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Impact of Board Gender Diversity, Audit Quality, and Ownership Concentration on Firm Performance: A Study of Family and Non-Family Firms in Pakistan

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ABSTRACT

This study investigates the effects of board gender diversity, audit quality, and ownership concentration on the financial performance of family and non-family companies. Using panel data from 125 non-financial firms listed on the PSX during a five-year period (2015-2019). This study uses many statistical analyses, including descriptive statistics, correlation, and a fixed effect model based on the Hausman test. This study measured firm performance using three performance parameters: return on assets (ROA), return on equity (ROE), and Tobin's Q. The study's findings suggest that board gender diversity improves both accounting-based performance (ROA) and market-based performance (Tobin's Q). The result suggests that increasing the number of female board members will improve both accounting and market-based firm performance. Audit quality has been shown to have a favorable impact on market performance. This suggests that improving audit quality will undoubtedly improve a firm's market-based performance. While ownership concentration and family-owned businesses have an insignificant effect on overall performance. These findings are helpful for businesses and investors, influencing decision-making processes and enhancing corporate governance structures to improve financial performance and sustainability.

Keywords: *Board gender diversity, audit quality, ownership concentration, Firm performance*

INTRODUCTION

This study investigates how board diversity, audit quality, and ownership concentration affect firm financial performance. This study examines a key aspect of diversity of board members, specifically the representation of women in board of directors. Audit quality is also an important aspect of our investigation and ownership concentration. In developing economies, establishing strong governance structures is critical to organizational success. Companies can reduce the risk of financial crises and management conflicts, ensuring long-term stability and growth (Gompers, Ishii, & Metrick, 2003). Corporate governance is fundamentally about developing and maintaining strong associations among a company's management, stakeholder and shareholders. It is a framework that defines the rules, guidelines, and principles that govern how an organization operates and makes decisions that drive success (Shleifer and Vishny, 1997).

A board of directors is responsible for overseeing and guiding a company's growth and value. A competent board is required for effective governance (King & Zeithaml, 2001). Companies consider board diversity not only for ethical reasons but also for the potential benefits and costs (Sarhan, Ntim, & Al. Najjar, 2018). Board diversity refers to the representation of diverse backgrounds and perspectives on a company's leadership team, which includes women and people from various countries. The role of women in leadership varies greatly according to cultural norms and values. According to research, having a more diverse board can help a company perform better. A diverse board of directors has a better understanding of various market conditions, which can result in innovative solutions and creative ideas. This is because board members from diverse backgrounds contribute their unique expertise and experiences (Carter, Simkins, & Simpson, 2003).

A reliable auditor is essential for any business. A competent auditor can detect discrepancies or issues in financial data, ensuring its accuracy (Mostafa Mohamed & Hussien Habib, 2013). Quality auditors also play an important role in increasing investor confidence, which can boost a company's earnings potential. Finally, a quality audit seeks to confirm the veracity of financial information and eliminate any biased or misleading data (Leventis, Weetman, and Caramanis, 2005). When auditors finish their work on time, they can save money. However, delays can incur additional costs (Leventis et al., 2005). Effective governance practices improve a company's performance. Firms around the world are implementing best practices to improve their performance.

When a company has a concentrated ownership structure, the CEO's actions can be aligned with the company's goals, reducing conflicts and increasing value. For decades, researchers have investigated the relationship between ownership concentration and company performance, but the findings have been mixed (Wang & Shailer, 2015). In theory, concentrated ownership should limit managers' self-serving behavior because large shareholders have a strong incentive to monitor them (Makhija, 2004; Zeckhauser and Pound, 1990). These shareholders can even appoint or dismiss executives who don’t perform for the interest of organization. However, research has not consistently demonstrated a clear relationship between ownership patterns and global company performance (La Porta et al., 2000).

This study takes a more comprehensive approach, taking into account multiple factors such as board diversity, ownership concentration, audit quality, and performance of firms (family and non-family) listed on PSX. The results of this study will be beneficial for corporate leaders, policymakers, and investors in emerging markets such as Pakistan. The findings can also be used to inform governance policies, particularly those related to ownership, board diversity, and audit quality.

LITERATURE REVIEW

Agency Theory

The agency theory describes the association between shareholders and the directors or managers who act on their behalf. According to Clarke (2004), shareholders hire agents to run the company and make decisions. However, these situations can lead to conflicts of interest because managers may prioritize their own interests over the goals of their shareholders (Daily et al., 2003). Agency theory suggests that managers should act in the best interests of shareholders, but this may not always be the case (Padilla, 2000). This issue was first identified by Adam Smith and later investigated by researchers such as Ross (1973) and Jensen and Meckling (1976), who created the agency theory framework. Davis, Schoorman, and Donaldson (1997) emphasized the issues that arise when ownership and control are separated.

According to Fama and Jensen (1983), the board of directors is responsible for reviewing management and settling disagreements between executives and shareholders. Inside directors are more inclined to work

ethically because they want to maintain their reputation as a good administrator. According to agency theory, having women on the board can increase its efficacy by providing diverse viewpoints and holding CEOs more accountable than their male counterparts. Carter, Simkins, and Simpson (2003) discovered that female directors are more engaged and autonomous, making them excellent additions to boards.

Board Diversity and Firm Performance

During the past two decades, board diversity has become an essential component of good corporate governance. Policymakers all around the world are realizing its potential association to better company performance (Eulerich, Velte, & Van Uum, 2014).While ethics are important, cost-benefit analyses are frequently used to make board diversity decisions (Sarhan et al., 2018). Despite the growing interest in diverse boards, the impact on firm performance is unclear, leaving many organizations unsure of their effectiveness (Hassan & Marimuthu, 2018). A diverse board of directors can help improve a company's performance. Siciliano (1996) studied data from 240 organizations and discovered that boards with members from various specialized backgrounds performed better socially and raised more funds. This suggests that a diverse board can provide distinct advantages to an organization.

Sarhan et al. (2018) investigated the relationship between board diversity and business performance in the Middle East and North Africa. Three key insights were discovered after analyzing data from 600 firms over a six-year period. For starters, having a diverse board that includes women and international members improved the company's performance. Second, this positive effect was even more pronounced in well-governed firms. Last but not least, diverse boards were more likely to associate executive compensation with output. While gender diversity improved financial performance, it did not necessarily lead to increased fundraising. However, having a diverse age group on the board helped with fundraising.

Audit Quality and Firm Performance

Auditors' primary goal is to ensure the accuracy and reliability of financial information by detecting and resolving any discrepancies. Audits completed on time can result in cost savings. However, delays can lead to additional expenses (Leventis et al., 2005). Cho and Wu (2014) discovered that the choice of auditor is influenced by a company's governance structure, especially in cases where there are low to moderate conflicts of interest. This finding indicates a relationship between auditors and internal governance. Another study, Johl et al. (2013), investigated the impact of internal audits on financial performance and discovered a complex relationship between audit quality and firm performance. Outsourcing and political relationships both had an impact on the relationship. Meanwhile, Jusoh et al. (2013) investigated the role of audit quality in firm performance and discovered that high-quality audits improved financial performance. External audits also helped to close information gaps between shareholders and managers.

Francis (2009) discovered that larger Big 4 auditor offices produce higher-quality audits due to their extensive experience. The study, which examined data from over 6,500 US firms between 2003 and 2005, confirmed that larger offices do provide better audits, frequently conducting reports on a going-concern basis. While the Big Four offices stood out for their quality, there was no evidence to suggest that smaller offices are below standard.

Ownership Structure and Firm Performance in Pakistan

The study "Ownership Structure and Firm Performance in Pakistan" examines the relationship between ownership structure and company performance in that country. Javed and Iqbal (2008) examined the relationship between ownership structure and company performance in Pakistan. They discovered that

concentrated ownership, which is common in Pakistan, improves business performance when particular characteristics are controlled for. The study also revealed that ownership concentration rises with market growth potential, but falls with firm size. Khan et al. (2011), Azam et al. (2011), and Hassan et al. (2014) found a strong positive association between ownership concentration and company performance in Pakistan. These studies examined specific businesses, such as tobacco and oil and gas, and utilized financial parameters like return on assets (ROA) and return on equity (ROE) to evaluate performance. Other research, such as Ibrahim et al. (2010), Wahla et al. (2012), and Yasser (2015), showed little association between ownership concentration and company performance in Pakistan.

Ibrahim et al. (2010) and Wahla et al. (2012) both explored the relationship between ownership concentration and company performance in Pakistan, but the methods they used differed. Ibrahim et al. focused on the chemical and pharmaceutical industries, using financial measures such as ROA and ROE, whereas Wahla et al. investigated non-financial companies listed on the Karachi Stock Exchange, using Tobin's Q as a performance metric. Yasser (2015) examined a broader range of indicators, including financial and market-based variables, but found no meaningful relationship between ownership concentration and business performance. Given the varied results, additional study is required to determine the relationship between ownership concentration and company success.

Research Methodology

Data

This study is quantitative in nature and used secondary panel data from non-financial family and non-family enterprises listed on the Pakistan Stock Exchange from the year 2015 to 2019. This study examined data of 125 non-financial firms. The data has collected randomly from different sector’s firms.

Independent Variables

This study used a simple classification to quantify audit quality: if a company's auditor came from one of the big four audit firms, it was considered high-quality (coded as "1"); otherwise, it was marked as "0" (Abid, Shaique, & Anwar ul Haq, 2018; Zalata et al., 2018). To assess board gender diversity, this study counted the total number of female board members. Previous research, including Buniamin et al. (2012), Rodriguez and Lawrence, Adams (2016), Abdul Manaf et al. (2016), and Farrell (2004), used this approach to quantify board gender diversity by counting female board members. The ownership concentration variable is estimated as the percentage of shares held by the greatest shareholder or a group of top shareholders, as previously examined (Alimehmeti & Paletta, 2012; Denis et al., 1997; Hautz et al., 2013; Thomsen & Pedersen, 2000; Earle et al., 2005; Yasser, 2015). This study used a dummy variable to code family ownership as 1 if the firm is family-owned and 0 otherwise.

Dependent Variable

Firm performance is a dependent variable. To get a complete understanding, this study included both accounting and market-based indicators, as advised by prior research (Barney, 2002; Daily & Johnson, 1997; Hoskisson et al., 1994). This is because relying on a single parameter is insufficient for evaluating a company's performance (Daily & Johnson, 1997). This study investigates company performance using three main Parameters, Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q as a Proxy for calculating firm Performance.

Control Variables

This research used control variables such as firm age, firm leverage and firm size. The effects of these variables will remain constant while investigating the association of independent and dependent variables.

Firm Size

According to Al-Smadi et al. (2013), researchers measured firm size by taking the log of the book value of its assets. The idea is that larger assets can result in economies of scale, increasing productivity and sales (Demsetz & Lehn, 1985). In other words, businesses with more resources are more probably to have a high value of market, whereas those with fewer resources may struggle.

Firm Age

As with earlier research, studies calculated firm age by counting the number of years since the company's foundation. Firm age is significant because it determines ownership structure; older organizations have more distributed ownership, whereas new companies often have more concentrated ownership (Eisenberg et al., 1998).

Firm Leverage

Studies measured a company's leverage by calculating its debt-to-equity ratio, which shows the proportion of debt versus shareholder equity (Chen & Joggi, 2000; Hutchinson & Gul, 2004).

Research Models

I. $ROA = \beta o + \beta 1bgdi + \beta 2aqi + \beta 3oci + \beta 4fnfi + \beta 5Fai + \beta 6levi + \beta 7fsi + \varepsilon i$
II. $ROE = \beta o + \beta 1bgdi + \beta 2aqi + \beta 3oci + \beta 4fnfi + \beta 5Fai + \beta 6levi + \beta 7fsi + \varepsilon i$
III. $Tobin's\ Q = \beta o + \beta 1bgdi + \beta 2aqi + \beta 3oci + \beta 4fnfi + \beta 5Fai + \beta 6levi + \beta 7fsi + \varepsilon i$

In the above models, bgd represents board gender diversity, aq represents audit quality, oc represents ownership concentration, fnf represents family and non-family firms, Fa represents firm age, Lev represents firm leverage, Fs represents firm size.

RESULTS AND DISCUSSION

Model 1 Return on Asset (Proxy for Firm Performance)

Descriptive Statistics

The mean return on assets is 0.051, with a minimum of 0.867 and a maximum of 0.331. The mean value of board gender diversity is 0.39, with a minimum value of 0 and a maximum value of 0.988. The mean audit quality is .445, with a minimum of .09 and a maximum of 1. The mean value of ownership concentration is 0.64, with a minimum of 0 and a maximum of 0.987. The remaining variables are control variables, and their effects are controlled.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max

Roa	625	.051	.09	.867	.331
Bgd	625	.39	.276	0	.988
Aq	625	.445	.498	.09	1
Oc	625	.64	.212	0	.987
Fnf	625	.832	.374	0	1
Fa	625	41.344	21.375	8	159
Lev	625	.518	.255	.039	2.459
Fs	625	15.862	1.574	11.68	20.457

Pearson Correlation

ROA and BGD have a positive correlation of 0.219. This shows that organizations with more women on their boards perform better financially. The correlation coefficient between ROA and AQ is 0.366, indicating a strong positive association. This suggests that organizations that conduct high-quality audits are more likely to do well financially. The correlation between ROA and OC is 0.009, which is very low. This indicates that ownership concentration has no effect on financial performance. ROA and FNF have a weak negative correlation (-0.045). This indicates that family-owned businesses may have slightly lower financial performance. These relationships demonstrate how various factors affect a company's financial performance, as measured by ROA.

Table 2: Pearson Correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) roa	1.000							
(2) bgd	0.219	1.000						
(3) aq	0.366	0.357	1.000					
(4) oc	0.009	0.142	0.100	1.000				
(5) fnf	-0.045	-0.228	-0.184	-0.149	1.000			
(6) fa	-0.089	-0.132	0.003	-0.070	-0.002	1.000		
(7) lev	-0.462	-0.170	-0.201	0.076	0.067	-0.029	1.000	

(8) fs	0.293	0.162	0.342	0.011	0.060	0.075	-0.088	1.000

Fixed Effect Model

The coefficient is 0.077, which means that a 1% increase in board gender diversity leads to a 0.077% increase in ROA. This result is statistically significant at the 5% level. The coefficient is 0.005, which is statistically insignificant. This suggests that audit quality has little effect on ROA. The coefficient is -0.033, which is statistically insignificant. This indicates that ownership concentration has little effect on ROA. The R-squared value is 0.178, indicating that the model explains approximately 17.8% of the variation in ROA defined by the study's independent variables, with the remaining effect due to error terms. The F-test is statistically significant, indicating that the model is fit for forcasting. There are 625 observations, which is a sufficient sample size.

Table 3: Fixed Effect Model

Roa	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bgd	.077	.032	2.42	.016	.14	.015	**
Aq	.005	.012	0.37	.71	.029	.02	
Oc	-.033	.025	-1.33	.185	-.082	.016	
Fnf	.73	.084	1.12	.76	.061	.162	
Fa	-.007	.002	-3.19	.002	-.012	-.003	***
Lev	-.281	.03	-9.40	0	-.34	-.222	***
Fs	.032	.014	2.21	.027	.004	.06	**
Constant	.05	.171	0.29	.768	-.285	.386	

Mean dependent var	0.051	SD dependent var	0.090
R-squared	0.178	Number of obs	625
F-test	17.807	Prob > F	0.000
Akaike crit. (AIC)	-1944.153	Bayesian crit. (BIC)	-1913.088

Random Effect Model

Table 4: Random Effect model

Roa	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bgd	.004	.017	0.22	.823	.037	.03	
Aq	.024	.009	2.77	.006	.007	.041	***
Oc	-.012	.018	-0.67	.503	-.048	.023	
Fnf	-.001	.013	-0.09	.928	-.028	.025	
Fa	-.001	0	-2.61	.009	-.001	0	***
Lev	-.179	.017	-10.68	0	-.212	-.147	***
Fs	.011	.003	3.51	0	.005	.017	***
Constant	-.007	.051	-0.13	.897	-.107	.094	

Mean dependent var	0.051	SD dependent var	0.090
Overall r-squared	0.319	Number of obs	625
Chi-square	162.574	Prob > chi2	0.000
R-squared within	0.132	R-squared between	0.444

*** $p<.01$, ** $p<.05$, * $p<.1$

Hausman Test

Ho= if P value is greater than 0.05 then Random effect model is consistent. (Rejected)

H1= fixed effect model is best for analysis if P value is less than 0.05.(Accepted)

Table 5: Hausman Test

Hausman (1978) Specification Test

	Coef.
Chi-square test value	49.509
P-value	0

Model 2 Return on Equity (Proxy for Firm Performance)

Descriptive Statistics

The mean return on equity is.106, with a minimum of.728 and a maximum of 1.875. The mean value of board gender diversity is.39, with a minimum value of 0 and a maximum value of 988. The mean value of audit quality is.445; the minimum value is.09, and the maximum value is 1. The mean value of ownership concentration is.64, with a minimum value of 0 and a maximum value of.987. The remaining variables are control variables, and their effects are controlled**.**

Table 6: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Roe	625	.106	.18	.728	1.875
Bgd	625	.39	.276	0	.988
Aq	625	.445	.498	.09	1
Oc	625	.64	.212	0	.987
Fnf	625	.832	.374	0	1
Fa	625	41.344	21.375	8	159
Lev	625	.518	.255	.039	2.459
Fs	625	15.862	1.574	11.68	20.457

Matrix of Correlations

There is a positive correlation of 0.144 between ROE and BGD, indicating that companies with more women on their boards perform slightly better financially. ROE and AQ have a correlation of 0.292, indicating a moderately positive relationship. This means that firms having high-quality audits are more expected to perform well financially. The correlation between ROE and OC is 0.058, which is low. This suggests that ownership concentration has little impact on performance of firms. The correlation is weak and negative (-0.078) between ROE and FNF, indicating that family-owned businesses may have slightly

lower financial performance. These correlations reveal how different factors influence a company's financial performance, as measured by ROE.

Table 7: Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) roe	1.000							
(2) bgd	0.144	1.000						
(3) aq	0.292	0.357	1.000					
(4) oc	0.058	0.142	0.100	1.000				
(5) fnf	-0.078	-0.228	-0.184	-0.149	1.000			
(6) fa	0.031	-0.132	0.003	-0.070	-0.002	1.000		
(7) lev	-0.250	-0.170	-0.201	0.076	0.067	-0.029	1.000	
(8) fs	0.366	0.162	0.342	0.011	0.060	0.075	-0.088	1.000

Fixed Effect Model

The coefficient is 0.016, which is statistically insignificant. This shows that board gender diversity has no significant effect on ROE. The coefficient is 0.002, which is statistically insignificant. This indicates that audit quality has little effect on ROE. The coefficient is 0.06, which is statistically insignificant. This shows that ownership concentration has no significant effect on ROE. The R-squared value of 0.027 indicates that the model explains approximately 2.7% of the variation in ROE. The F-test is statistically significant, indicating that the model is properly fitted. There are 625 observations, which is an appropriate sample size.

Table 8: Fixed Effect Model

Roe	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bgd	.016	.071	0.23	.822	.154	.123	
Aq	.002	.027	0.06	.956	.052	.055	
Oc	.06	.055	1.08	.28	-.049	.168	
Fnf	.68	.079	1.09	.63	.056	.157	
Fa	-.012	.005	-2.43	.016	-.022	-.002	**
Lev	-.167	.066	-2.53	.012	-.297	-.037	**

Fs	.04	.032	1.26	.207	-.022	.103	
Constant	.036	.377	0.09	.925	-.705	.777	

Mean dependent var	0.106	SD dependent var	0.180
R-squared	0.027	Number of obs	625
F-test	2.282	Prob > F	0.000
Akaike crit. (AIC)	-954.313	Bayesian crit. (BIC)	-923.248

*** $p<.01$, ** $p<.05$, * $p<.1$

Random Effect Model

Table 9: Random Effect Model

Roe	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bgd	.002	.037	0.05	.963	.074	.071	
Aq	.034	.019	1.79	.074	.003	.071	*
Oc	.039	.039	1.00	.319	-.038	.116	
Fnf	-.027	.029	-0.94	.349	-.085	.03	
Fa	0	0	-0.24	.807	-.001	.001	
Lev	-.155	.036	-4.26	0	-.227	-.084	***
Fs	.033	.007	4.83	0	.02	.046	***
Constant	-.349	.112	-3.12	.002	-.568	-.13	***

Mean dependent var	0.106	SD dependent var	0.180
Overall r-squared	0.204	Number of obs	625
Chi-square	60.819	Prob > chi2	0.000
R-squared within	0.006	R-squared between	0.337

*** p<.01, ** p<.05, * p<.1

Hausman Test

Ho= if P value is greater than 0.05 then Random effect model is consistent. (Rejected)

H1= fixed effect model is best for analysis if P value is less than 0.05. (Accepted)

Table 10: Hausman Test

Hausman (1978) specification test

	Coef.
Chi-square test value	13.684
P-value	.033

Model 3 Tobins Q (Proxy for Firm Performance)

Descriptive Statistics

The mean value of Tobin's Q is 1.393, with a minimum value of.409 and a maximum value of 2.119. The mean value for board gender diversity is 0.39, with a minimum value of 0 and a maximum value of 0.988. The mean value of an audit is 0.445, with a minimum value of 0.09 and a maximum value of 1. The average value of ownership concentration is 0.64, with a minimum value of 0 and a maximum value of 0.987. The rest are control variables, and their effects are controlled.

Table 11: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Tq	625	1.393	.551	.409	2.119
Bgd	625	.39	.276	0	.988
Aq	625	.445	.498	.09	1
Oc	625	.64	.212	0	.987
Fnf	625	.832	.374	0	1
Fa	625	41.344	21.375	8	159
Lev	625	.518	.255	.039	2.459
Fs	625	15.862	1.574	11.68	20.457

Matrix of Correlations

There is a positive correlation of 0.128 between Tobin's Q and BGD, indicating that companies with more women on their boards perform slightly better. Tobin's Q and AQ have a correlation of 0.208, indicating a moderately positive relationship. This means that companies that undergo high-quality audits tend to perform better. The Tobin's Q and OC correlation is -0.014, which is extremely low. This suggests that ownership concentration has little impact on performance. The correlation of Tobin's Q and FNF is -0.142 which is weak and negative, indicating that family-owned businesses may have slightly lower performance. These correlations reveal how different factors influence a firm's performance, as Tobin's Q calculated.

Table 12: Pearson Correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) tq	1.000							
(2) bgd	0.128	1.000						
(3) aq	0.208	0.357	1.000					
(4) oc	-0.014	0.142	0.100	1.000				
(5) fnf	-0.142	-0.228	-0.184	-0.149	1.000			
(6) fa	0.150	-0.132	0.003	-0.070	-0.002	1.000		
(7) lev	-0.049	-0.170	-0.201	0.076	0.067	-0.029	1.000	
(8) fs	0.056	0.162	0.342	0.011	0.060	0.075	-0.088	1.000

Fixed Effect Model

The coefficient is 0.254, which means that companies with more women on their boards are likely to have higher firm market-based performance. At the 5% level, this result is statistically significant. The coefficient is 0.126, which means that companies that have better audit quality tend to have higher company's market-based Performance. This result is statistically significant at the 1% level. The coefficient is -0.05, but it doesn't mean anything statistically. Financial Performance is not greatly affected by ownership concentration. The R-squared value is 0.119, which means that the model explains about 11.9% of the changes in firm Performance. The F-test is statistically significant, which means that the model is a good fit. There are 625 observations in the sample size, which is sufficient.

Table 13: Fixed Effect Model

Tq	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig

Bgd	.254	.121	2.11	.035	.491	.018	**
Aq	.126	.047	2.70	.007	.218	.035	***
Oc	-.05	.094	-0.53	.594	-.236	.135	
Fnf	.56	.057	1.08	.58	.047	.55	
Fa	-.034	.009	-3.85	0	-.051	-.016	***
Lev	.328	.113	2.91	.004	.107	.55	***
Fs	-.065	.054	-1.20	.23	-.172	.041	
Constant	3.838	.644	5.96	0	2.572	5.104	***

Mean dependent var	1.393	SD dependent var	0.551
R-squared	0.119	Number of obs	625
F-test	11.138	Prob > F	0.000
Akaike crit. (AIC)	-284.694	Bayesian crit. (BIC)	-253.629

*** *p<.01, ** p<.05, * p<.1*

Random Effect Model

Table 14: Random Effect Model

Tq	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Bgd	.072	.105	0.68	.494	.277	.134	
Aq	.032	.045	0.71	.478	.119	.056	
Oc	-.153	.091	-1.69	.092	-.331	.025	*
Fnf	-.235	.127	-1.85	.064	-.484	.013	*
Fa	0	.002	0.03	.976	-.004	.004	
Lev	.144	.098	1.47	.143	-.048	.336	
Fs	-.051	.025	-2.07	.038	-.1	-.003	**

Constant	2.466	.393	6.27	0	1.696	3.237	***

Mean dependent var	1.393	SD dependent var	0.551
Overall r-squared	0.000	Number of obs	625
Chi-square	14.938	Prob > chi2	0.037
R-squared within	0.067	R-squared between	0.000

*** p<.01, ** p<.05, * p<.1

Hausman Test

Ho= if P value is greater than 0.05 then Random effect model is consistent. (Rejected)

H1= fixed effect model is best for analysis if P value is less than 0.05. (Accepted)

Table 15: Hausman Test

15 Hausman (1978) Specification Test

	Coef.
Chi-square test value	77.071
P-value	0

VIF ROA

The results of multicollinearity show that there is no multicollinearity in data as the values of all the variables are less than 10 which means there is no issue and data is normal.

Table 16: VIF Test

Variance Inflation Factor

	VIF	1/VIF
aq	1.326	.754
bgd	1.243	.805
fs	1.169	.856

fnf	1.108	.902
lev	1.07	.935
oc	1.054	.948
fa	1.035	.966
Mean VIF	1.143	.

CONCLUSION:

The study examined the effects of board gender diversity, audit quality, and ownership concentration on firm performance. It is a study of family and non-family businesses. This study used five years (2015-2019) of panel data from 125 non-financial firms from various sectors listed on the Pakistan Stock Exchange. This study measured firm performance using three performance parameters: return on asset, return on equity, and Tobin's Q. Three separate models were run for ROA, ROE, and Tobin's Q. ROA and ROE parameters measure a firm's accounting performance, whereas Tobin's Q measures its market performance. This study conducted various kinds of analyses, including descriptive statistics, correlation, fixed effect model, random effect model, Hausman test, and VIF test. This study used a fixed effect model based on the Hausman test. There is no problem with the data, as shown by the Vif test in table 16.

Results of model 1 shows that there is a positive association of board gender diversity and return on asset and the relationship is significant. It means increase in number of female board of directors will leads to improve firm accounting based performance. while audit quality and ownership concentration have positive association but the relationship is insignificant and have less effect on ROA. Family owned and non-family has insignificant effect on firm Performance.

Results of model 2 shows that Board gender diversity, audit quality and ownership concentration have positive association with ROE but the association is insignificant and have less effect on ROE. Family owned and non-family has insignificant effect on firm Performance.

Results of model 3 shows that board gender diversity has positive association with firm market-based performance and the relationship is significant. It means that increase in female board of director will leads to enhance firm market-based performance. Audit quality has significant relationship with firm market-based performance and the association is positive. It means that improvement in audit quality will leads to improve firm market-based Performance. Family owned and non-family has insignificant effect on firm Performance.

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