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**Article**

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## ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

# Impact of board diversity and audit on firm performance

Aqil Waqar Khan<sup>1\*</sup> and Qazi Abdul Subhan<sup>1</sup>

**Abstract:** The study investigates impact of board diversity and quality audit on financial performance by analyzing listed firms in Pakistan. Board diversity is investigated in terms of nationality diversity and gender diversity. Audit is studied in domain of quality audit and audit cost. Although various organizations want to have diverse board structure but still the implication of board diversity in firm performance is uncertain. Here in this study results illustrated an interesting depiction of board diversity and firm financial performance. Higher audit cost leads to more efficient audit services as compare to companies having less audit cost. The study sample comprises of listed companies in Pakistan Stock Exchange (PSE) 100 Index. PSE-100 index is selected on the basis of sector representation and highest market capitalization. Panel data set is collected with time span from 2008 to 2017. In methodology, the study utilized quantitative techniques from econometrics on panel data to fill the research gap in the existing governance literature. Findings suggest that presence of female board members contributed to enhance firm performance while number of female board members in board of director is not related to firm financial performance. Nationality diversity is negatively associated with firm financial performance mostly due to difference in cross-cultural



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### PUBLIC INTEREST STATEMENT

Good governance practices tend to positively impact the performance of firms. Across the globe firms have been continuously working to adopt best governance practices in order to improve firm performance. In Pakistan, the concept of corporate governance was introduced by Security and Exchange Commission of Pakistan (SECP) in 2002 but still there is very limited literature contribution in governance mechanisms.

Results demonstrated that board diversity and quality audit are essential elements for firms to attain better market share, adequate management, and enhanced firm financial performance. Hence, it is strongly recommended for different sectors to genuinely consider the potential for diversity in board of directors, and arrangements for quality audit which leads to better financial performance of firms. On the basis of econometric results of this study, policy makers can easily develop different governance policies particularly in domain of board diversity and quality audit.

perceptions and communication barriers. High audit cost indicates a good quality audit, due to the fact that extended audit hours and expert audit staff conduct more comprehensive investigation, which cost higher audit fees.

**Subjects: Board Diversity; Quality Audit**

**Keywords: nationality diversity; female board members; audit cost; firm performance (ROA; ROE)**

## 1. Introduction

The study investigates the relationship of board diversity and quality audit on financial performance. Board diversity is enquired under two classifications, firstly nationality diversity measured by presence of other nationality directors in the board and gender diversity measured by presence of female board member on corporate board. Audit is explored in direction of quality audit and audit cost.

In developing economies appropriate governance structures serves as a key objective in organizational success which reduce the probability of financial crises and management conflicts (Gompers, Ishii, & Metrick, 2003). Corporate governance serves as gateway for facilitation of relationships of corporate staff, owners, and other stakeholders. It can also be considered as system of guidelines, rules, and factors, which control the methods used for performing various operations in the organization (Shleifer & Vishny, 1997).

Board of directors are normally performing both evaluating and monitoring job for enhanced firm value, yet another critical part of corporate governance is board competence (King & Zeithaml, 2001). Decisions regarding board diversity are not simply predisposed on moral grounds but decisions are made on the basis of cost benefit concerns (Sarhan, Ntim, & Al.Najjar, 2018). Board diversity is characterized as the level of females and other nationalities in the top managerial staff. Females are placed at different status levels in different societies depending upon the norms values and ethical standards of particular area. Wider diversity in board of directors has been advocated as a means of improving organizational performance (Siciliano, 1996).

Diverse board members are always in better position to understand different market conditions. Board diversity leads to innovation and creativity because of the fact that different board members are from different demographic backgrounds with diverse expertise and experience levels (Carter, Simkins, & Simpson, 2003). Having quality auditors is most important issue for any firm. If auditor is able to trace any manipulation or problems in data, than we can say audit is of good quality (Mostafa Mohamed & Hussien Habib, 2013). Earning capacity of firm is also influenced by quality auditors. If investors believe that firm is having quality auditors than it will be having increasing trend of investment (Kumar & Sharma, 2015). Primary concern of quality audit is to verify and filter asymmetric information that can affect reliability of published financial information (Leventis, Weetman, & Caramanis, 2005).

When auditors manage to complete their audit in specified time duration, they get potential advantage of cost saving and when audit duration exceed from allocated time frame, it results in addition of cost (Leventis et al., 2005). Good governance practices tend to positively impact the performance of firms. Across the globe firms have been continuously working to adopt best governance practices in order to improve firm performance.

The past approach of one point should fill all in the model is being upgraded through this study, by proposing multidimensional integrative framework comprising of new variables like board diversity and quality audit. Empirical findings of the current study would be useful addition, especially for corporate staff, policy makers, and investors of an emerging economy like Pakistan. On the basis of econometric results of this study, policy makers can easily develop different governance policies particularly in domain of board diversity and quality audit.

The current study is comprised of four sections. Section one provide introduction and background of the study. In section two, detail literature review for board diversity and quality audit is conducted under topical order. Section three presents data collection and methodology for the study under discussion. Finally, section four discuss result and conclusion along with limitations and future research areas for study.

### **1.1. Background of the study**

In Pakistan, the concept of corporate governance was introduced by Security and Exchange Commission of Pakistan (SECP) in 2002 but still there is very limited literature contribution in governance mechanisms (Javid & Iqbal, 2008). Corporate governance mechanisms and firm performance have always been an area of debate for believers of stewardship theory and agency theory.

Agency theory (Jensen & Meckling, 1976) argues that most of the time business operates under condition with lack of information and uncertainty. Agency theory further states that separation of ownership from control communicates that firm is being managed by professionals. Classified information access to professional managers provides them with additional personal advantage due to the fact that managers are more interested in their personal welfare as compared to shareholder's interests (Kiel & Nicholson, 2003). The stewardship theory is also known as the stakeholder theory and suggests that managers are mostly reliable and are not involved in inappropriate corporate decision making (Shahwan, 2015).

After formal scrutiny and selection procedure, the agents are supposed to have our trust that he or she will act in the best interest of organization (Carty & Weiss, 2012). Stewardship theory is mainly concerned with managerial behaviour and believes that primary motivation factor for managers is getting satisfied after completing the job timely and in effective manner. So, the conduct of managers is pro-organizational and according to mission and goals of the particular organization (Madison, Holt, Kellermanns, & Ranft, 2016).

## **2. Literature review and hypothesis development**

### **2.1. Board diversity and firm performance**

Board diversity is gradually becoming a vital instrument for good corporate governance from last two decades. Particularly national and international policy makers consider board diversity association with enhanced firm performance (Eulerich, Velte, & van Uum, 2014). Decisions regarding board diversity are not simply predisposed on moral grounds only but decisions are made on the basis of cost benefit concerns (Sarhan et al., 2018). Although various organizations want to have diverse board structure but still the implication of board diversity in firm performance is uncertain (Hassan & Marimuthu, 2018). Wider diversity in board member characteristics has been advocated as a means of improving organizational performance. After working on data from 240 organizations, a board diversity index was constructed and compared to multiple measures of board member diversity by Siciliano (1996). Results revealed higher levels of social performance and fundraising results when board members had greater occupational diversity.

Sarhan et al. (2018) investigated the impact of board diversity on firm performance across Middle East and North African countries by analyzing balanced panel of 600 firm years ranging from 2009 to 2014. The findings reported three major folds. Firstly, board diversity proxied by gender and nationality, has a positive impact on firm performance. Secondly, board diversity has significant and stronger relation with firm performance in better governed firms. Finally, board diversity proxied by gender and nationality, increases the pay as per performance rather than actual executive pay scales. Gender diversity has a positive relation with firm financial performance but a negative relation exist for level of funds raised. The diversity in board member age groupings was linked to higher levels of fund raising.

## 2.2. Gender diversity

A vital dimension of corporate governance is gender diversity in boards but there have been limited studies in this domain (Sanan, 2016). Forcing female appointments in board of directors with strong cultural resistance can lead to decline in firm performance (Low, Roberts, & Whiting, 2015). Smith, Smith, and Verner (2006) find out in their research work that there exist a positive significant relationship between female board members and firm performance. Darmadi (2013) enquired the relationship of gender diversity for board members and the financial performance in Indonesian listed firms. The dependent variable was firm performance proxied by return on assets (ROAs) and Tobin's q. The independent variables were gender diversity, proxied by ratio of females, the presence of females in board, and a gender heterogeneity list. Results revealed that introduction of females as board members has a negative relationship with both ROA and Tobin's q which clearly demonstrate that female presence in board of directors is not related with an enhanced level of firm performance.

Sanan (2016) investigated the impact of gender diversity on financial performance of firms. Analysis was conducted on data from 54 companies drawn from Economic Times ranking and according to results gender diversity of corporate boards has a negative significant relationship with financial performance of firms. For future study author proposed to consider relationship between board diversity and firm performance under extended duration. Ararat, Aksu, and Tansel Cetin (2015) examined the indirect relationship of a board's demographic diversity on firm performance by using data from Turkey. Results showed a positive and nonlinear relationship between board diversity and firm performance. Demographic diversity boosts firm performance by moderating the negative impact of the cluster on board monitoring.

Low et al. (2015) utilized sample of Asian firms and concluded that board diversity have a positive relationship with firm performance proxied by return on equity (ROE). However, this positive effect is reduced in countries with higher participation of females in economic activities. Salloum, Jabbour, and Mercier.Suissa (2019) studied the relationship between demographic diversity of board and financial performance of firm. Major variables of study are female board members and ethnic minority in board of directors. The results demonstrated positive relationship between presence of female board members and form performance.

Greater diversity in board can lead to conflicts, slow decision making process and difference of opinion in risk handling (Joshi et al., 2006). Board diversity characterized as the level of females and foreign nationalities in the top managerial staff has a significant relationship with firm performance and furthermore board diversity is associated with enhanced financial performance (Carter et al., 2003).

Based on above mix results first and second hypothesis of study are:

**HYPOTHESIS 1a:** *There is a positive association between board diversity and firm financial performance on the basis of female board member presence. (ROE)*

**HYPOTHESIS 1b:** *There is a positive association between board diversity and firm financial performance on the basis of female board member presence. (ROA)*

**HYPOTHESIS 2a:** *There is a positive association between board diversity and firm financial performance on the basis of number of female board members. (ROE)*

**HYPOTHESIS 2b:** *There is a positive association between board diversity and firm financial performance on the basis of number of female board members. (ROA)*

## 2.3. Nationality diversity

Due to globalization factor boundaries of business are increasing. Foreign investors are investing at a rapid pace for having shares in different industries across the globe but unfortunately current available literature regarding nationality diversity and firm performance is not enough in prevailing market

conditions (Randøy, Thomsen, & Oxelheim, 2006). According to Choi, et al. (2014), presence of foreign directors in board of directors results in enhanced financial performance of Korean firms. Rose (2007) find out in his research work that there is no significant relation of nationality diversity with firm performance in Denmark. Apart from positive aspects of nationality diversity, there are some negative contributing factors as well for firm performance. In case of nationality diversity in board of directors, the most crucial issue will be difference in cross-cultural perceptions and communication (Lehman & DuFrene, 2008).

Zainal, Zulkifli, and Saleh (2013) analyzed the pattern of gender and nationality diversity of board members in top 300 Malaysian listed firms from year 2005 to 2009. Results recognized that a noteworthy contrast exist in qualities of firms with female board members and foreigner executives to those without female board members and foreigner executives. Nielsen and Nielsen (2013) analyzed the dubious connection between board diversity and firm performance. It was concluded that nationality diversity is having a positive relation with firm performance and this impact is more grounded in extended tenured groups and exceptionally in internationalized firms.

Broome, Conley, and Krawiec (2010) reported his findings after series of research meetings with board members about impact of board diversity on firm performance. From over all perspective, respondents were clear and uniform in their views regarding board diversity to be a positively contributing factor in firm performance. However, when respondents were asked to quote any successful example or reference outlining to what valid reason matters in success of nationality diversity, many respondents were unable to provide valid justification.

Board diversity when attributed with variables like, gender, age, nationality, and functionality predicted negative relationship of nationality diversity and age on corporate firm performance. The main reason behind these results could be the fact that great internationality on boards lead to barriers in communication between board members Eulerich et al. (2014). Based on above theoretical and empirical literature third hypothesis of study is as follows:

**HYPOTHESIS 3a.** *There is a negative association between board diversity and firm financial performance on the basis of diverse nationalities. (ROE)*

**HYPOTHESIS 3b.** *There is a negative association between board diversity and firm financial performance on the basis of diverse nationalities. (ROA)*

#### **2.4. Quality audit and firm performance**

Main motive of auditors and audit is to overcome and filter asymmetric information that can raise question mark on reliability of published financial information. When auditors manage to complete the audit in specified time duration, it result in potential cost saving and when audit duration exceed from allocated time frame, it results in addition of cost (Leventis et al., 2005). Cho and Wu (2014) examined the case of employing a brilliant auditor and come up with the view that it relies upon corporate governance indicators subsequent to controlling an alternate level of agency conflicts. Analysis was conducted on Taiwanese open organizations from 1998 to 2011. The outcomes demonstrate that the corporate governance indicators can clarify the choice of auditor selection just in low and medium agency conflicts, which propose that there might be an integral connection amongst auditors and internal corporate governance.

Johl, Kaur Johl, Subramaniam, and Cooper (2013) tested the impact of internal audit on a firm's financial performance.

Specifically, author investigated the relationship between the nature of internal audit and audit quality. Findings demonstrate a surprising positive connection between audit quality and firm performance, this relationship is dependent upon whether firms outsource their audit procedures



or whether they are politically connected. In estimations other than outsourcing and political perceptions, the relationship between audit quality and firm performance is negative.

Jusoh, Ahmad, and Omar (2013) investigated the impact of audit quality on firm performance. After application of F-test, Chow test, and Hausman test, the results showed that the managerial ownership had negative relationship with ROAs and Tobin's Q while audit quality have a positive relationship with ROAs and Tobin's Q. Furthermore, external audit serve as monitoring unit for reducing information asymmetry between shareholders and managers.

Francis (2009) tested the prediction that larger offices of Big 4 auditors have higher quality audits due to greater experience in governing such audits. The prediction was tested by examining a sample of 6,568 US firms with time span of 2003–2005. Results support the argument that larger offices provide higher quality audits. One major reason behind this finding is that larger offices mostly conduct the audit reports on going-concern basis. Although results suggested audit quality is higher in Big 4 offices but at the same time there is no evidence that audit quality is below standard in smaller offices.

Based on given literature forth hypothesis of the study is as follows:

**HYPOTHESIS 4a.** *There is a positive relationship between audit and firm financial performance on the basis of audit quality. (ROE)*

**HYPOTHESIS 4b.** *There is a positive relationship between audit and firm financial performance on the basis of audit quality. (ROA)*

### **2.5. Audit cost**

Auditor can be influenced by their fee in two ways. Firstly, a handsome amount paid to auditor serve as motivation of extended efforts. Secondly, this handsome amount can generate economic dependency of auditor on clients, which will make auditor reluctant for conducting certain audit enquiries (Hoitash, Markelevich, & Barragato, 2007). Hassan, Hassan, Iqbal, and Khan (2014) mentioned in his research that major scandals in Pakistan have brought about expanded focus for reviewing audit and regulatory arrangements for the purpose of effective monitoring and accountability.

Accordingly, examination investigated the connections between corporate governance and quality audit cost in Pakistan. For this reason, analysis was conducted to explore the linkage between corporate governance and audit cost of 37 listed firms at PSE from 2009 to 2012. Results demonstrated that corporate governance has a positive relationship with audit cost.

Choi, Kim, Kim, and Zang (2010) analyzed sample of US firms over the time span of 2000 to 2005 and investigated the relationship of audit cost with firm performance. Results showed that the office size has a significant and positive relationship with both audit quality and audit cost. The positive and significant relation of audit cost with firm performance support the idea that big offices provide better quality audits as compared to small offices. Vichitsarawong and Pornupatham (2015) analyzed the relationship between audit opinion and income stability of listed organizations in Thailand from 2004 to 2008. Firms getting altered audit opinion have bring down income stability than firms accepting unqualified audit opinion.

Said Suwaidan and Qasim (2010) explored the impression of Jordanian external auditors for the significance given by them to various factors which may influence their dependence on internal and level of dependence on the internal and external audit cost. Sample of hundred external auditors were investigated to know the view of external auditors regarding dependence on audit cost. Results demonstrated that external auditors in Jordan consider the objectivity, capability of internal auditors, and internal audit cost as imperative components.

Yassin and Nelson (2012) utilized audit cost as proxy variable for quality audit. Results showed that a higher audit cost leads to more efficient audit services as compare to companies having less audit cost. Extended audit hours and expert audit staff conduct more comprehensive investigation, which cost higher audit fees. So, it is predicted that high audit cost indicate a good quality audit, due to the fact that quality audit is required to verify all financial from data misstatement (O’Sullivan & Diacon, 2002). Based on above arguments fifth hypothesis of study is as follows:

**HYPOTHESIS 5a.** *There is a positive relationship between audit and firm financial performance on the basis of audit cost. (ROE)*

**HYPOTHESIS 5b.** *There is a positive relationship between audit and firm financial performance on the basis of audit cost. (ROA)*

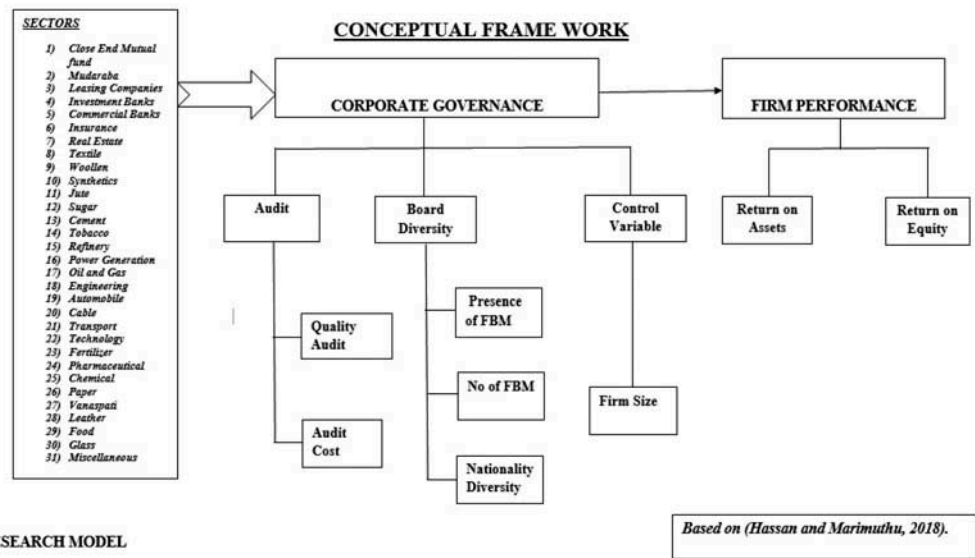
**3. Research design**

This section deals with assortment of research design utilized in research process, its validation and explanation. Research Sample, methods of data compilation and instrument for collecting the data is also discussed in this portion. Finally, different research techniques and methods utilized in research analysis are explained and justified. Broadly quantitative approach is opted in current study.

**3.1. Research sample and data source**

The study sample comprises of listed companies in PSE-100 Index. PSE100 index was introduced in 1991 and comprises of 100 companies selected on the basis of sector representation and highest market capitalization covering about 80% of the total market capitalization listed in PSE (Yasser & Mamun, 2015). Panel data set is collected with time span from 2008 to 2017.

Base data is extracted from annual reports and websites of listed companies on PSX-100. The approach of collecting panel data is consistent with prior research work of Salloum et al. (2019). The listing of 100 companies is provided in appendix.



**RESEARCH MODEL**  
 (IMPACT OF BOARD DIVERSITY AND QUALITY AUDIT ON FIRM PERFORMANCE)



### 3.2. Variables of the study

Dependent variable of the study is firm performance and it is measured by two proxy variables. First one is ROAs and it is calculated by dividing profit after tax with total assets. ROA is best indicator for using as a proxy of firm performance because it demonstrates how well management utilized available resources.

The approach of using ROA as dependent variable is consistent with Hassan and Marimuthu (2018-2018). Second variable for measuring firm performance is ROE calculated by dividing net income to shareholders' equity. The approach of using ROE as proxy of form performance is in line with Ararat et al. (2015). Board diversity is evaluated by three proxy variables including gender diversity, number of female board members, and nationality diversity of board members. No of female board members is measured by total number of female directors present in board. Firm size is represented by total assets of the firm and in current study this variable has been used as control variable of the study. Female board member and firm size as independent variable of firm performance is consistent with research work of Low et al. (2015).

Nationality diversity is measured by observing either different nationality board members exist in board or directors or not. Choi et al. (2010) utilized nationality diversity for measuring firm performance. Quality audit is measured by investigating that either firm is hiring services of higher quality external auditing firms are not. This variable is measured as binary variable. It will be 1 in case of quality audit arrangements, i.e. category A auditing firms maintained by State Bank of Pakistan and would be 0 in case of noncompliance with quality audit standards. The quality audit variable has been used in research work of Brender et al. (2015). Audit cost is calculated by total expenses incurred during auditing process. Hassan et al. (2014) explored the linkage between firm performance and audit cost. Summarized model specification for both models are represented below in table 1 and table 2.

#### (A) Firm performance = f (Board diversity)

$$(1) ROA = ND + PFM + NFM + FS$$

**Table 1. Model specification**

Symbol	Variable	Description
ROA	Return on assets	Profit after tax/Total assets
ROE	Return on equity	Net income/Shareholders equity
ND	Nationality diversity	Different nationality members in BOD
NFM	No of female board members	No of females in BOD
PFM	Presence of FBM	Presence of females in BOD
FS	Firm size	Total assets of the firm

**Table 2. Model specification**

Symbol	Variable	Description
ROA	Return on assets	Profit after tax/Total assets
ROE	Return on equity	Net income/Shareholders equity
QA	Quality audit	Audit by category A auditing firms maintained by SBP
AC	Quality audit cost	Cost incurring on audit
FS	Firm size	Total assets of the firm

$$(2) ROE = ND + PFM + NFM + FS$$

**(B) Firm performance =  $f$  (Quality audit)**

$$(1) ROA = QA + AC + FS$$

$$(2) ROE = QA + AC + FS$$

#### 4. Empirical results and discussions

The impact of board diversity and audit on firm performance is measured by using firm year as unit of analysis. Balanced panel data are opted for research study ranging from 2008 to 2017. In panel data following techniques and models have been utilized for estimation.

##### 4.1. Descriptive statistics

Table 3 interprets the mean value, the standard deviation along with values of skewness and kurtosis. The descriptive results are source of significant information about the parametric nature of data utilized in the study. The average values of ROA and ROE of the firms are 18.06 and 6.74, respectively. Firm size is estimated to be 59,912 on average. The mean value of audit cost is 2.68 while audit quality is estimated to have average value of 0.91.

The average value for nationality diversity is 0.45 and for presence of female board members the average value is 0.29. The maximum number of females in board of directors is 4. Data contain no multicollinearity issues amongst the variables as depicted by values of Table 4.

##### 4.2. Variance inflating factor

##### 4.3. Correlation matrix

Pearson's correlation matrix represented in table 5 is utilized in the study for exploring the nature of relationships among the different variables. According to correlation matrix, most of the variables have a statistically significant correlations. The board diversity variable like presence of female board members are strongly and positively correlated with firm financial performance. However, nationality diversity is having a negative correlation with firm financial performance. Similarly, quality audit and audit cost are strongly and positively correlated with firm financial performance.

##### 4.4. Hausman test

In Hausman test, the decision is to be made for either to go for fixed effect model or random effect model. The selection criteria is based on fact that if difference value is large, the null hypothesis that individual effects are uncorrelated with the other regressors is rejected than fixed effect

**Table 3. Descriptive statistics**

Variable	Minimum	Maximum	Mean	Standard deviation
ROE	-167.2	136.79	18.06	23.59
ROA	-163.2	193.5	6.74	13.43
PFBM	0	1	0.29	0.45
NFBM	0	4	0.40	0.79
ND	0	1	0.45	0.49
QA	0	1	0.91	0.27
AC	0.12	19.5	2.68	1.99
FS	38.09	407,290	59,912	89,525

**Table 4. VIF**

Variable	VIF
PFMB	2.54
NFBM	2.55
ND	0.96
QA	0.98
AC	0.93
<b>Mean VIF</b>	<b>1.54</b>

**Table 5. Correlation matrix**

Variable	ROE	ROA	PFBM	NFBM	ND	QA	AC	FS
ROE	1							
ROA	<b>0.70*</b> (0.00)	1						
PFBM	0.04 (0.13)	<b>0.16*</b> (0.00)	1					
NFBM	0.01 (0.68)	<b>0.14*</b> (0.00)	<b>0.77*</b> (0.00)	1				
ND	<b>-0.11</b> (0.00)	<b>-0.07*</b> (0.01)	<b>-0.16*</b> (0.00)	<b>-0.13*</b> (0.00)	1			
QA	<b>0.16*</b> (0.00)	<b>0.11*</b> (0.00)	-0.02 (0.39)	-0.02 (0.95)	-0.02 (0.36)	1		
AC	<b>0.16*</b> (0.00)	-0.01 (0.59)	<b>-0.09*</b> (0.00)	<b>-0.14*</b> (0.00)	<b>0.10*</b> (0.00)	<b>0.082*</b> (0.00)	1	
FS	-0.01 (0.59)	<b>-0.13</b> (0.00)	<b>-0.05</b> (0.07)	<b>0.10*</b> (0.00)	<b>0.07*</b> (0.02)	<b>0.09*</b> (0.00)	<b>0.19*</b> (0.00)	1

model is utilized in the study however if difference is small, the null hypothesis is not rejected, and random effect is preferred.

In this case, we have a large test statistics giving impression that distance is large. It will lead to rejection of null hypothesis and fixed effects model will be used. Here in this case we have two proxy variables for measuring firm performance, i.e. (ROE and ROA) leading to two different models, summarized in table 6 and table 7 respectively.

#### **4.5. Model 01: (Return on equity as proxy variable of firm performance)**

According to results of Hausman test, the difference and probability values are significant which clearly suggest fixed effect model to be the optimal one in this case.

#### **4.6. Fixed effect regression model**

Table 7 presents fixed effects estimation model, assessing the effect of board diversity and audit on firm performance with return on equity as proxy of firm performance.

According to results, presence of female board member is positively related to firm performance. The results here are consistent with the findings of Sarhan et al. (2018) who mentioned in his research work that board diversity proxied by gender has a positive impact on firm performance. Negative insignificant coefficient for number of female board number clearly depicts that there is no significant relationship between number of female board members and firm performance which match with the findings of Darmadi (2013). He mentioned in his findings that female presence in board of directors is not related with an enhanced level of firm performance. Nationality diversity has

**Table 6. Return on equity as proxy variable**

Variable	Fixed	Random	Difference	SE
PFBM	8.3284	7.8029	0.5254	0.82
NFBM	-0.4972	-1.1711	-0.6739	0.87
ND	-9.9333	-8.7632	-1.1702	0.85
QA	17.6558	16.4911	1.1646	1.41
AC	3.9330	3.4148	0.5181	0.26
FS	-0.00	-0.00	-7.8406	0.00
<b>Chi 2 = 13.37</b>				
<b>Prob&gt;chi2 = 0.02</b>				

**Table 7. Regression model**

ROE	Coefficient	Robust St. Err	t	P > t
<b>PFBM</b>	<b>8.3284</b>	<b>3.4773</b>	<b>2.40</b>	<b>0.01</b>
NFBM	-0.4972	2.0533	-0.24	0.80
<b>ND</b>	<b>-9.9333</b>	<b>3.5026</b>	<b>-2.84</b>	<b>0.00</b>
<b>QA</b>	<b>17.6558</b>	<b>6.4759</b>	<b>2.73</b>	<b>0.00</b>
<b>AC</b>	<b>3.9330</b>	<b>1.154</b>	<b>3.41</b>	<b>0.00</b>
FS	-0.00	-0.00	-0.57	0.56
Constant	-4.8731	6.9376	-0.70	0.48

a negative significant relation with firm performance and similar views have been quoted in research work of Eulerich et al. (2014). Positive and significant coefficients for quality audit and audit cost leads to the fact that there exist a positive relationship between quality audit and audit cost with the firm performance and it is also demonstrated in research findings of Jusoh et al. (2013). Firm size is not able to develop any significant relationship with firm performance here in this study.

#### **4.7. Model 02: (Return on assets as proxy variable of firm performance)**

##### **4.7.1. Hausman test**

According to results of Hausman test, the difference and probability values are insignificant which clearly demonstrate that random effect model is the optimal choice in this case, presented below in table 8.

##### **4.8. Random effect model**

Table 9 presents random effects estimation model, calculating the effect of board diversity and audit on firm performance and here the proxy variable for firm performance is ROAs. Here in this model once again presence of female board member is positively related to firm performance and number of female board number lack any significant relationship with firm performance which is consistent with the research findings of Ararat et al. (2015).

Nationality diversity do not have any significant relationship with firm performance, which is also demonstrated in findings of Rose (2007). Positive and significant coefficients for quality audit and audit cost once again demonstrate that there exist a positive relationship with firm performance which is in line with the research findings of Francis (2009). Firm size is not able to develop any significant relationship with firm performance in this model as well.

**Table 8. Hausman test**

Variables	Fixed	Random	Difference	SE
PFBM	6.2832	5.6068	0.6763	0.6287
NFBM	-1.1427	-0.3690	-0.7737	0.6360
ND	-0.8800	-1.1976	0.3175	0.6307
QA	5.2124	5.5407	-0.3282	1.0463
AC	0.9432	0.6729	0.2703	0.1915
FS	7.9606	0.00	0.00	0.00
		<b>Chi 2 = 4.75</b>		
		<b>Prob&gt;chi2 = 0.44</b>		

**Table 9. Return on assets as proxy variable**

ROA	Coefficient	Robust St. Err	z	P > z
<b>PFBM</b>	<b>5.6068</b>	<b>1.5476</b>	<b>3.62</b>	<b>0.00</b>
NFBM	-0.3690	1.0046	-0.37	0.71
ND	-1.1976	1.0377	-1.15	0.24
<b>QA</b>	<b>5.5407</b>	<b>1.8414</b>	<b>3.01</b>	<b>0.00</b>
<b>AC</b>	<b>0.6729</b>	<b>0.2714</b>	<b>2.48</b>	<b>0.01</b>
FS	-0.00	7.6306	-1.59	0.11
Constant	-0.3914	2.0853	-0.19	0.85

## 5. Summary of results

The hypothesis testing and the results is presented in Table 10. Broadly, the results of current investigation are in support of the proposed research models. Gender diversity in terms of female representation in board of directors contributes positively in better firm performance. The findings are unique and meaningful due to positive results of female contribution in firm performance. In contrast, number of female board members do not affect firm in all domains of financial performance. However, nationality diversity in board of directors have a negative and significant impact on firm financial performance. So, the results interpret a concrete indication of the relationship between board diversity and firm performance. Finally, there exist a positive relationship of firm performance with quality audit and cost of audit.

## 6. Limitations and directions for future research

This research study has few limitations as well that need to be addressed by future researchers. Firstly, the sample is taken from top 100 listed companies at PSE and the results may not be applicable to smaller companies. Although, the sample comprised of Pakistan-listed companies from 31 sectors but the variables used in study are operationalized by different definitions identified by the existing literature. So, it might be possible to have inconsistent results. Finally, the data has been extracted from different financial data bases like annual report of the companies which raise the probability of figures to be marginally not as accurate as the real organizational figures.

In future studies, researchers might add some new variables like religious diversity and structural diversity. Moreover, in domain of audit, new variables could be audit time duration and working experience of auditors. Regarding methodology, advanced econometrics methods with blend of some qualitative techniques are suggested to incorporate in upcoming studies.

**Table 10. Summary of results for tested hypotheses**

Table 10. Summary of results for tested hypotheses		
S. No	Objective: To know the impact of board diversity and quality audit on firm performance	Status
1	There is a positive association between board diversity and firm financial performance on the basis of female board member presence. (ROE)	<b>Supported Positively significant</b>
2	There is a positive association between board diversity and firm financial performance on the basis of female board member presence. (ROA)	<b>Supported Positively significant</b>
3	There is a positive association between board diversity and firm financial performance on the basis of number of female board members. (ROE)	Not supported Insignificant
4	There is a positive association between board diversity and firm financial performance on the basis of number of female board members.(ROA)	Not supported Insignificant
5	There is a negative association between board diversity and firm financial performance on the basis of diverse nationalities.(ROE)	<b>Supported Negatively significant</b>
6	There is a negative association between board diversity and firm financial performance on the basis of diverse nationalities.(ROA)	Not supported Insignificant
7	There is a positive relationship between audit and firm financial performance on the basis of audit quality. (ROE)	<b>Supported Positively significant</b>
8	There is a positive relationship between audit and firm financial performance on the basis of audit quality. (ROA)	<b>Supported Positively significant</b>
9	There is a positive relationship between audit and firm financial performance on the basis of audit cost. (ROE)	<b>Supported Positively significant</b>
10	There is a positive relationship between audit and firm financial performance on the basis of audit cost. (ROA)	<b>Supported Positively significant</b>

## 7. Summary and conclusion

The research study has found a significant relationship of board diversity and quality audit with firm financial performance. According to agency theory perspective classified information access to professional managers provide them with additional advantage and managers are more interested in their personal welfare as compared to shareholder's interests. In contrast, the stewardship theory is also known as the stakeholder theory and suggests that managers are mostly reliable and they are selected after formal scrutiny procedures, so agents are supposed to have our trust.



Although various organizations want to have diverse board structure but still the implication of board diversity in firm performance is uncertain. Here in this study, results illustrated an interesting depiction of board diversity and firm financial performance. In a certain domains like presence of female board members contributed to enhance firm financial performance.

In the mean while number of female board members is not related to firm performance and nationality diversity is negatively associated with firm financial performance. In case of nationality diversity in board of directors, the most crucial issue is difference in cross-cultural perceptions and communication barriers.

In short, gender diversity in the board of director plays a dual role depending upon the dimension of diversity under consideration. Higher audit cost leads to more efficient audit services as compare to companies having less audit cost. Extended audit hours and expert audit staff conduct more comprehensive investigation, which cost higher audit fees. So, it is predicted that high audit cost indicate a good quality audit, due to the fact that quality audit is required to verify all financial from different data sources.

In conclusion, board diversity and quality audit are essential elements for firms to attain better market share, adequate management, and enhanced firm financial performance (ROA and ROE). Hence, it is strongly recommended for different sectors to genuinely consider the potential for diversity in board of directors, and arrangements for quality audit which leads to better financial performance of firms.

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