A Study of Interaction Effect of Financial Performance on the Relationship of Board Gender Diversity and Corporate Social Responsibility

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Abstract

Purpose : This paper aimed to investigate the relationship between board diversity, financial performance, and CSR of firms. Along with this, an attempt was made to study the interaction effect of board diversity and financial performance on the CSR spending of the firms.

Methodology : Panel data of 80 companies listed on BSE 100 index were taken for the period starting from April 1, 2014 – March 31, 2019. The data pertaining to CSR spending, board characteristics, and financial performance has been taken into consideration. Panel data regression was employed to test the hypotheses framed.

Findings : It was concluded that board size, proportion of women directors, and corporate governance played a significant role in impacting the CSR activities of the firms. As the number and proportion of women directors increases, the CSR spending of the firms improves. The return on assets, age, and size of the firms also significantly impacted the CSR spending.

Practical Implications : Thus, the major implications of the study are to understand how the mandatory provision related to the appointment of women directors on board influences the financial performance and CSR spending of the firms. This study statistically confirmed that appointing more women on board improved the CSR of the firms.

Originality : The present research made an attempt to enrich the existing literature related to CSR, board diversity, and financial performance. With respect to India, very few research studies have worked on examining the relationship among these variables.

Keywords : **moderation, women directors, CSR, return on assets, board size, India**

JEL Classification : C33, G38, L25, M14, O16

Paper Submission Date : May 19, 2020 ; Paper sent back for Revision : January 14, 2021 ; Paper Acceptance Date : March 30, 2021 ; Paper Published Online : August 20, 2021

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DOI : https://doi.org/10.17010/pijom/2021/v14i8/165676

The various publicized corporate scandals, namely Enron and WorldCom, have stunned the public confidence in large corporations and have led the policy makers to discuss the new spectrums of regulations and importance of board diversity in companies. Many countries have already amended the regulations to being more women centric, that is, giving more attention to the role of women on boards including India, which were implemented from October 1, 2014. To encourage a gender diverse board, the regulations in India specify that all the listed companies should have a minimum of one-woman director on the board (Kumar & Sudesh, 2016). A management board which is constituted as per the requirements of the CG norms leads to an effectively managed company which further helps in improving the financial performance of the company (Rajpurohit & Rijwani, 2020). Thus, companies should ensure to have an optimum board composition.

The presence of women directors on the board is justified on the basis of the following reasons (Dutta & Bose, 2007). First, women understand the market requirements better than men and second, women directors have an edge in understanding the business environment as well, and these factors lead to effective decision making at the board (Erhardt et al., 2003; Smith et al., 2006). The third justification is that society presumes a better image of a gender diverse firm (Dezsö & Ross, 2012). It has been stated that as the number of women on the board increases, it leads to an improvement in the corporate social responsibility (CSR) of the firm, which gives a signal to its investors that the company has the potential to improve its reputation (Inamdar & Nagendra, 2017) and financial performance (Bear et al., 2010).

CSR should not only be perceived as a moral responsibility of the managers, or an expenditure at the discretion of the managers, which may be harmful to the company's profitability ; rather, it should be observed as a strategic resource that is used to improve the performance of the organization (McWilliams et al., 2006) thus, benefiting its stakeholders and society at large (Kang & Sivadas, 2018).

Research in the past has been more focused upon how the composition of the board affects a firm's financial performance. However, not much research has been done on the specific attributes of the board that affect a firm's CSR policies and initiatives. A diverse board, among other board attributes, has gained a lot of attention. With more female directors on a board, a firm's CSR performance enhances (Bear et al., 2010). According to Carter et al. (2003) and Rose (2007), a lot of studies support that board diversity influences the financial performance, however, as far as the non-financial performance is concerned, particularly with respect to CSR, there is a dearth of studies in the Indian context.

The present research attempts to fill this gap by studying the relations between these three concepts. The major research question this study has addressed is : Does the presence of women directors on a board affects the financial performance of a firm ? Another research question that has been answered is : Does a board with women directors tend to be more vigilant about the CSR activities ? Also, have the regulatory provisions with respect to compulsory appointment of women directors on board and mandatory CSR spending necessitated the need to study the impact of these provisions on the financial performance of the companies ?

Literature Review

Based on the existing available literature, several studies have focused on finding how the presence of women directors influences the performance of firms. However, the literature is limited with respect to the relationship between women directors and CSR spending. In this study, the review of literature has been categorized into three sub-sections, namely board diversity and financial performance ; board diversity and CSR ; and financial performance and CSR. The research questions that the present research addresses are whether the board diversity affects the overall financial performance of firms ? How the presence of women directors positively affects the CSR activities of firms ? Whether the financial performance mediates the relationships between women directors on board and the CSR spending of firms ?

Board Diversity and Financial Performance

Since the past two decades, there is an exponential increase in research in board diversity. This is because of the pressure on the companies to compose a diverse board with members from different gender and race. A plethora of studies have explored the impact of board diversity on firms' financial performance (Campbell & Mínguez-Vera, 2008 ; Erhardt et al., 2003). Another major reason for studying gender diversity especially in the Indian context is that India is the latest country to join the category of countries having mandatory women participation on the board because of the new Companies Act, 2013.

The studies showing the relationship between gender diversity and financial performance produced mixed results (Adams & Ferreira, 2009 ; Bear et al., 2010 ; Erhardt et al., 2003). The findings showing a positive relation between the two (Kumar, 2016) were based on the reasons that they bring diverse perspectives in the decision making of firms (Adams & Ferreira, 2009), which facilitates implementing activities related to CSR. Female presence on the board improves the moral principles at the board level (Pan & Sparks, 2012) as women question the unethical behavior of others (Bilimoria & Wheeler, 2000). Women are considered to have more flexibility ; so, in situations of uncertainty, they prove to be more capable and compatible.

Another study observed a direct relationship between the percentage of women on board and market performance of companies (Carter et al., 2003) ; while in some of the studies, a negative relationship between the two was found (Ahern & Dittmar, 2012 ; Matsa & Miller, 2013). However, there are also studies that observed no relationship between the two variables (Adams & Ferreira, 2009 ; Carter et al., 2010 ; Jurkus et al., 2011).

Based on the empirical studies conducted by researchers (Carter et al., 2003 ; Erhardt et al., 2003), the proportion of women on the board was found to be positively correlated with corporate performance. Fodio and Oba (2012), taking a sample of 100 Nigerian companies, reinforced the argument that the presence and the proportion of women directors on board positively influenced the financial development (measured by ROCE) of the companies. Similar to these findings, using a sample of 120 Brazilian companies for the period from 2010 and 2013, the authors found that companies with more women directors on board positively influenced the financial development measured by Tobin's *Q* and return on assets (ROA) (Silva Júnior & Martins, 2017). Another study performed an experiment using Spanish firms to test whether women directors influenced firms' performance or the firms that performed better were more likely to hire women on the board (Campbell & Mínguez-Vera, 2008). The findings highlighted a direct link between gender diversity and firm performance because of the presence of women directors on the board.

Thus, one can conclude that both the genders, male and female, possess a separate set of capital skills and experiences, and they thus create a competitive advantage through diversity (Singh et al., 2008). Hence, we propose the following hypotheses of the present research :

- **H_1 & H_2 :** There is a positive relation between presence of women directors on board and ROA/ ROE.
- **H_3 & H_4 :** There is a positive relation between the proportion of women directors on board and ROA/ ROE.
- **H_5 & H_6 :** The greater the number of women directors on board, the better is the ROA/ ROE.

Board Diversity and CSR

Firms' decision making is majorly influenced by the background of the board of directors (Hambrick & Mason, 1984). Thus, the composition of the board plays a vital role in determining the CSR performance of firms as it plays a key role in the firms' decision making (Rupley et al., 2012). Various board composition factors that affect CSR performance are gender diversity (Bruna et al., 2014 ; Hyun et al., 2016 ; Setó-Pamies, 2015), the number of outside directors (Amran et al., 2014 ; Liao et al., 2015), board size (Rao & Tilt, 2016), director age (Hafsi &

Turgut, 2013 ; Post et al., 2011), and education (Post et al., 2011). Thus, it becomes important to explore how the board composition relates to the CSR performance of firms.

As far as the variable - gender diversity is concerned, it is based on the facts that the presence of women directors on a board positively influences the social capital and social responsibility of the firms. This has been mainly due to greater support and influence for the existing community (Bear et al., 2010 ; Singh et al., 2008). According to Williams (2003), companies which have women directors on board are more sensitive towards the CSR initiatives, that is, charity and other environmental issues, and they also ensure a favourable working environment (Bernardi et al., 2006 ; Post et al., 2011).

Gender board diversity signals the stakeholders that firms will address the issues related to minorities and women, which will ultimately make them responsible socially (Bear et al., 2010). Thus, socially responsible firms develop sound relations with their stakeholders such as shareholders, employees, and customers, which ultimately improves the financial performance of the firms (Chen & Wang, 2011 ; Davis, 1973 ; Turban & Greening, 1997).

The presence of women directors on the board significantly impacts the board's CSR decisions (Bear et al., 2010) as women directors push forward firms' CSR practices. Heemskerk and Fennema (2014), Tanaka (2014), and Zhang et al. (2018) also stated that having a gender diverse board may sensitize the management towards CSR initiatives. The firms which have a higher percentage of women directors donate large amounts as charity (Williams, 2003). Thus, when a company is performing poorly, hiring a greater number of women directors and involving in CSR initiatives can help in improving the performance of the firm (Zhang et al., 2018).

- **H_7 :** There is a positive relation between women directors on board and the CSR of firms.
- **H_8 :** The greater the number of women directors on board, the better is the CSR of firms.
- **H_9 :** There is a positive relation between the proportion of women directors on board and the CSR of firms.

Financial Performance and CSR

Measuring the overall financial performance of firms takes into consideration net profit, market share, and sales growth, which were found to be positively related with the CSR disclosure of firms (Menguc & Ozanne, 2005). Another study also observed a positive relation between the financial performance variable PAT and the CSR spending of the companies using the sample of BSE-100 companies (Kumar & Nigam, 2017). Similarly, Bristy et al. (2020) concluded that CSR activities undertaken by US firms led to profit maximization, while Patro and Pattanayak (2017) observed a positive impact of CSR disclosure on earnings management (EM) practices.

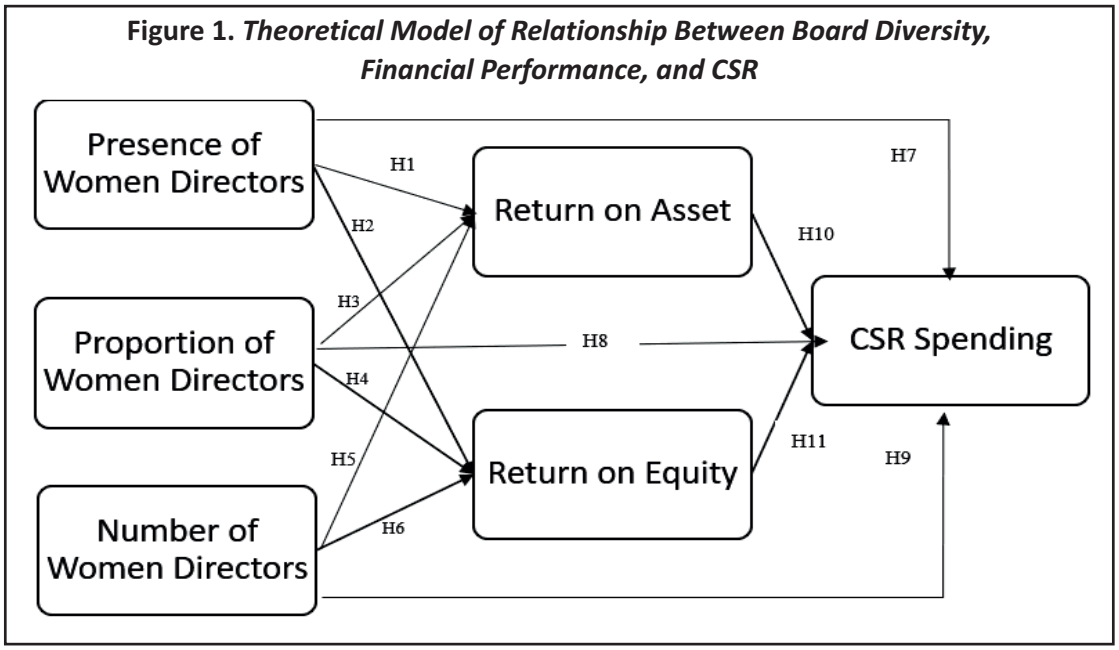
One of the studies observed that financial performance measured with ROA, ROE, and Tobin's *Q* was positively related to the CSR performance of the companies (Choi et al., 2010). Hence, based on the literature, the H10 and H11 test the relationship between CSR and the financial performance of the Indian companies :

- **H_{10} & H_{11} :** There is a positive impact of ROA/ROE on the CSR of firms.

As per the existing literature, there has been mixed evidence on the effects of board diversity with respect to women on board. The studies of Farrell and Hersch (2005) and Miller and Triana (2009) found no effect of women on board on the firm performance. Other studies found a positive effect of board diversity (Adams & Ferreira, 2009 ; Carter et al., 2003 ; Campbell & Mínguez-Vera, 2008 ; Nguyen & Faff, 2006 ; Nguyen et al., 2015), concluding that higher representation of female directors on board had a positive influence on firms' financial performance (Jiang et al., 2020 ; Sial et al., 2018).

Carter et al. (2003) concluded that the percentage of women had a significant positive relationship with the

Figure 1. ***Theoretical Model of Relationship Between Board Diversity, Financial Performance, and CSR***



firm value. The two key functions of the boards can be broadly categorized as first being the most powerful people in strategic decision making and second is fulfilling the monitoring role, that is, representing shareholders, monitoring proper use of organizations' wealth, response to takeover threats and hiring, and compensating and monitoring the top management work (Hambrick & Mason, 1984). Thus, we have also framed the hypotheses exploring the moderating role of financial performance indicators on the relationship of presence of women directors on board and CSR spending of firms.

- **H_{12} & H_{15} :** ROA/ROE moderates the relationship between presence of women directors and the CSR.
- **H_{13} & H_{16} :** ROA/ROE moderates the relationship between proportion of women directors and the CSR.
- **H_{14} & H_{17} :** ROA/ROE moderates the relationship between number of women directors and the CSR.

Till date, a quantum of studies has focused on analyzing the number of women on boards along with possible reasons of a smaller number of female appointments on boards. There are a dearth of studies examining the actual role and impact of women on boards on the firm performance and/or CSR spending. The present study has focused on analyzing the impact of women directors on the overall financial performance and CSR of firms. The theoretical model developed to study the relationship between board diversity, financial performance, and CSR has been shown in Figure 1. It highlights the relationships between the independent and dependent variables this study has explored.

Research Methodology

Based on the literature discussed above, the major objective of the study is to examine the possible impact of board diversity on the CSR initiatives and spending. Few studies have concluded that gender diversity impacts the financial performance of firms, and thus, the CSR spending improves. Hence, in the present research, we analyze the interaction effect of board diversity and financial performance on the CSR spending of firms.

↳ To analyze the impact of board diversity with respect to gender on the financial performance and CSR spending of firms.

↳ To analyze the impact of financial performance of firms on the CSR spending.

↳ To analyze the interaction effect of financial performance on the relationship of board diversity and CSR spending of firms.

A sample of BSE100 indexed companies were selected to analyze the relationship between board diversity, financial performance, and CSR. The sample comprised of 70% of market capitalization. The sample period is of 5 years from 2014 – 2019. From the 100 companies of BSE 100 index, the banking companies were not taken into consideration due to differences in their regulating act. Similarly, companies which did not adopt April to March as their financial year were also excluded. The final set of companies studied and analyzed on the women directors as well as financial and CSR parameters was 80. This final set of 80 companies represents eight industries namely, Automobile, Engineering, Construction and Infrastructure, Consumer Goods, Energy & Power, Pharmaceuticals, Metals, Information & Communication and Entertainment Industry.

The data required for board structure and composition were extracted from the annual reports of the companies. In this study, the financial data were obtained from the database of CMIE Prowess and Capitaline. The data consisted of return on assets (ROA), return on equity (ROE), total assets, year of incorporation, and CSR spending. All financial data were taken for the financial year ending in March for the purpose of uniformity. In order to test the hypothesis of impact of board diversity and financial performance on the CSR spending, a set of variables have been used. These variables were selected after careful study of the existing literature and are presented in Table 1.

The data used in this study comprises of 80 companies across 5 years for 12 variables. Thus, this type of time series and cross-sectional observation is known as panel data. The panel data approach is appropriate for the CSR

Table 1. ***List of Variables***

Variable	Symbol	Type	Measurement
CSR Variable			
CSR Spending	*CSR_S*	Dependent	Corporate social responsibility spending of firms.
Firm Specific Variables			
ROA	*ROA*	Control	Return on assets. Net income/total assets.
ROE	*ROE*	Control	Return on equity, that is, ratio of net income to shareholders' equity.
Age of Company	*Age*	Control	Age of the company in years since inception.
Size of the Company	*Size*	Control	Size of the company by way of log of total assets of the company.
Board Specific Variables			
Women Directors	*D_WD*	Dummy	Takes the value 1 if the firm has one or more women directors on board, otherwise 0.
Proportion of WD	*P_WD*	Control	Proportion of women directors calculated as ratio of number of women directors to board size.
One Woman	*onef*	Control	Proportion of one woman director with respect to board size.
Two Women	*Twof*	Control	Proportion of two women directors with respect to board size.
Three Women	*Threef*	Control	Proportion of three women directors with respect to board size.
Four Women	*Fourf*	Control	Proportion of four women directors with respect to board size.

studies. The main reason behind selecting this approach is absence of time series data with respect to the variables measuring CSR initiatives. Hence, panel data regression is the robust method for studying the impact of numerous dependent variables within the context of multivariate regression analysis. Another rationale in support of panel regression is that it can capture the variation from both time and space dimensions simultaneously.

Panel data regression has three models to choose from, that is, pooled regression, fixed effects, and random effects. Pooled regression is somewhat like OLS regression only and doesn't consider difference in years or companies. Fixed effect panel regression considers the difference in companies across the panel, while the random effect model considers difference in both years and companies. The random effect model usually gives efficient estimators along less variability as compared to the fixed effect model. In order to test whether fixed is better or the random effect model is better, Hausman test has to be applied. Hausman test has to be conducted once all the three models have been estimated. According to the Hausman test, null hypothesis in random effect model is appropriate and alternate hypothesis in fixed effect model is appropriate. If the null is rejected, then the fixed effect model must be run again with time for all the dummies to check the robustness of the results with that of pooled regression. After that, the Wald test is applied to finalize the decision between fixed effect model or pooled regression model to be used.

However, these models have few limitations, that is, they don't answer the issue of endogeneity in the variables. Endogeneity refers to simultaneous causality or reverse causality among dependent and independent variables at the same time. Specially in case of studies related to CSR, there is a possibility that more socially responsible firms will have better board diversity, thus in such kind of cases, the fixed effects model is not appropriate. Thus, to overcome this problem of endogeneity, instrumental variable estimation approach is considered to be the robust one. A common IV estimation in panel data models is to use (Arellano & Bond, 1991) the generalised method of moments (GMM) estimator. It is based on fewer assumptions as compared to the random effect model and takes care of the endogeneity issue as compared to the fixed effect model. The following regression model, for studying the overall relationship between the independent and dependent variables, has been used :

$$CSR\_S = \beta_0 + \beta_1 ROA + \beta_2 ROE + \beta_3 Age + \beta_4 Size + \beta_5 P\_WD + \beta_6 D\_WD + \beta_7 Onef + \beta_8 Twof + \beta_9 Threef + \beta_{10} Fourf + Industry\ Dummy + Time\ Dummy + \varepsilon$$

Analysis and Results

The analysis has been done in parts, that is, firstly the relationship of board diversity with respect to women directors and financial performance indicators has been analyzed. Next, we examine the relationship of board diversity with the CSR spending of the firms followed by examining the relation of financial performance and CSR spending. Finally, interaction effect of board diversity and financial performance on the CSR spending of the firms has been evaluated. The analysis has been done by using EVIEWS 9. Descriptive statistics of the variables used in the study has been presented in Table 2. The average CSR spending done by the firms in 5 years was ₹ 70.3 crores, with maximum being ₹ 760.58 crores. The sample consists of companies with minimum board size of 5 members and maximum of 24 members.

Board size average of 11.5 indicates that on an average, from 2014 – 2019, around 11 directors were serving on the board. Among them, almost all of the firms had at least one-woman director, however, there are firms with no woman director as well even after the mandatory requirement. The sample also comprises of firms in which women directors occupied as good as four positions. Proportion of women directors on board has a mean of 32.3%, depicting that on an average, 32.3% of the independent directors on board were women. Approximately 6.3%, 2.7%, 2.1%, and 0.5% of firms had one, two, three, and four women directors. Financially, this set of firms had average ₹ 3,467 crores adjusted profit after tax, 43 years of age since incorporation, with ROA and ROE of

Table 2. ***Descriptive Analysis***

Variables	Mean	Maximum	Minimum	Std. Dev.
CSR_S	70.298	760.580	0	113.421
ROA	9.031	77.610	–27.40	10.989
ROE	15.590	106.910	–105.94	20.257
Age	43.937	111.00	8.00	24.107
Size	10.294	13.212	7.118	1.268
P_WD	0.323	0.333	0.307	0.014
Onef	0.063	0.200	0.000	0.049
Twof	0.027	0.250	0.000	0.062
Threef	0.021	0.333	0.000	0.072
Fourf	0.005	0.333	0.000	0.040

Table 3. ***VIF Results***

ROA	*ROE*	*Age*	*Size*	*P_wd*	*Onef*	*Twof*	*Threef*
4.92	4.36	1.13	2.41	3.54	3.48	3.51	4.17

Table 4. ***GMM Results of Board Diversity on Financial Performance***

Variables	Model 1 - ROA	Model 2 - ROE
C	31.953*	23.651*
Age	– 0.461*	–0.002
Size	–1.349	2.343*
D_WD	0.891*	0.795*
P_WD	5.404*	4.592*
Onef	1.429	2.427
Twof	–0.917	–0.758
Threef	–2.923	–3.765
Industry Dummies	Yes	Yes
Time Dummies	Yes	Yes
No. of Cross Sections	80	80
No. of Time Series	4	4
Adjusted R^2	0.621	0.635
F Stats (Prob.)	<0.0001	<0.0001

Note. *Significant at the 0.05 level.

9.03% and 15.59%, respectively. The multicollinearity has also been checked for all the variables and the same is found to be under five as shown in Table 3.

Table 4 tests the hypotheses H_1–H_8, that is, impact of board diversity on the financial performance of the firms. The equations (1) and (2) have been developed for analyzing the relationship between the variables.

$$ROA = \beta_0 + \beta_1 Age + \beta_2 Size + \beta_3 P\_WD + \beta_4 D\_WD + \beta_5 Onef + \beta_6 Twof + \beta_7 Threef + \beta_8 Fourf + Industry\ Dummy + Time\ Dummy + \varepsilon \quad \text{..... (1)}$$

$$ROE = \beta_0 + \beta_1 Age + \beta_2 Size + \beta_3 P\_WD + \beta_4 D\_WD + \beta_5 Onef + \beta_6 Twof + \beta_7 Threef + \beta_8 Fourf + Industry\ Dummy + Time\ Dummy + \varepsilon \quad \text{..... (2)}$$

Model 1 concludes that ROA is significantly impacted by the age of the firm and proportion of women directors. Except for the age of the firm, rest of the significant variables have a positive impact. These models suggest that presence of women on board has a positive effect on the financial performance of firms. This result is in line with the findings of Carter et al. (2010) and Jurkus et al. (2011), stating that the proportion or percentage of women directors on board has a direct relationship with the financial performance of a firm. Also, as the proportion of women directors increases, the ROA increases. Quantum impact of proportion of women directors has been more as compared to other variables of board diversity on the ROA. Oba and Musa (2012) also showed in their findings that presence and proportion of women directors had a positive impact on the financial performance of the firms measured by return on capital employed. However, in our study, ROA has been indifferent to the specific number of female members on board, in particular, which is contradictory to the results of Oba and Musa (2012) and Bear et al. (2010). Their studies concluded that as the number of women directors increased in firms, the financial performance of the firms improved.

As the age of a firm increases, the ROA decreases as depicted by the negative relation between the two. The argument in this support is, as a firm becomes old, competition blooms in the market, innovation precedes products, assets become few and old, and thus, to retain the performance, the firm must employ new initiatives and spend more on research and development.

Model 2 also has similar results as Model 1, however, ROE is not significantly impacted by the age of a firm. It is rather the size of a firm that is significant in impacting the ROE, that is, as the total assets (proxy of size) of a firm increase, the return on its equity increases. The overall proportion of women directors has a significant impact on the ROE as compared to the number of women directors. These results support the findings of Carter et al. (2003), Erhardt et al. (2003), and Silva Júnior and Martins (2017), that is, overall presence of women directors on board positively and significantly impacts the financial performance of firms. Hence, H_1–H_4 are supported by the results of the Models 1 and 2, that is, presence of women directors and proportion of women directors significantly impact the ROA and ROE of the firms. However, H_5 and H_6 have been rejected, that is, firm performance is indifferent of number of women directors on board.

Models 3 – 7 show the GMM results of board diversity and financial performance on the CSR spending of firms (Table 5). In the Model 3, all the board diversity variables are added to analyze their impact on CSR spending by the firms. In other words, presence of women directors and proportion of the firms having one woman, two women, and three women directors on board are introduced in Model 3 along with other control variables as presented in equation 3.

$$CSR = \beta_0 + \beta_1 Age + \beta_2 Size + \beta_3 P\_WD + \beta_4 D\_WD + \beta_5 Onef + \beta_6 Twof + \beta_7 Threef + Industry\ Dummy + Time\ Dummy + \varepsilon \quad \text{..... (3)}$$

The results conclude that age and size are significant and have a positive impact on CSR spending. The dummy variable and proportion of women directors have been positively significant. However, as in earlier models, the quantum impact of proportion of women directors has been more as compared to just presence of women directors. This confirms with the findings of existing literature that, as the proportion of women directors increase on boards, firms become more socially responsible (Bruna et al., 2014 ; Chen & Wang, 2011 ; Davis, 1973 ;

Table 5. ***GMM Results of Board Diversity, CG, and Financial Performance on CSR***

Variables	Model 3	Model 4	Model 5	Model 6	Model 7
C	50.69**	48.23**	48.13**	49.84**	49.21**
ROA	-	0.146*	-	-	-
ROE	-	-	0.248*	-	-
Age	0.07*	0.09*	0.15*	0.06*	0.12*
Size	0.75**	0.78**	0.79**	0.82**	0.85**
P_WD	0.675*	-	-	-	-
D_WD	0.028*	-	-	-	-
Onef	0.190	-	-	-	-
Twof	0.185	-	-	-	-
Threef	1.58*	-	-	-	-
*ROA*P_WD*	-	-	-	0.32*	-
*ROA*D_WD*	-	-	-	0.21	-
*ROA*Onef*	-	-	-	0.08	-
*ROA*Twof*	-	-	-	0.05	-
*ROA*Threef*	-	-	-	0.10*	-
*ROE*P_WD*	-	-	-	-	0.37*
*ROE*D_WD*	-	-	-	-	0.31
*ROE*Onef*	-	-	-	-	0.09
*ROE*Twof*	-	-	-	-	0.07
*ROE*Threef*	-	-	-	-	0.17*
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes
No. of Cross Sections	80	80	80	80	80
No. of Time Series	4	4	4	4	4
Adjusted R^2	0.690	0.712	0.689	0.724	0.751
F Stats (Prob.)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Note.* & ** show significance at 0.05 & 0.01 levels, respectively.

Hyun et al., 2016 ; Setó - Pamies, 2015). Hypotheses H_7 and H_9 propose that board diversity is measured by presence of women directors and proportion of women directors significantly impacts CSR spending of the firms. Model 3 supports these hypotheses, that is, with women on board, firms become more socially oriented and also as their proportion with respect to board size increases, there is greater impact on the CSR spending of the firms. Hence, based on the results, H_7 and H_9 cannot be rejected. Hypothesis H_8 proposes that the greater the number of women directors, the better is the CSR spending. This has been tested by the Model 3, which suggests that firms are indifferent in case of one to two women directors on the board, and there is not much impact on the CSR spending. However, as the number of women directors increase to three or more (which in our set of companies is four), the CSR spending increases manifolds. The coefficient of three women directors (*threef* = 1.27) is quite high as compared to coefficients of *onef* and *twof*. Hence, H_8 fails to be rejected, that is, as the women directors on board increases to three or more, the CSR spending is positively impacted. Thus, this result is in line with the studies of Williams (2003) and Singh et al. (2008), which concluded that with more women on board, firms become more sensitive towards their CSR practices and initiatives.

The impact of the financial performance, measured by the ROA and ROE, on CSR has been measured by Models 4 and 5 along with the effect of control variables – age and size of the firms. Equations 4 and 5 have been used to analyze the relationship with the help of panel data regression.

$$CSR = \beta_0 + \beta_1 Age + \beta_2 Size + \beta_3 ROA + Industry\ Dummy + Time\ Dummy + \varepsilon \quad \text{.....(4)}$$

$$CSR = \beta_0 + \beta_1 Age + \beta_2 Size + \beta_3 ROE + Industry\ Dummy + Time\ Dummy + \varepsilon \quad \text{.....(5)}$$

ROA and ROE both are significant in impacting the CSR spending of the firms. The overall quantum of effect on CSR spending has been the highest for the size of the firm measured by log of total assets (0.75). Hypotheses H_{10} and H_{11} propose that there is a positive impact of ROA and ROE on the CSR spending. Models 4 and 5 conclude that both ROA and ROE are statistically significant with $p < 0.05$. Hence, we fail to reject the null hypotheses H_{10} and H_{11}. Thus, overall, these findings from Models 4 and 5 conclude that there is a significant impact of financial performance on the CSR spending of the firms. The studies of Turban and Greening (1997), Van Beurden and Gössling (2008), and Choi et al. (2010) also concluded that CSR had a positive relation with the financial performance of firms and our results also support their findings.

$$CSR = \beta_0 + \beta_1 Age + \beta_2 Size + \beta_3 ROA*P\_WD + \beta_4 ROA*D\_WD + \beta_5 ROA*Onef + \beta_6 ROA*Twof + \beta_7 ROA*Threef + \beta_8 ROA*Fourf + Industry\ Dummy + Time\ Dummy + \varepsilon \quad \text{.....(6)}$$

$$CSR = \beta_0 + \beta_1 Age + \beta_2\ Size + \beta_3 ROE*P\_WD + \beta_4 ROE*D\_WD + \beta_5 ROE*Onef + \beta_6 ROE*Twof + \beta_7 ROE*Threef + \beta_8 ROE*Fourf + Industry\ Dummy + Time\ Dummy + \varepsilon \quad \text{.....(7)}$$

Table 6. ***Hypotheses Testing Results***

Hypotheses	Result
H_1 & H_2 : There is a positive relation between presence of women directors on board and ROA/ ROE.	Fails to be rejected
H_3 & H_4 : There is a positive relation between the proportion of women directors on board and ROA/ ROE.	Fails to be rejected
H_5 & H_6 : The greater the number of women directors on board, the better is ROA/ ROE.	Rejected
H_7: There is a positive relation between women directors on board and the CSR of firms.	Fails to be rejected
H_8 : The greater the number of women directors on board, the better is the CSR of firms.	Fails to be rejected
H_9 : There is a positive relation between the proportion of women directors on board and the CSR of firms.	Fails to be rejected
H_{10} & H_{11} : There is a positive impact of ROA/ROE on the CSR of firms.	Fails to be rejected
H_{12} & H_{15} : ROA/ROE moderates the relationship between presence of women directors and the CSR.	Rejected
H_{13} & H_{16} : ROA/ROE moderates the relationship between proportion of women directors and the CSR.	Fails to be rejected
H_{14} & H_{17} : ROA/ROE moderates the relationship between number of women directors and the CSR.	Fails to be rejected

In Models 6 and 7, the interaction effect of financial performance between board diversity and CSR has been analyzed. The hypotheses $H_{12} – H_{17}$ are tested for estimating the interaction effect using the equations 6 and 7. Similar results have been obtained as in Models 1 – 5, thus confirming the robustness of the findings. The results confirm the presence of mediation effect of financial performance on the relationship of board diversity and CSR spending. Both the models conclude that as the proportion of women directors increase, the ROA & ROE increases, and thus, CSR spending of the firms improves to a greater extent. However, there is a small change with respect to significance of dummy of women directors along with ROA and ROE on CSR spending. The mere presence of women directors does not mediate the relationship between ROA/ROE and CSR spending. Hence, it can be said that as financial performance parameters interact with the board diversity parameters, the proportion of women directors become more significant rather than merely having a woman on board. Thus, firms with more women directors have greater impact on the financial performance, which in turn leads to better CSR practices and greater CSR spending. These results have been tested for robustness and add a new vertical to the existing literature. Existing research studies have not focused on the interaction effect among board diversity, financial performance, and CSR. Hence, our study can be used as the base for further analyzing the importance of women on board for analyzing the overall financial health and social responsibility practices of the firms. Table 6 summarizes the results of the hypotheses testing.

Conclusion

This research focuses on analyzing the relationship between board diversity measured by proportion and number of women directors on board on the CSR spending of the firms. Also, impact of financial performance parameters, that is, ROA, ROE, age, and size of the firms on CSR spending are also analyzed. Panel data of 80 companies listed on BSE 100 index were taken for the period starting from April 1, 2014 – March 31, 2019. Thus, the panel data had 80 cross sections, five-time series, and 400 observations in total. Fixed effect panel regression has been confirmed by the Hausman test for the hypothesis testing. However, due to the problem and possibility of endogeneity, GMM model has been finally used. A total of 17 hypotheses were developed based on four objectives of the study with respect to relation of board diversity and financial performance with CSR spending and relation of board diversity with financial performance. These hypotheses are tested by using seven regression models, which almost give similar results. It has been concluded that presence and proportion of women directors on board plays a significant role in impacting the CSR activities of the firms. As the proportion of women directors increases, the CSR spending of the firms increases. There has been a significant and positive relationship between the number of women directors and CSR spending. Hence, with the increase in the number of women directors to three or four, CSR spending improves. In terms of the financial variables, ROA, age, and size of the firm have a significant impact on the CSR spending. When the relationship between financial performance and board diversity is analyzed, it is found that ROA is positively impacted by board diversity and negatively impacted by age of the firm. Similarly, ROE is positively impacted by board diversity as measured by proportion of women directors on board and size of the firm measured by total assets.

Managerial Implications

This study highlights the importance of the provisions of mandatory CSR spending and appointment of at least one-woman director on board. As evident from the results of the findings, the companies were not complying with the mandatory regulations since there are no stringent penalties for non-compliance. In the initial years of the study, there was lack of awareness, however, even after 5 years of implementation of the provisions, the reporting and enforcement from the end of the companies is still not effective. It thus becomes necessary for the policy

makers to keep a vigilant check on the companies post implementation and impose fines or penalties depending upon the nature of non-compliance. This will ensure effective implementation of the regulations. For the CEOs and strategic managers, who frame the policies of the firms, this study provides a clear evidence that an effectively composed and managed board leads to better firm performance.

Limitations of the Study and Scope for Further Research

The data were taken from 2014 only as the new amendment with respect to corporate governance guidelines has been applicable from that period. The present study has focused on only one dimension of the corporate governance guidelines, that is, the women directors, however, other criteria can be included to have a comprehensive view of the relationships. In this research, we have shown the impact on the accounting performance measures of the firms, however, other performance parameters have been excluded. Thus, future research can widen the research by analyzing the impact on empirical performance measures as well.

Authors' Contribution

Dr. Neha Kumar conceived the idea and developed the framework and theoretical model of the study. Dr. Parul Kumar conducted the empirical analysis of the model using Eviews 9 and critically appraised it based on the existing literature. Dr. Devesh Nigam verified the analytical methods and supervised the study.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter, or materials discussed in this manuscript.

Funding Acknowledgement

The authors received no financial support for the research, authorship, and/or for the publication of this article.

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