to pay its immediate debts (Bimo et al., 2024). There is evidence that shows that the values and the performance of firms with high liquidity would be superior to firms with greater vulnerability to shocks (Marliyana et al., 2024). Liquidity is useful in enhancing the net operating cash flows as well as the reduction of the cost of capital (Chen et al., 2021). However, recent literature reports also assert that liquidity may not always foster superior firm value because of inefficient utilization of cash resources (Bimo et al., 2024). Bearing this in mind, firm size and liquidity are two factors that determine profitability and firm value, which therefore means that these factors need to be managed within the strategic and operational framework of the firms. There is great statistical evidence of a positive relationship between firm size liquidity and firm value and profitability. Some advantages of large firms include; economies of scale, enhanced market power, and boosted investors' confidence leading to improved profitability and firm value (Chen et al., 2021). While firm size and liquidity are crucial, their impacts can differ based on industry context and the specific financial metrics considered, suggesting a nuanced relationship that deserves further exploration (Reschiwati et al., 2020). Hence, it can be hypothesized that

H_5: Liquidity is positively linked to profitability and firm value

Underpinning Theories

Agency Theory

This study is grounded in Agency, which claims that conflicts may emerge between the management (agents) and the shareholders (principals) due to opposing interests. Board structures, such as including independent directors and separating the responsibilities of CEO and chairman, are governance tools aimed at aligning

management's activities with shareholders' interests. Gender diversity on boards is considered a factor that can improve board decision-making by offering varied perspectives and enhancing the board's monitoring capacities, therefore lowering agency difficulties.

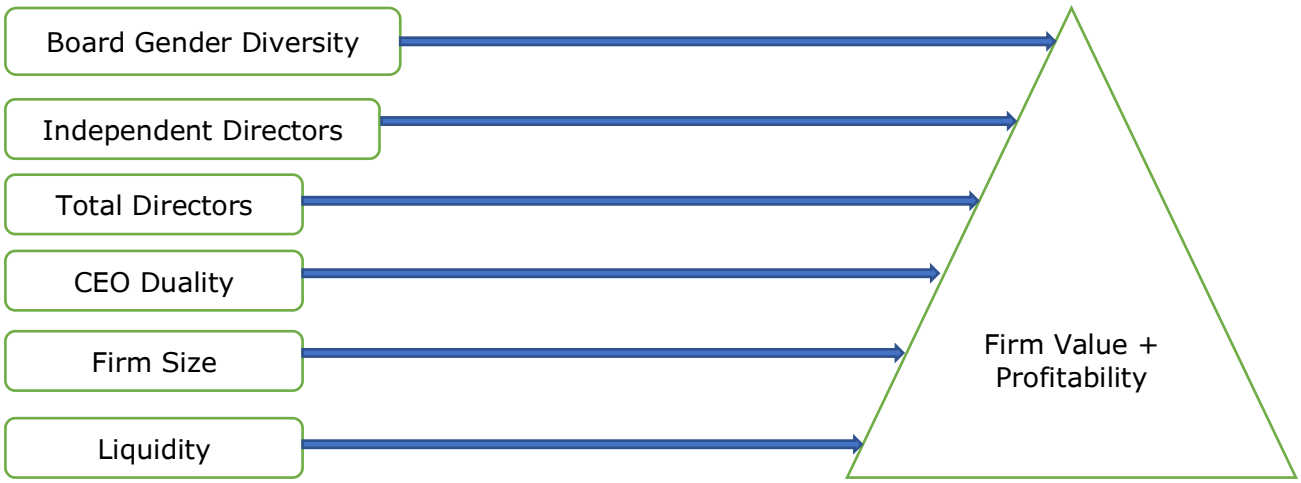
Resource Dependance Theory

Resource Dependance Theory (Pfeffer & Salancik, 1978) suggests that boards offer resources such as networks, skills, and external information that help companies make better strategic decisions and perform well. In particular, gender-diverse boards may have different perspectives and resources that can enhance decision-making and spur greater innovation all factors that could lead to better financial performance for a company. Both theories provide contexts where governance mechanisms, such as board structure and gender diversity are hypothesized to be able to affect corporate performance, especially in the case of non-financial listed firms operating in an emerging market like Pakistan.

Conceptual Framework

Figure 1

Conceptual Model



Data Collection and Methodology

The data for this study was obtained from 73 firms in the food, chemical, and cement industries, covering the period from 2018 to 2023. The collection covers firm-level data including annual reports, financial statements, and corporate governance filings. The key variables of importance are Board gender diversity, board structure, business size, liquidity, and their impact on firm value and profitability. The analysis employs the Ordinary Least Squares (OLS) regression approach. Ordinary Least Squares (OLS) is a statistical technique that quantifies the association between independent variables (e.g., board gender diversity, board structure) and dependent variables (firm value and profitability). The objective of OLS is to minimize the aggregate of squared discrepancies between observed and predicted values. This method assumes a linear relationship among the variables under scrutiny and is particularly suited for analyzing both cross-sectional and panel datasets in the realm of firm-level inquiries.

The following equations are used to analyze the results:

$$\mathrm{PROF_{it}} = \beta_o + \beta_1 \mathrm{TDIR_{it}} + \beta_2 \mathrm{IDIR_{it}} + \beta_3 \mathrm{CEOD_{it}} + \beta_4 \mathrm{BGDIV_{it}} + \beta_5 \mathrm{FSIZE_{it}} + \beta_6 \mathrm{LIQ_{it}} + \varepsilon_{it}$$

$$\mathrm{FV_{it}} = \beta_o + \beta_1 \mathrm{TDIR_{it}} + \beta_2 \mathrm{IDIR_{it}} + \beta_3 \mathrm{CEOD_{it}} + \beta_4 \mathrm{BGDIV_{it}} + \beta_5 \mathrm{FSIZE_{it}} + \beta_6 \mathrm{LIQ_{it}} + \varepsilon_{it}$$

Analysis

Descriptive Statistics

The descriptive statistics of the variables employed in this empirical investigation are shown in Table 5.1. PBT/TA, or profitability, is 7.31 percent on average. When expressed as the natural log of market capitalization, the mean company value is 17.886. On average, a board has eight directors. The boards can include as few as eight directors or as many as fourteen. On average, 28.70 percent of the total number of directors on a board are independent directors. Compared to the Code of Corporate Governance's (CCG) requirements for independent directors, which state that they must make up one-third of all directors, this ratio is rather low. According to the CEO duality, the CEO serves as the board chairman in 63.92 percent of cases. This ratio is quite concerning and shows how poorly corporate governance is practiced in the nation. In all boards, the average percentage of female directors is 14.63 percent. When expressed as the natural log of total assets, the mean firm size is 15.96. When current liabilities are divided by total assets, the mean liquidity ratio is 1.93. This ratio shows that the sample businesses choose to finance a smaller percentage of their current assets with long-term cash and retain positive net working capital. Despite the minimal level of liquidity risk in this case, it has a detrimental effect on the profitability of the company. One crucial subject that requires research is why businesses have positive net working capital. The political unrest and precarious economic conditions are two significant factors that might compel the firms to operate with net positive working capital to avoid any possible situation of insolvency.

Table 1

Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
$PROF_{it}$	438	0.0731	0.2109	-2.6473	0.6312
FV_{it}	438	17.886	2.1005	12.927	22.297
$TDIR_{it}$	438	8.0068	1.5058	6	14
$IDIR_{it}$	438	0.2870	0.1120	0.1023	0.7142
$CEOD_{it}$	438	0.6392	0.4807	0	1
$BGDIV_{it}$	438	0.1463	0.0906	0.0714	0.4285
$FSIZE_{it}$	438	15.960	1.9973	10.007	20.226
LIQ_{it}	438	1.9350	3.1413	0.0270	30.812

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Years Wise Descriptive Statistics

Table 4.2 show descriptive statistics covering a range of financial and governance variables from 2018 to 2023. Profitability fluctuated, peaking in 2023 after declining in 2020 but continuing on a steady rising trajectory. The firm value increased steadily, reaching a high in 2021 and then gradually declining in 2023. The independent director ratio steadily climbed, demonstrating an increasing emphasis on independent governance, while the total director fluctuated very little and remained nearly steady. After remaining steady for a while, CEO duality somewhat increased in 2023, indicating a growth in the number of situations in which the CEO serves in two capacities.

The consistent rise in board gender diversity from 2018 to 2023 demonstrated advancements in gender representation at the board level. The firm's size also gradually increased over time, which was indicative of an increase in operations or assets. Conversely, liquidity reached its peak in 2021 and then started to fall, though it was still higher than in 2018. While liquidity has recently declined after peaking in

2021, overall data point to increases in profitability, board diversity, and governance frameworks throughout time, coupled with growth in firm size.

Table 2
Descriptive Statistics

Year	$PROF_{it}$	FV_{it}	$TDIR_{it}$	$IDIR_{it}$	$CEOD_{it}$	$BGDIV_{it}$	$FSIZE_{it}$	LIQ_{it}
2018	0.0574	17.877	8.0273	0.2368	0.5616	0.1138	15.664	1.7657
2019	0.0760	17.653	7.9726	0.2660	0.6438	0.1358	15.815	1.723
2020	0.0415	17.816	8.0821	0.2865	0.6438	0.1421	15.845	2.1416
2021	0.0811	18.115	8.0821	0.2990	0.6438	0.1546	15.968	2.2454
2022	0.0778	17.924	7.9726	0.3122	0.6438	0.1655	16.178	1.8697
2023	0.1045	17.928	7.9041	0.3215	0.6986	0.1660	16.289	1.8647
Total	0.0731	17.886	8.0068	0.2870	0.6392	0.1463	15.960	1.9350

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

The development in profitability from 2018 to 2023 is shown in Chart 1. Over the course of the six years, variations may be seen in the profitability statistic. From 2018 to 2019, it rose, and then in 2020, it sharply decreased. Profitability did, however, increase in 2021 and then stabilize in 2022 after hitting its lowest point in 2020. It experienced a notable increase in 2023, hitting its greatest point during the monitored time. This indicates that even while profitability experienced difficulties in 2020, possibly as a result of outside factors, it recovered gradually and continued to grow by 2023.

The trend in company value from 2018 to 2023 is seen in Chart 2. From 2018 to 2019, the firm's worth decreased, reaching its lowest point in 2019. But starting in 2020, there is a noticeable uptick in recovery that peaks in 2021. Following this peak, the business value fell once more before somewhat stabilizing in 2022 and 2023. This suggests that while company value increased significantly in 2021, it has since plateaued, indicating difficulties in continuing the growth seen during the recovery phase.

Figure 1
Profitability

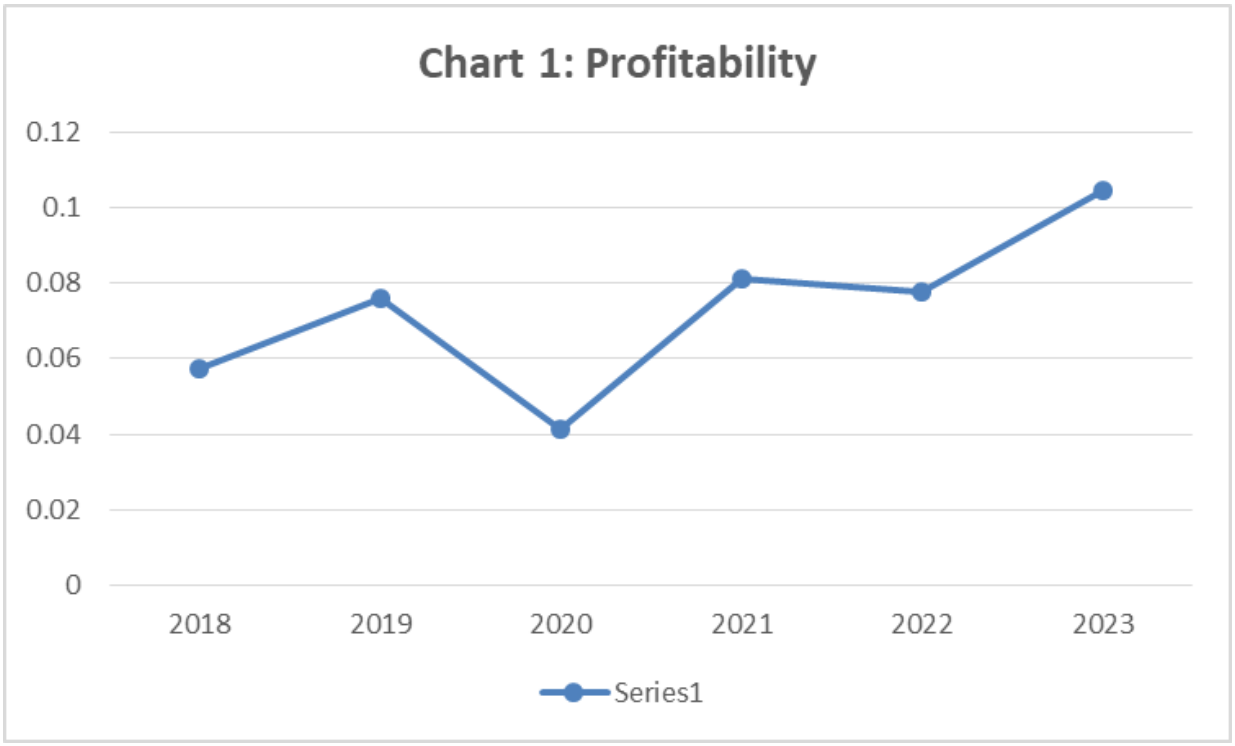
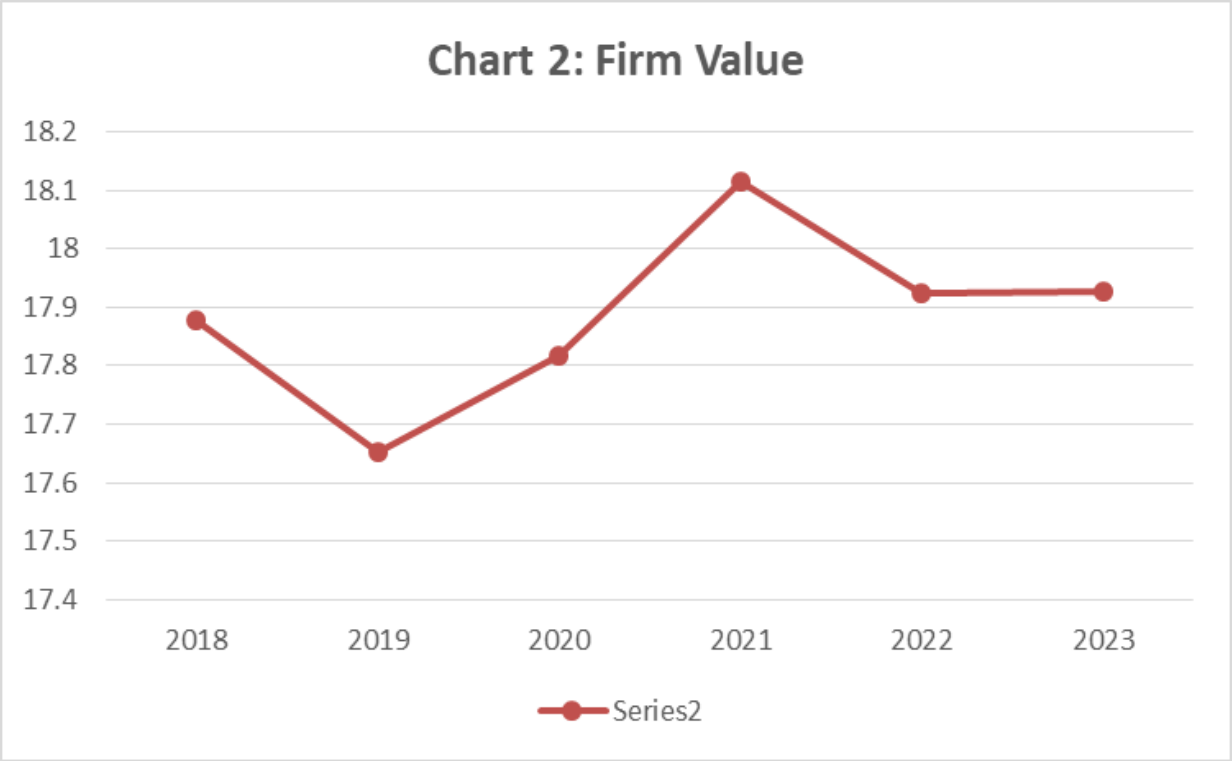


Figure 2
Firm Value



Correlation Matrix

The correlation matrix is displayed in Table 4.3 and illustrates the connections between a number of variables, including firm value, profitability, and others. The majority of the factors show a positive correlation with profitability; notable correlations were found with firm value (0.3525), total director independence (0.1435), CEO duality (0.2556), gender diversity on the board (0.1265), and company size (0.3255). This shows that in addition to larger organizations and more frequent CEO duality, higher profitability is connected with stronger firm value, board independence, and diversity.

Company value is positively correlated with both company size (0.8671) and CEO duality (0.3711), suggesting that greater firm values are typically seen in larger organizations with two CEOs. Additionally, it has a 0.3179 positive correlation with total director independence. It does, however, show a negative correlation (-0.1372) with liquidity, suggesting that companies with higher value typically have less liquidity. Director independence has no discernible link with board gender diversity or liquidity, but it is favorably correlated with CEO duality, profitability, and firm value (0.1299).

CEO duality is positively connected with both profitability and firm value, suggesting that companies whose CEOs have two jobs typically outperform others and are worth more. It does not, however, demonstrate any appreciable inverse or positive association with liquidity. There is a weak positive association with CEO duality, profitability, and board gender diversity. This suggests that board gender diversity has a limited but favorable impact on these factors.

Lastly, there is a negative correlation between firm value and liquidity (-0.2715), suggesting that larger firms typically have less liquidity. It's interesting to note that there is a positive correlation between liquidity and the independent director ratio (0.1351), indicating that companies with better liquidity may have more independent directors while often being smaller and less lucrative.

Table 3

Correlation Matrix

	$PROF_{it}$	FV_{it}	$TDIR_{it}$	$IDIR_{it}$	$CEOD_{it}$	$BGDIV_{it}$	$FSIZE_{it}$	LIQ_{it}
$PROF_{it}$	1.0000							
FV_{it}	0.3525***	1.0000						
$TDIR_{it}$	0.1435***	0.3179***	1.0000					
$IDIR_{it}$	0.0320	-0.0149	0.0596	1.0000				
$CEOD_{it}$	0.2556***	0.3711***	0.1299***	0.1365***	1.0000			
$BGDIV_{it}$	0.1265***	0.1351***	-0.0042	0.0050	0.1586***	1.0000		
$FSIZE_{it}$	0.3255***	0.8671***	0.2356***	0.0441	0.3390***	0.1094**	1.0000	
LIQ_{it}	-0.0117	-0.1372***	-0.0507	0.1351***	-0.0211	-0.0735	-0.2715***	1.0000

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Impact of Board Structure and Board Gender Diversity on Profitability

Table 4 presents regression result of pooled OLS method. Results depict that CEO duality; board gender diversity and firm size are statistically important and positively related to profitability. In contrast, board size, independent directors and liquidity have no impact on profitability.

Table 6 presents regression result in the fixed effects method which shows that firm size and liquidity are two significant variables that are statistically important and positively connected to profitability. However, board size, independent directors, CEO duality and board gender diversity have no material impact on profitability.

Table 7 presents regression results in random effects method. Two variables namely CEO duality and firm size are statistically significant and positively related to profitability. Board size independent directors, board gender diversity and liquidity have no material impact on profitability. Table 4.8 presents results of Huasman specification test. Results reveal fixed effects to be superior than random effects method.

Table 4

Impact of Explanatory Variables on $PROF_{it}$ (Pooled OLS Method)

Variables	Obs.	Coef.	Std. Err.	t-Stat	Prob.
C	438	-0.6380	0.1318	-4.84	0.000
$TDIR_{it}$	438	0.2053	0.1346	1.53	0.128
$IDIR_{it}$	438	-0.0290	0.0856	-0.34	0.734
$CEOD_{it}$	438	0.0638	0.0212	3.01	0.003
$BGDIV_{it}$	438	0.1870	0.1055	1.77	0.077
$FSIZE_{it}$	438	0.0286	0.0053	5.36	0.000
LIQ_{it}	438	0.0051	0.0031	1.63	0.104
R^2		0.1449	f-Statistics		12.17
Adjusted R^2		0.1330	Probability		0.0000
RMSE		0.1964	Mean DV		0.0732

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 5

Variance Inflation Factor

Variable	VIF	1/VIF
$\mathbf{FSIZE_{it}}$	1.29	0.7742
CEODit	1.18	0.8496
$\mathbf{LIQ_{it}}$	1.11	0.8986
TDIRit	1.08	0.9298
$\mathbf{IDIR_{it}}$	1.04	0.9581
$\mathbf{BGDIV_{it}}$	1.04	0.9660
Mean VIF	1.12	

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 6

Impact of Explanatory Variables on $\boldsymbol{PROF_{it}}$ (Fixed Effects Method)

Variables	Obs.	Coef.	Std. Err.	t-Stat	Prob.
C	438	-1.1733	0.5539	-2.12	0.035
$\mathbf{TDIR_{it}}$	438	-0.1269	0.3305	-0.38	0.701
$\mathbf{IDIR_{it}}$	438	-0.0082	0.1377	-0.06	0.952
$\mathbf{CEOD_{it}}$	438	0.0169	0.0320	0.53	0.598
$\mathbf{BGDIV_{it}}$	438	0.0237	0.1571	0.15	0.880
$\mathbf{FSIZE_{it}}$	438	0.0834	0.0272	3.06	0.002
$\mathbf{LIQ_{it}}$	438	0.0083	0.0051	1.62	0.107
$\mathbf{R^2}$		0.1138	f-Statistics		1.96
Mean DV		0.0732	Probability		0.0707

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 7

Impact of Explanatory Variables on $\boldsymbol{PROF_{it}}$ (Random Effects Method)

Variables	Obs.	Coef.	Std. Err.	z-Stat	Prob.
C	438	-0.6195	0.1800	-3.44	0.001
$\mathbf{TDIR_{it}}$	438	0.1102	0.1781	0.62	0.536
$\mathbf{IDIR_{it}}$	438	0.0050	0.0997	0.05	0.959
$\mathbf{CEOD_{it}}$	438	0.0466	0.0245	1.90	0.058
$\mathbf{BGDIV_{it}}$	438	0.1248	0.1213	1.03	0.303
$\mathbf{FSIZE_{it}}$	438	0.0335	0.0075	4.43	0.000
$\mathbf{LIQ_{it}}$	438	0.0047	0.0036	1.30	0.193
$\mathbf{R^2}$		0.1408	Mean DV		0.0732
Wald $\mathbf{Chi^2}$		35.92	Prob. $\mathbf{Chi^2}$		0.0000

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 8

Huasman Specification Test

	(b) fe Coefficients FE	(B) re Coefficients RE	(b-B) Difference	Sqrt (diag (V_b -V_B)) S.E.
$\mathbf{TDIR_{it}}$	-0.1269	0.1102	-0.2372	0.2784
$\mathbf{IDIR_{it}}$	-0.0082	0.0050	-0.0133	0.0949
$\mathbf{CEOD_{it}}$	0.0169	0.0466	-0.0296	0.0206
$\mathbf{BGDIV_{it}}$	0.0237	0.1248	-0.1011	0.0998
$\mathbf{FSIZE_{it}}$	0.0834	0.0335	0.0499	0.0261
$\mathbf{LIQ_{it}}$	0.0083	0.0047	0.0036	0.0036

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Impact of Board Structure and Board Gender Diversity on Firm Value

Regression results using the pooled OLS approach are shown in Table 4.9. The findings show that business size, liquidity, CEO duality, board gender diversity, and board size are all statistically significant and positively correlated with firm value. On the other hand, independent directors are important and have a negative relationship with the value of the company.

Regression results using the fixed effects approach are shown in Table 4.11, which indicates that firm size and liquidity have a substantial positive relationship with firm value. In contrast, the value of the company is negatively correlated with the gender diversity of the board and the CEO duality, but the value of the company is not significantly impacted by the number of independent directors.

The regression result using the random effects method is shown in Table 4.12. While independent directors and board gender diversity have an inverse relationship with firm value, total directors, firm size, and liquidity have a strong and positive relationship with firm value using the random effects method. Using the random effects method, CEO duality has no effect on company value. The Huasman specification test results are shown in Table 13. The results show that the fixed effects method is better than the random effects method.

Table 9

Impact of explanatory variables on $\mathbf{FV_{it}}$ (Pooled OLS Method)

Variables	Obs.	Coef.	Std. Err.	t-Stat	Prob.
C	438	0.5225	0.6511	0.80	0.423
$\mathbf{TDIR_{it}}$	438	3.6043	0.6648	5.42	0.000
$\mathbf{IDIR_{it}}$	438	-1.6262	0.4231	-3.84	0.000
$\mathbf{CEOD_{it}}$	438	0.3406	0.1047	3.25	0.001
$\mathbf{BGDIV_{it}}$	438	0.9524	0.5210	1.83	0.068
$\mathbf{FSIZE_{it}}$	438	0.8830	0.0264	33.44	0.000
$\mathbf{LIQ_{it}}$	438	0.0758	0.0155	4.87	0.000
$\boldsymbol{R^2}$		0.7897	f-Statistics		269.66
Adjusted $\boldsymbol{R^2}$		0.7867	Probability		0.0000
RMSE		0.9700	Mean DV		17.886

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 10

Variance Inflation Factor

Variable	VIF	1/VIF
$\mathbf{FSIZE_{it}}$	1.29	0.7742
$\mathbf{CEOD_{it}}$	1.18	0.8496
$\mathbf{LIQ_{it}}$	1.11	0.8986
$\mathbf{TDIR_{it}}$	1.08	0.9298
$\mathbf{IDIR_{it}}$	1.04	0.9581
$\mathbf{BGDIV_{it}}$	1.04	0.9660
Mean VIF	1.12	

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 11

Impact of Explanatory Variables on $\boldsymbol{FV_{it}}$ (Fixed Effects Method)

Variables	Obs.	Coef.	Std. Err.	t-Stat	Prob.
C	438	10.847	0.9791	11.08	0.000
$\mathbf{TDIR_{it}}$	438	0.0209	0.5843	0.04	0.971
$\mathbf{IDIR_{it}}$	438	-0.0585	0.2434	-0.24	0.810
$\mathbf{CEOD_{it}}$	438	-0.1139	0.0567	-2.01	0.045
$\mathbf{BGDIV_{it}}$	438	-0.7433	0.2777	-2.68	0.008
$\mathbf{FSIZE_{it}}$	438	0.4472	0.0481	9.29	0.000
$\mathbf{LIQ_{it}}$	438	0.0413	0.0091	4.50	0.000
$\boldsymbol{R^2}$		0.7403	f-Statistics		16.83
Mean DV		17.886	Probability		0.0000

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 12

Impact of Explanatory Variables on $\boldsymbol{FV_{it}}$ (Random Effects Method)

Variables	Obs.	Coef.	Std. Err.	z-Stat	Prob.
C	438	6.5064	0.8257	7.88	0.000
$\mathbf{TDIR_{it}}$	438	1.0719	0.5767	1.86	0.063
$\mathbf{IDIR_{it}}$	438	-0.4597	0.2481	-1.85	0.064
$\mathbf{CEOD_{it}}$	438	-0.0609	0.0589	-1.04	0.301
$\mathbf{BGDIV_{it}}$	438	-0.7019	0.2892	-2.43	0.015
$\mathbf{FSIZE_{it}}$	438	0.6629	0.0390	16.96	0.000
$\mathbf{LIQ_{it}}$	438	0.0575	0.0092	6.23	0.000
$\mathbf{R^2}$		0.7661	Mean DV		17.886
Wald $\mathbf{Chi^2}$		295.53	Prob. $\mathbf{Chi^2}$		0.0000

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Table 13

Huasman Specification Test

	(b) fe Coefficients FE	(B) re Coefficients RE	(b-B) Difference	Sqrt(diag (V_b -V_B)) S.E.
$TDIR_{it}$	0.0209	1.0719	-1.0510	0.0941
$IDIR_{it}$	-0.0585	-0.4597	0.4012	.
$CEOD_{it}$	-0.1139	-0.0609	-0.0530	.
$BGDIV_{it}$	-0.7433	-0.7019	-0.0413	.
$FSIZE_{it}$	0.4472	0.6629	-0.2156	0.0281
LIQ_{it}	0.0413	0.0575	-0.0162	.

$PROF_{it}$ = Profitability, FV_{it} = Firm Value, $TDIR_{it}$ = Board Size, $IDIR_{it}$ = Board Independence, $CEOD_{it}$ = CEO Duality, $BGDIV_{it}$ = Board Gender Diversity, $FSIZE_{it}$ = Firm Size, LIQ_{it} = Liquidity

Overall, the findings indicate that, using the pooled OLS approach, return on assets is positively correlated with both CEO duality and board gender diversity, both of which are statistically significant. Additionally, return on assets is strongly correlated with business size and liquidity, both of which are statistically significant.

According to the pooled OLS approach, board size, CEO duality, and board gender diversity are statistically significant and positively correlated with firm value. On the other hand, there is an inverse relationship between board independence and business value. Firm value is strongly correlated with firm size and liquidity, both of which are statistically significant.

Results and Discussion

Results of regression analysis showed a positive relation between board size and the performance of the firms. This positive correlation confirms the expectations of the resource-based approach, which posits that directors leverage their personal networks to acquire essential assets from the external environment vital for organizational success. Thus, a board composed of several members not only monitors the actions of the management but also fetch resources from external environment for the well-being of a firm. Since a bigger board composed of several directors with diverse experience and capabilities to handle the strategic decisions tactfully which in turn enhance the firm performance. The prominent result of this practical work is that board independence is inversely related to firm value. In general, a positive relationship was expected between board independence and firm value however the relation is negative. The essence to include independent directors on a board is to increase transparency. Thus, negative relation might be due to excessive involvement of independent directors in strategic decisions. Moreover, undue deliberations on strategic issues may lead to delay in decision making which inversely affect the firm performance.

CEO duality is positively related to profitability and FV. The positive relation may be due to the reason that when a CEO holds both positions i.e. decision management and decision control then it is easier for him/her not only to make decision but also to implement it well in time. This element not only improves the firm's efficiency but also creates a positive impact on company's profitability and market value of stocks. Board gender diversity is positively related to firm performance. This positive connection can be attributed to female directors being more disciplined as well as risk averse than their male counterparts, and prefer to make strategic decisions in such a way that leads to rise in firm value. For instance, they prefer to invest funds in projects that worth more than their cost, and prefer to formulate a financing mix that leads to low cost of capital. But they also manage risk that involves in investment and financing decisions.

Firm size has a positive connection with firm performance. The positive correlation aligns with the reality that large enterprises operate on a substantial scale, resulting in a lower fixed cost per unit, so granting them a competitive advantage in the market. Thus, selling products at low prices not only increases

their sales but also creates a positive impact on profitability and firm value. Finally, liquidity is also positively related to profitability and firm value. Descriptive data reveal that the sample enterprises maintain positive net working capital and opt to finance a smaller portion of current assets with long-term cash. Although liquidity risk is low in this situation however it creates a negative impact on firm profitability due to the reason that a smaller portion of current assets is financed with long-term funds which are more costly than short-term funds. Amazingly, the relation between liquidity and performance is positive. This might be due to the reason that political unrest in the country and precarious economic conditions are two significant factors in convincing firms to do so to avoid any possible insolvency. Thus, making payment to various vendors and lenders on time not only increase the firm's creditability but also build a better image in the market which in turn lead to raise in stock price.

In sum, findings suggest that board structure and board gender diversity have substantial effects on firm performance.

Limitations and Future Research Directions

Owning data availability issues, this study has only analyzed the data of non-financial firms pertaining to the cement sector, food & personal care products, and pharmaceuticals sectors. The limited scope of data analysis was due to challenges in acquiring comprehensive datasets and ensuring consistent quality across different sectors. While these sectors provide valuable insights into specific industry trends and financial performance, extending the sample to include other sectors such as textiles, energy, and technology could enhance the representativeness and robustness of the findings. A broader sample would allow for greater generalizability of the study's results, facilitating more comprehensive sectoral comparisons and an improved understanding of non-financial firm dynamics across the economy. Future research should aim to address these data limitations by employing a multi-sectoral approach and integrating more longitudinal data to strengthen the overall analysis.

Analyzing the impact of ownership structure including institutional, foreign, block holder, and managerial ownership on company performance is critical for understanding how different ownership forms influence strategic decision-making, risk management, and ultimately firm value. Studies suggest that ownership structure may considerably alter corporate governance procedures, which in turn effect financial outcomes, particularly among non-financial listed firms in emerging economies like Pakistan. Future study should examine the impact of external governance measures in regulating these correlations, since these mechanisms play a significant function in supervising and guiding business conduct.

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