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[THE IMPACT OF COMPREHENSIVE BOARDROOM GENDER DIVERSITY ON FIRM FINANCIAL PERFORMANCE: A STUDY OF PSX-100 INDEX FIRMS]

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ABSTRACT

The purpose of the study is to investigate the impact of boardroom gender diversity and prominent characteristics on firm financial performance. The data was collected using the stratified random sample of the Pakistan Stock Exchange (PSX) 100 Index from 2020 to 2024 using the Generalized Method of Moment (GMM) estimation. The results revealed that the proportion of female directors to males significantly positively impacts financial performance. In the same way, the number of female directors on the board plays an essential role in the sense that if there is a single female and two female directors. Furthermore, the female independent director has a weak relationship with the financial performance. The female ethnicity has a partial significant impact. The female experience has an astonishing mix and partial findings. Finally, the study supports that there is a positive impact of female age on financial performance using ROA and ROE as proxies. The findings of the study have theoretical, methodological, and practical implications and have valuable insights into various stakeholders of corporate governance and financial performance.

Keywords: Corporate Governance, Gender Diversity, Gender Characteristics, PSX 100 Index, Pakistan

Introduction

Many businesses do not fully realize women's inclusion, as evidenced by the fact that women continue to be underrepresented on corporate boards while making incremental but consistent progress (Carter et al., 2010; Rahman & Zahid, 2021). According to Rahman et al. (2023), the persistent issue of gender disparity has lately risen to the forefront due to regulators' increased attention. This is especially true in the aftermath of the massive scandals that rocked the corporate world in the United States at the beginning of the century. In the following years, the authorities tried to increase the number of women serving on boards to improve their autonomy and monitoring level Rahman et al. (2023). One school of thought held that gender diversity would contribute to a reduction in corporate fraud. Multiple factors strengthen the board composition, including ethnic and gender diversity, which may influence the firm's financial performance (Carter et al., 2010).

The business sector has been under significant attention in recent years for its inability to attain corporate sustainability (CS) (Zahid et al., 2023) despite initiatives to mitigate adverse impacts and safeguard stakeholders' rights. However, corporate social responsibility (CSR) and its reporting encounter considerable challenges, especially in economically disadvantaged countries (Gong et al., 2021; Rahman et al., 2021; Samina Rooh et al., 2021; Shaheen et al., 2021). Academics suggest that corporate governance (CG) in countries with deficient governance systems can be enhanced by including gender diversity in the boardroom (Gull et al., 2022; Rahman et al., 2021). The board room gender diversity suggests that companies devote more of their human and financial resources to designing and implementing efficient integration strategies that favor firm financial performance (Al-Najjar & Salama, 2022; Katmon et al., 2019a; Kusi-Sarpong et al., 2023; Putri & Nasih, 2022a). Female directors are more equipped to think independently and question actions that can harm stakeholders' interests due to their lack of personal

connections to senior management (Galbreath, 2018a; Putri & Nasih, 2022; Zahid, Rehman, et al., 2019).

Researchers investigated the lack of representation of women on corporate boards because they are interested in creating a more "gender-sensitized" and "gender-equal" society; as a result, the firm's performance may be affected (Rahman & Zahid, 2021; Adams & Ferreira, 2009). An essential step towards achieving "sustainability and UN women empowerment principles" is the increasing number of women serving on Pakistani boards of directors (Rahman et al., 2024). This includes engaging in socio-ethical community service and professional growth, promoting lawful corporate governance practices, fostering healthy competition, and protecting the reputation of organizations. With the government's support and a legally mandated gender-inclusive policy, we can create a workplace free from gender stereotypes, where women can overcome obstacles and achieve long-term success despite the country's male-dominated culture (Adams & Ferreira, 2009).

Numerous studies have investigated the influence of female-led boards on financial performance and environmental, social, and governance performance. The features of Women On Board (WOB) that influence FFP and ESGP are also analyzed. Although several studies have examined the impact of I4.0T on Pakistani enterprises, the predominant focus has been on gender diversity inside boardrooms and its influence on FFP and ESGP. Most of this study has focused on the critical mass of female directors and their levels of education or experience; however, the findings have shown inconsistent results. The study seeks to ascertain if variables outside the number of female directors significantly influence organizations' financial performance (FFP) and non-financial performance. This study will analyze the impact of Industry 4.0 on the financial and non-financial performance of Pakistani companies included in the KSE-100 index from 2019 to 2022. A comprehensive methodology will be required for the analysis. The research will consist of several gender features, including boardroom representation, years of experience, educational attainment, and the number of independent and executive directors.

The study tries to answer the following question: How do gender diversity and other characteristics affect the financial performance of Pakistan's KSE-100 companies?
This study addresses the abovementioned research issues, fills the literature gap, and provides valuable insights applicable to policy and practice. Boards with female members are more inclined to recognize CSD initiatives and offer perspectives that may facilitate the progression of CSD. According to the principles of gender socialization theory (Zahid Ur et al., 2019), companies with female board members are less prone to violate environmental standards. Gender socialization theory asserts that men and women are inherently distinct, particularly regarding ethical challenges, based on their first experiences in social relationships. Ethical challenges disproportionately impact women due to their heightened perception, empathy, and concern for the needs of others. This study possesses theoretical significance as it employs gender socialization theory to investigate how gender diversity in the boardroom may enhance Corporate Social Disclosure across four dimensions: social, environmental, workplace, and economic.

Literature Review

Haque & Jones, (2020) and Liao et al., (2015) define gender diversity as the

representation of women constituting a specific proportion of a board's total directors. Boards comprising a significant proportion of female directors exhibit superior governance frameworks, enhanced financial performance, and a more profound understanding of complex business challenges due to their distinctive amalgamation of backgrounds, skills, and (Adams & Ferreira, 2009; Alharbi et al., 2022; Carter et al., 2010).This research investigates the impact of gender diversity in boardrooms as a moderator of Industry 4.0 Technology on the generation of non-financial performance (economic, environmental, and social gains) and financial performance. Researchers and managers may leverage Industry 4.0 technologies and gender diversity to accelerate the transition toward sustainable practices and financial prosperity. It is essential to note that the concepts and domains for future study in this field must be uniform across all sectors and countries, regardless of their development status. Numerous multinational firms operating in developing countries use Industry 4.0 methods to attain the sustainable development and competitiveness objectives outlined in the 2030 agenda. This occurs despite several organizations facing financial difficulties investing in Industry 4.0 technologies (de Oliveira Neto et al., 2024).

Theoretical Framework And Hypothesis Development

Gender socialization theory suggests that early experiences in social interactions lead to fundamental differences between men and women, especially regarding ethical dilemmas (Gilligan, 1982; Rahman et al., 2017). The authors indicates that female directors exhibit a lower propensity for power-seeking behavior than their male counterparts (Zahid et al., 2020). Female directors tend to show a greater propensity for empathy and dedication toward the welfare of individuals and the preservation of the environment. As stated by Alharbi et al. (2022), there has been a significant debate over women directors and their roles, mainly whether they contribute to the firm's success. Women are more aware, attentive, and caring of the needs of others, which results in their being more attuned to ethical difficulties, according to the gender socialization theory (Ibrahim & Hameed, 2009). A notion suggests boards that women lead is less likely to be affected by executive interference. In addition, (Rahman et al., 2017) found that when there is gender diversity among senior executives, there is a reduction in agency conflict between shareholders and management (Rahman et al., 2017).

The presence of a female director constitutes the majority of a board's gender diversity (Haque & Jones, 2020; Liao et al., 2015). Research by Adams and Ferreira (2009) and (Carter et al., 2010) indicates that strong female participation on a board can enhance a firm's financial performance, comprehension of complex business challenges, and the efficacy of governance practices. As per theory and preceding literature, gender diversity on boards improves corporate governance, affects decision-making, promotes innovative solutions to longstanding issues, and eventually impacts stock market valuations (Hillman & Dalziel, 2003; Estélyi & Nisar, 2016; Alharbi et al., 2022). According to resource dependency theory, a board comprising a significant proportion of female directors will likely enhance the organization's reputation and image, augmenting stakeholders' ability to elevate the firm's value through improved access to market resources (Mahadeo et al., 2012; Wellalage & Locke, 2013). Gul et al. (2011)assert that more public openness resulted in improved information when more women had board positions in large corporations (Alharbi et al., 2022). The following hypotheses have been

established in light of the above discussion.

H1: The proportion of female directors on board has positive impact on firm's financial performance using ROA and ROE as proxies.

H1: One female on board has a positive impact on firm's financial performance using ROA and ROE as proxies.

H3: Two or more female directors on board have positive impact on firm's financial performance using ROA and ROE as proxies.

H4: Three or more female directors on board have positive impact on firm's financial performance using ROA and ROE as proxies.

To avoid biased and self-centric decisions in the corporate world, the independence of directors is crucial for the board composition. In this regard, independent female directors play an essential role in reducing the chance of a conflict of interest in the board's decisions. Regardless of female independence, the diversity in ethnicity on the board will likely affect the board's quality. Ethnicity affects individuals' perceptions, and a board with substantial ethnic diversity is more adaptable to unique ideas and views (Katmon et al., 2019b). Board members with diverse ethnic backgrounds improve the board's perspectives in decision-making. The cultural uniqueness of each ethnic group requires their participation on the board for both commercial and strategic development; subsequently, they possess a deeper understanding of their communities than outsiders; hence, the female director's ethnicity may positively impact the firm's financial performance. In the same way, the experience of directors, both male and females, can contribute significantly to the board value and can make meaningful and strategic decisions, ultimately improving the firm long-term financial performance (Li & Yang, 2024), as the experience brings strength and expertise to the board. Boards are entrusted with the responsibility of determining a company's general administration and governance and selecting the company's strategic direction; therefore, it is very much essential to include experienced directors on the board with a significant amount of exposure and expertise in their career, which can have a positive effect on the financial and non-financial performance of the board (Katsiampa et al., 2024).

H5: Female independent directors on board have positive impact on firm's financial performance using ROA and ROE as proxies.

H6: Ethnic diversity in women on board has positive impact on firm's financial performance using ROA and ROE as proxies.

H7: An experienced female director on board has positive impact on firm's financial performance using ROA and ROE as proxies.

H8: Age diversity in female director on board has positive impact on firm's financial performance using ROA and ROE as proxies.

Research Method

The population of the study consisted of 542 companies registered on PSX. The sample was derived from PSX-100 index companies. The inclusion of companies is dependent on the criteria such as listing on the PSX 100-index companies, publication of an annual report, or publication of an Environment, Social, and Governance (ESG)/Sustainability/Corporate Social Responsibility (CSR) report, either separately or as part of the annual report. The data is collected from 2020 to 2024. The period is chosen because of several reasons, such as during this period the Security Exchange Commission

of Pakistan (SECP) introduced a revised code of corporate governance, the PSX issued a PSX Primer on Environmental, Social, and Governance (ESG): Reporting Guidance for Companies, and carbon trading mechanisms for the companies, to name a few. The variables of the study were measured following the previous literature. The variables measurement is reported in Table 1.

Table 1: Measurement of Variables

Variables	Abbreviation	Measurement	References	Source
Dependent Variable				
Firm's Financial Performance Return on Assets Return on Equity	**ROA and ROE**	(Market Value of Equity + Book Value Of Liabilities) / Book Value of Total Assets (Market Value of Equity + Book Value Of Liabilities) / Book Value of Total Equity	(Hussainey et al., 2022; Rahman et al., 2021; Rahman, Zahid, & Khan, 2022)	Annual Report
The Proportion of Female Directors	**PFD**	An indicator of the representation of women on boards of directors is the percentage of women on such boards.	(Putri & Nasih, 2022b; Rahman, Zahid, & Saleh, 2022)	(Annual Report)
One Female Director	**1Fem**	A dummy variable with a value of 1 for the board having one female or 0 otherwise		
Two Female Director	**2Fem**	A dummy variable with a value of 1 for the board having two females or 0 otherwise		
Three Female Director	**3Fem**	A dummy variable with a value of 1 for the board having three or above females or 0 otherwise		
Female Independent Director	**FID**	Ratio of Women Directors Who Are Not Executives to the Total Number of Women Directors.	(Alharbi Et Al., 2022)	(Annual Report)
Female Director Ethnicity	**FDETH**	Board Ethnicity Diversity. Gilgit-	(Alharbi et al., 2022)	(Annual Report)

		Baltistani, Pathan, Punjabi, Sindhi, Balochi		
Female Director Experience	**FDEXP**	Years of Service/Board Tenure Diversity	(Alharbi et al., 2022)	(Annual Report)
Female Director Age	**FDAGE**	Diversity in Board Age		(Annual Report)
Board Size	**BSIZ**	Proportional to the natural logarithm of the entire board membership.	(Alharbi et al., 2022)	(Annual Report)
Board Independence	**BIND**	There are a certain number of independent, non-executive directors on the board.	(Alharbi et al., 2022)	(Annual Report)
Firm Leverage	**FLEVG**	Total Debt / Total Assets	(Hussainey et al., 2022)	(Annual Report)
Firm Age	**FAGE**	Age of the i^{th} firm at time t measured by the number of years since listing on the stock exchange	(Hussainey et al., 2022)	(Annual Report)
Firm Size	**FSIZE**	Log of Total Assets	(Hussainey et al., 2022)	(Annual Report)

Findings

Panel data regression analysis was used to investigate the impact of gender diversity on Firm Financial Performance. In keeping with several prior research in the field, this one also included the firms' ages, sizes, and leverage as control variables, in addition to the kind of industry and the years (Zahid et al., 2020). To determine the nature of the link between the independent and dependent variables, this study will employ panel data regression analysis. The following are the models for the estimations:

$ROA/ROE_{it}=\beta_0+\beta_1 PFD_{it}+\beta_2 1Fem_{it}/2Fem_{it}/3Fem_{it})+\beta_3 FID_{it}+\beta_4 FDETH_{it}+\beta_5 FDEXP_{it}+\beta_6 FDAGE_{it}+\beta_7 BSIZ_{it}+\beta_8 BIND_{it}+\beta_9 FLEVG_{it}+\beta_{10} FAGE_{it}+\beta_{11} FSIZE_{it}+\beta_{12} TD_{it}+\varepsilon_{it}$ ……..Model 1

Table 2 indicates descriptive statistics of board room diversity comprehensive board room gender diversity on a firm's financial of KSE-100 Pakistani firms. In this regard, the ROA statistics show a minimum value of -86.57 and a minimum of 51. 47 with a mean value of 6.177, reflecting that all the firms generally generate overall profitability. The ROE represents a minimum of 11.39, maximum 33.82 and mean value 20.08. Similarly, skewness and kurtosis values show that the data related to ROA and ROE are normally skewed and distributed. At the same time, no represents non-existence of variable in the PSX-100 listed companies. In this regard, 326 firms have one female, with a percentage of 65%; 29 firms have two female directors, and only five firms have three females on their boards. Age is a control variable that indicates the years companies have existed since their commencement. Table 1 shows a minimum value of 8 and a maximum value of 162, with a mean of 44.5 and SD 23.7. It shows that, on average, the KSE-100 has been 44

years since its establishment, an appropriate number of years for a firm to flourish in the market. Size is another control variable used in the present study, and it has been measured with the total assets of the 100 index companies. As per Table 1, the minimum value represents 1.7, the maximum value is 10000 with a mean of 347.983, and standard deviation is 799.947. The average value indicates a more excellent value of assets owned and possessed by the firms listed on the Pakistan Stock Exchange. Similarly, the control variable leverage minimum and maximum value as per Table 1 are -2.808 and 3.87, respectively, with a mean of 0.014 and SD 0.992.

Table 2: Descriptive Statistics

	Min	Max	Mean	SD	**Skewness**		**Kurtosis**	
	Stat.	Stat.	Stat.	Stat.	**Stat.**	**S.E**	**Stat.**	**S.E**
ROA	-86.57	51.47	6.177	9.591	.000	.109	-.140	.218
ROE	11.39	33.82	20.08	0.99	.745	.109	.179	.218
PFD	0	0.5	0.101	0.075	.945	.109	-.179	.218
FDEXP	0	37	6.208	10.877	.623	.109	.130	.218
FDAGE	0	47	0.49	4.681	.079	.109	-.242	.218
BSIZ	0	17	8.086	2.962	.117	.109	-.161	.218
BIND	0	12	2.536	1.684	.002	.109	-.143	.218
NLEVG	-2.808	3.870	0.014	0.992	.945	.109	-.179	.218
FAGE	8	162	44.586	23.790	.000	.109	-.140	.218
FSIZE	1.7	10000.000	347.983	799.947	.356	.112	-.542	.224
Frequency Distribution			**No**	**Yes**	**%No**	**%Yes**	**Cumulative%**	
1Fem			174	326	35	65	35	100
2Fem			471	29	94	6	94	100
3Fem			495	5	99	1	99	100
FDETH			474	21	95	4	96	100

Table 3 explains the association between all variables observed in the current study. This section has a dual purpose. Firstly, it evaluates the correlation of independent variables with dependent variables. Secondly, it is essential to check before regression analysis to investigate the problem of multicollinearity amongst the independent variable (Weisberg, 2005). In this regard, Tabachnick (2007) described the multicollinearity problem that exists between two or more two independent variables if the value of correlation is greater than 0.90. Pearson's correlation matrix is indicated in Table 3.

Table 3: Pearson's Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ROA	1.0 0														
ROE	0.1 8***	1.0 0													
PFD	0.0 9*	- 0. 03	1.0 0												
1Fe m	0.0 6	0. 02	0.4 9***	1.0 0											
2Fe	-	-	0.3	-	1.0										

m	0.02	0.04	7***	0.34***	0									
3Fem	0.02	-0.02	0.2***	-0.14**	-0.02	1.00								
FID	0.05	-0.00	0.46***	0.36***	0.12**	0.13**	1.00							
FEth.	0.13**	0.05	0.02	0.15***	-0.05	-0.02	0.16***	1.00						
FExp	-0.02	0.00	0.16***	0.26***	0.08	0.02	0.05	-0.04	1.00					
FAge	0.28***	0.12**	0.01	0.08	-0.03	-0.01	0.13**	0.48***	0.08	1.00				
BSize	-0.07	-0.00	-0.20***	0.13**	0.17***	0.15**	0.07	0.11*	0.20***	0.03	1.00			
Bind	-0.08	0.00	-0.06	0.00	0.18***	-0.06	0.07	0.07	0.32***	0.21***	0.37***	1.00		
FAge	0.02	-0.08	-0.02	-0.04	0.02	-0.01	-0.02	0.05	0.20***	0.12**	0.05	0.30***	1.00	
FSize	-0.17***	-0.03	0.08	0.08	-0.06	-0.01	0.09	-0.05	0.10*	-0.04	0.08	0.14**	0.10*	1.00
FLevrge	-0.07	-0.03	0.03	-0.11*	0.08	0.04	0.05	-0.04	0.03	0.00	-0.05	0.01	-0.03	-0.02	1.00

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The research used Generalized Method of Moments (GMM) analysis in multivariate analysis. The models addressed the endogeneity issue; hence, the GMM estimator was used. A GMM is used in research for parameter estimation in models and is a more advanced methodology than other estimators. GMM is a prevalent method for estimating instrumental variables in a regression model, sometimes called the IV estimator. An instrumental variables estimator uses the fitted value from regressing the endogenous explanatory variable on all exogenous factors as the IV for the endogenous explanatory variable (Wooldridge, 2013). In GMM analysis, several instruments may be evaluated concurrently (Knutsen, 2011; Stata Corp., 2013). GMM regression analysis is a statistical method for applying structural equations(Wooldridge, 2013). The current research evaluated many models to examine the impact of board gender diversity and financial performance using GMM analysis. A comprehensive analysis of these models is

provided below.

The results in Table 4 and 5 indicate that the proportion of female directors to males significantly positively impacts financial performance, both ROA and ROE, and support H1 of the study. In the same way, the number of female directors on the board plays an essential role in the sense that if there is a single female director in the case of ROA, while insignificant in the case of ROE, partially supporting H2 of the study. Similarly, two female boards of directors both have a positive and significant impact on ROA and ROE and hence supported H3 of the study. At the same time, if three or more female directors are on the board, it has an insignificant effect on the ROA and ROE and hence is not supported in H4 of the study.

Table 4: GMM Regression Results using ROA as Proxy

	(1) ROA	(2) ROA	(3) ROA	(4) ROA
PFD	.099***			
	(.031)			
1Fem		.293**		
		(.113)		
2Fem			.467***	
			(.153)	
3Fem				-.487
				(.357)
Fem Ind	.165*	.132	-.001	.111
	(.095)	(.115)	(.071)	(.085)
Fem Ethnicity	.545***	.249	.367**	.152
	(.182)	(.177)	(.184)	(.15)
Fem Exp.	-.009	-.02***	-.025***	-.023***
	(.005)	(.007)	(.008)	(.007)
Fem Age	.109***	.09***	.08***	.086***
	(.008)	(.01)	(.01)	(.011)
Board Size	-.008	-.026	-.043**	-.032*
	(.015)	(.016)	(.017)	(.019)
Board Ind	.013	.078**	.093***	.096***
	(.023)	(.033)	(.028)	(.031)
Firm Age	.001	.022*	.034***	.031***
	(.009)	(.012)	(.01)	(.011)
Firm Size	0	0*	0***	0***
	(0)	(0)	(0)	(0)
Firm Leverage	.019	-.035	-.035	-.062***
	(.019)	(.024)	(.021)	(.023)
Lag of ROA	-.664***	-.635***	-.681***	-.723***
	(.04)	(.053)	(.045)	(.057)
Constant	11.264***	9.76***	9.165***	9.535***
	(.613)	(.779)	(.674)	(.933)

Standard errors are in parentheses

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

The female independent director has a weak relationship with the financial performance, both using ROA and ROE as proxies, as most of the relationships are insignificant and hence partially support H5 of the study. The female ethnicity has a significant impact using ROA; however, it has an insignificant impact on the firm's financial performance using ROE as a proxy and hence partially supports H6 of the study. The female experience has astonishing results, as in the ROA proxy, the results are negative and significant; however, using the ROE, the results positively impact and hence partially support H7 of the study. The final hypothesis of the study supports that there is a positive impact of female age on financial performance using ROA and ROE as proxies.

Table 5: GMM Regression Results using ROE as Proxy

	(1) ROE	(2) ROE	(3) ROE	(4) ROE
PFD	.048***			
	(.017)			
1Fem		.033		
		(.035)		
2Fem			.328***	
			(.11)	
3Fem				.091
				(.274)
Fem Ind	.104*	.049*	-.036	-.021
	(.058)	(.029)	(.035)	(.03)
Fem Ethnicity	-.244	.141	.037	-.067
	(.268)	(.135)	(.087)	(.159)
Fem Exp.	.013***	.002	.002	.005***
	(.003)	(.002)	(.002)	(.002)
Fem Age	.027***	.041***	.042***	.043***
	(.006)	(.003)	(.003)	(.003)
Board Size	-.01	-.015***	-.002	-.008
	(.007)	(.006)	(.006)	(.006)
Board Ind	-.044***	.021	.018	.016
	(.013)	(.013)	(.019)	(.012)
Firm Age	-.009*	-.008**	-.008***	-.009***
	(.005)	(.004)	(.002)	(.003)
Firm Size	0	0	0	0
	(0)	(0)	(0)	(0)
Firm Leverage	-.017**	.002	-.012	-.007
	(.008)	(.008)	(.009)	(.007)
Lag of ROE	-.372***	-.426***	-.424***	-.419***
	(.003)	(.003)	(.003)	(.004)
Constant	26.372***	28.933***	28.589***	28.611***
	(.119)	(.151)	(.138)	(.159)

Standard errors are in parentheses

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

Conclusion and Way Forward

This study investigates the impact of gender diversity characteristics of Pakistani listed companies on firm financial performance. The data was collected from listed companies' annual reports from 2017 to 2023. In the gender characteristics section, the study utilized a variety of proxies, including the number of female directorships, female independence, ethnicity, experience, and age of female directors. The results indicated that a female director on board increases firm financial performance using both the ROA and ROE proxies. The results further indicated that one to two female directors are more effective than three females. The results endorsed the 'critical mass' theory that the companies ensure the availability of at least two females on their boards (Rahman & Zahid, 2021b). In the above findings, the study endorsed weak relationships of female independent directors with the performance. One of the reasons could be that most of the companies prefer male independent directors to female. The results are similar to the theory and previous studies (Adams & Ferreira 2007; Alharbi et al. 2022); however, it is not identical to those (Bennouri et al., 2018), who found a negative association with female independence on the board and financial performance. The ethnicity of female directors have mixed findings as the relationships in the case ROA found partially significant while in the case of ROE it has insignificant results. These findings are inconsistent with the theory and preceding studies (Low et al., 2015; Alharbi et al., 2022). The female director's experience has a positive and significant effect on the firm's financial performance, and the overall results show a positive and significant impact. According to Galbreath (2018b), Giannarakis (2014), and Rahman, Zahid, & Khan (2022), companies with more experienced female directors tend to report better sustainable performance. Last relationship of the studyreports that age diversity in female directors on the board positively impacts afirm's financial performance. The results are in line with the previous study, whichsfound the same impact consistent with the underlying theory (Rahman & Zahid, 2023).

The study offers several contributions to the theory and practice of corporate governance and financial performance. First, this study has theoretical significance by applying various measures of female characteristics in the relationship of gender diversity and financial performance. Second, the study has methodological significance by applying the various measures for gauging the gender diversity, such as critical mass in the developing country context, such as Pakistan. Finally, the study has practical implications by investigating the above relationships in the period when the country promulgated several regulations for the implementation of corporate governance practices to gain the shareholder confidence.

Besides the implications, the study has several limitations. First, the data of the current study is based on five years, and future studies may consider a longer period for more robust results. Second, the study is based on non-financial firms, and in future studies, a comparison with the financial firms may enhance the value findings. Third, in future studies some other variables, such as sustainability factors and industry revolutionary models, may also be considered. Finally, future studies would consider the mixed method approaches to capture both the qualitative and quantitative aspects of the data.

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