

DOI: 10.28934/jwee22.12.pp97-116

JEL: O34, M14, L60, L80

ORIGINAL SCIENTIFIC PAPER

# Board Gender Diversity and Intellectual Capital Performance of Firms in India



---

Bharathi Kamath

University of Mumbai, Mumbai School of Economics and Public Policy, Mumbai,  
India

---

## ABSTRACT

*The study analyses the impact of female representation on boards of top Indian firms and examines its impact on the Intellectual Capital (IC) performance of these firms. A sample representing firms across different industries is studied for a five-year period from FY 2014-15 to 2018-19. The data is analyzed using panel regression wherein BLAU's Index, Shannon's Index of gender diversity and the percentage of independent women directors are taken as explanatory variables. The IC performance is measured using Value added intellectual capital (VAIC) and its sub-components viz. Human Capital Efficiency (HCE), Capital expended Efficiency (CEE) and Structural Capital Efficiency (SCE). IC performance results are a clear indication that at existing levels of women representation, gender diversity or IWD is not showing any specific and strong impact for the sample firms. The result for IC sub-components is mixed. The CEE is seen to be significantly influenced by the gender diversity on boards, whereas the HCE and SCE are not associated with it.*

**KEY WORDS:** *gender diversity, corporate governance, women on boards, intellectual capital performance, India*

## **Introduction**

Gender diversity is a widely discussed subject across corporates in India as the new corporate governance regulation mandates minimum representation of women on the board of directors. Diversity, empowerment and inclusion go together especially when it is related to gender and ethnicity. There have been several studies that have attempted to find the impact of gender and ethnic diversity on a firm's performance in different countries and industry contexts, and the results have been mixed (Adams & Ferreira, 2009; Christiansen et al., 2016; Arora & Sharma, 2016) Diversity on board is also studied in terms of the composition of the board, age, education, professional experience, CEO duality and similar aspects.

The female population in the world is normally seen as not getting represented either in the formal workforce, top positions and boards of firms. This phenomenon is seen both in developed and emerging economies. "Women comprise 49% of Asia's population and 36% of GDP, but only 12% of board seats, according to BofAML" (Bank of America, Merrill Lynch) market research. "As of 2015, about 17% of S&P 1500 boards still have no women directors and 35% have only one woman director. The lack of gender diversity becomes more severe in smaller firms" (Wright, 2013).

The dismal representation on board is attributed to several reasons including cultural and social aspects. One of the several factors that are recognized to be a major hindrance is the belief that women lack the requisite knowledge and skills. One more factor that poses a serious concern, especially in India, is that women join the workforce at lower levels of management, and during the actual growth phase of their career take a long break for meeting the family responsibilities, therefore not many women are able to make it to the top management during the rest of their career.

However, in recent years, many countries have taken the legal route to ensure that women are represented adequately on board of firms as voluntary inclusion was rarely happening. The companies are inducting women on board only as tokenism, for compliance to legal mandate, some firms are appointing their own family members or closely known people so that there are not many hindrances in their functioning, and therefore not involving them much in the actual decision making. If the firms are demonstrated empirically that the representation of women on board is beneficial in more than one way, there may be a possibility of an increase in

the representation. Representation of women on board is important for getting different perspectives for effective decision-making (Zelechowski & Bilimoria, 2004). A balanced board is always considered better than a skewed one for improved performance. In this context, the present study analyses and examines the female representation on boards and its impact on the Intellectual Capital (IC) performance of these firms.

The significance of the present study can be highlighted by the fact that there are very few studies that focus on the impact of gender diversity on boards on the intellectual capital performance of the firms, and there are no studies in the Indian context. This paper proves as a starting point in stressing the need for an inclusiveness policy in the composition of boards. The problem that this paper attempts to address is that despite the guidelines mandated having a fixed number of women directors among the listed firms; compliance seems to be slowly picking up.

This brief introduction is followed by the review of previous literature to identify the gap and the contribution of the present study to literature extant. The research methodology outlining the models used in this study, a detailed explanation of each variable used, and the sample size is provided. An overview and analysis of gender diversity are done before presenting the results of panel regression, this is followed by major conclusions, limitations and policy implications.

The present study proposes the following *objectives*:

- a. To explore the impact of women representation on board of Indian companies on the Intellectual capital
- b. To analyze the impact of women representation on board on Intellectual Capital sub-components (Human capital, structural capital and relational capital) performance.

## **Review of Previous Literature**

The systematic review of previous literature is arranged in the following manner. Studies that focused on the need and significance of gender diversity on board are discussed, this is followed by studies that clearly found a direct impact of gender diversity on performance. Some studies which found an inverse association, neutral impact and others that looked at specific dimensions of gender diversity rather than just the representation is presented in the latter half. Lastly, very few studies that refer to IC performance and gender diversity are reviewed.

Abad et al. (2017) report that gender diversity in the boards reduces the information asymmetry which implies a higher level of disclosure to the stakeholders. Therefore, the authors suggest a higher representation of women on board to enable higher quality and quantity of information about the performance of firms. Jurkus et al. (2011) find that gender diversity has an impact on reducing agency costs; however, the diversity is extremely significant only when there is no strong external governance. Indeed, female directors are more likely to raise more questions than the other directors and might be also more active and tougher monitors (Farrell & Hersch, 2005; Adams & Ferreira, 2009; Carter et al., 2010).

Reguera et al. (2017) observe that Spain in spite of being the second country in the world that has legal sanctions for including women on the board of firms, their representation still remains below the expected levels. However, their proportion has increased tremendously since the law has been passed. The performance of firms with women representatives on boards has seen an increasing trend. Arora and Kumar (2016) observed that most European countries such as Norway, the UK, Sweden and Finland gave a better representation to women on board. Even the developed countries like the USA, Canada and Australia have very less gender representation. In a study of around 1466 NSE listed companies; the researchers found that only 9 percent representation was given to women on board. The representation was a meager 4.5 percent in the unlisted companies. Vaibhavi and Soundarya (2015) note that in spite of the companies act in India mandating the inclusion of women directors by firms listed on stock exchanges, there is a gross underrepresentation even in India. They recommend intervention by higher legal authority as research has time and again super imposed the direct impact of the inclusion of females on the board.

Adams and Ferreira (2009) study the US firms and find that female directors do contribute to the firms' strict monitoring and performance. The paper also studies the impact of gender diversity on observable board inputs, such as attendance and additional committee assignments. Their study also suggests that the average gender quota tends to reduce performance. Khan and Vieito (2013) on the other hand find that CEO gender has a positive impact on firm performance in the US. Christiansen et al (2016) in their analysis of around 2 million European firms find that there exist country differences as well as sector differences in the representation of women in managerial positions and corporate boards. Their results find a high

correlation between firm performance and gender representation in senior management. Further, they reveal that the positive association is quite strong in industries that require high levels of creativity, skills and critical thinking i.e. knowledge-intensive industries

Abdullah and Ismail (2013) analyze the top 100 non-financial firms of Malaysia to find an inverse association between gender diversity and firm's performance for the year 2007; Campbell and Vera (2008) find that both in terms of percentage and indices the female participation on board has a direct impact on the value of firms in Spain. Though the move towards higher female representation is legislative in nature rather than organic, the result is positive in terms of economic gains for the stakeholders. Low et al. (2015) in their study of Asian firms from four countries observe a direct relationship between gender diversity and firm performance. Ahmadi et al. (2018) also suggest gender diversity among other board characteristics such as CEO duality, Board independence and CEO's tenure to be a significant influencer on performance for firms in France. Mahadeo et al. (2012) observe that women are poorly represented on boards of Mauritius companies. The reason for this is quoted as the social setup in Asian countries where the role of women in the workforce is pre-defined. However, the result of this study finds that a gender-diverse board has a direct significant impact on the performance of firms. Lückcrath-Rover's (2013) study of Dutch companies finds representation on board as low as 5 percent. This study reveals that firms with female directors on board do perform higher than other firms that do not have females on their boards. Arora and Sharma (2016) study the impact of board characteristics on the financial performance of firms in India and find that the Board size does have a strong influence on performance; Mukherjee and Singh (2014) opine that "firms with women directors have a greater return on equity i.e. 4.4%, while firms with zero gender diversity show a ROE of 1.8% on an average per year. The results were seen to be applicable to the family-run companies as well as the private companies". Thus, gender representation on board studied for different time periods has shown that they increase the stock value and profitability of firms in some countries and industries while it does not have an impact in others.

Smith et al. (2006) in their research of 2500 Danish firms find that there is a direct association between female representation and their qualifications in a firm's financial performance. Marimuthu and Kolandaisamy (2009) could not establish any consistent relationship

between gender diversity and a firm's profitability over time series. Opstrup and Villadsen (2014) have an interesting observation that gender diversity in the top management by itself will not result in the better financial performance of firms. Gender diversity has to be complemented and supported by the overall structure of the organization. Their research in Denmark finds a direct association in organizations that encourages cross-functional teamwork. Pletzer et al. (2015) in the meta-analysis find that most studies find that the gender representation in the firms across all countries has been significantly low. They also observe that most studies find that gender representation automatically without considering other factors does not result in higher performance of firms.

Daunfeldt and Rudholm (2012) find that gender diversity has a lagged inverse effect on the profitability of Swedish firms. Therefore, they suggest that it should not be made mandatory for the firms to have more women directors on board. Nguyen et al. (2015) find a pattern in the relationship between gender diversity and firm performance in Vietnam. They reveal that till the threshold level of 20 percent is reached, there is a significant direct relationship observed, thereafter the relationship is not very pronounced and tends to reduce the performance.

Some studies like that in Carter et al. (2010) report no support through evidence of any link (neither direct nor inverse) between gender and ethnic diversity on a firm's financial performance (Tobins Q and ROA) in the USA. Chapple and Humphrey (2014) in their study of Australian firms find that though there is no general evidence to support the improvement in firm financial performance with an increase in female representation, however, there has been positive evidence from very few specific industries. Ciavarella, (2017) found that overall diversity in boards doesn't have any significant relationship with firm performance in European countries; however, the researcher finds that at the executive level, higher female representation does have a strong direct impact. Rodríguez et al. (2012) also are of the opinion that women perform better when the educational background and working conditions are similar to both; they recommend a balanced board for the best results.

Nadeem et al. (2017) find that gender diversity has no impact on IC performance for the 906 listed firms in China, when endogeneity was taken in while estimation. Better monitoring of performance and higher disclosure of Intellectual capital information by including female representation on board was found in Spanish firms (Tejedo et al., 2017). Van der Zahn

(2006) in the study of South African firms find that if women are designated as insiders, then there is an inverse relationship between women directors on board and intellectual capital performance; the association between IC performance and the representation turns positive if women are designated as outsiders. Nadeem et al. (2019), find a direct relationship between ICE, its components and female representation on board in top 500 listed companies in the UK. Based on their findings they recommend that there should be a legal increase in the representation of women on board. Swartz and Firer (2005) find no significant relationship between gender diversity and a firm's intellectual capital performance in South Africa

So, we can see from the above literature that some studies find a direct association between gender diversity and a firm's performance, some find that the association is inverse and some researches find a neutral impact of gender diversity on financial performance. The results also vary between countries. There are limited studies to analyze the impact of gender diversity on the IC performance of the firms. In the Indian context, there have been no studies that have focused on this area.

Following testable hypotheses based on the research objectives are framed.

*H1*: there is a significant direct relationship between the gender diversity and intellectual capital performance (ICE)

H1a: there is a direct association between female representation and HCE

H1b: there is a direct association between female representation and SCE

H1c: there is a direct association between female representation and RCE

## **Research Methodology**

*Sampling*: Since this is the first of its kind study, a small sample representing different sectors for panel data of 5 years used was found appropriate for this study. Therefore, the top 50 firms which are listed on NSE (National Stock Exchange) and classified as NIFTY50 are taken up five-year period from FY 2014-15 to FY2018-19. The sampling technique is non-probability sampling. The sample is a group of firms that has been pre-selected by the stock exchange to reflect the performance of high Mcap in the country. This group of fifty firms is revised based on the changing





(Diversity Index (Blau/Shannon) and Proportion of IWD), and firm identification and characteristics (age, type, size and leverage)

The dummy for women on board, yes/no cannot be used, as it was observed that since there is a legal requirement of women's representation on board, all firms in the sample do have women as directors on their board. The ratio of women on board has been used by several studies. However, it is considered not a good means of measuring diversity as the decision-making of the women on board may be constrained by these members being non-independent. Therefore, the proportion of IWD on board may be a better way to understand the implication of their presence at the policy-making level.

*Dependent Variables:* The main focus of the paper is analyzing the impact of gender diversity on Intellectual capital performance which is measured using Value added intellectual capital (VAIC) and its sub-components viz. Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Expended Efficiency (CEE)

Thus, VAIC includes capital spent on physical & financial assets and intellectual capital i.e. human and structural capital.

The detailed definition and measurement of each of the independent and dependent variables are provided in Table 1 below.

*Table 1: Independent and Dependent Variables used in the Panel Estimation*

| S. No | Variable                                    | Measured as   |
|-------|---|---|
| 1     | Value added Intellectual Coefficient (VAIC) | $VAIC_i = HCE_i + SCE_i + CEE_i$  |
| 2     | Human Capital Efficiency (HCE)              | $HCE_i = \frac{VA_i}{HC_i}$<br>Human Capital Efficiency Coefficient for the firm i (HCE <sub>i</sub> ); VA <sub>i</sub> , value added by the firm; HC <sub>i</sub> , total salary and wage costs for the firm i.        |
| 3     | Capital Expended Efficiency (CEE)           | $CEE_i = \frac{VA_i}{CE_i}$<br>Capital Expended Efficiency Coefficient for Firm <sub>i</sub> (CEE <sub>i</sub> ); VA <sub>i</sub> , Value Added for the firm; CE <sub>i</sub> , book value of the net assets for firm i |

| S. No | Variable                             | Measured as  |
|-------|--------------------------------------|--|
| 4     | Structural Capital Efficiency (SCE)  | $SCE_i = \frac{SC_i}{VA_i}$  |
|       |                                      | $SC_i = VA_i - HC_i$   |
|       |                                      | Structural Capital Efficiency for the firm i (SCE <sub>i</sub> ); VA <sub>i</sub> , Value added for the firm i; HC <sub>i</sub> , total salary and wage costs for the firm i.  |
| 5     | Value added (VA)                     | $VA_i = W_i + I_i + DP_i + D_i + T_i + M_i + R_i$  |
|       |                                      | where VA <sub>i</sub> , Value Added by firm i computed as sum of; I <sub>i</sub> , interest expense; DP <sub>i</sub> , depreciation expenses; D <sub>i</sub> , dividends; T <sub>i</sub> , corporate taxes; M <sub>i</sub> , equity of minority shareholders in net income of subsidiaries; R <sub>i</sub> , retained earnings by the firm |
| 6     | Board Size (BSIZE)                   | Number of members on the board of the firm for each of the FY2014-15 to FY2018-2019  |
| 7     | Independence of Board (BIND)         | Proportion of independent directors on board to total board members  |
| 8     | CEO Duality (CEOD)                   | 0 if Chairperson and Managing Director is not the same person, 1 if Chairperson and Managing Director is the same person.  |
| 9     | Age of firm (AGE)                    | The age is based on their year of incorporation till the year 2018. i.e. a firm incorporated in the year 2000 would be aged as 18 years.   |
| 10    | Type of firm (TYPE)                  | Firms classified as manufacturing (0) and services (1) based on their primary business.  |
| 11    | Size of firm (SLOG)                  | Log of Sales   |
| 12    | Leverage (LEV)                       | Ratio of total liabilities to total equity   |
| 13    | Independent women director (IWDPROP) | Ratio of total independent women directors on board to total independent directors   |
| 14    | BLAU Index (BI)                      | $BI = 1 - \sum_{i=1}^2 P_i^2$ , where i=(1, 2), P <sub>i</sub> = proportion of board members of each category  |
| 15    | Shannons Index (SI)                  | $SI = -\sum_{i=1}^2 P_i \ln P_i$ , P <sub>i</sub> = proportion of board members of each category   |

There are different measures of gender diversity used by various papers. The most common is estimating the percentage of women directors

in the total directors. The other is just to incorporate just whether women on the board are present or not by using a dummy. These two measures do not capture the actual diversity if the entire sample consists of at least one woman per company on board or if some single-member board consists of all women. Therefore, the diversity index is used to capture the intensity of board diversity.

This paper identifies two such indexes which are commonly used for measuring gender diversity. The first one is the Blau index and the other is the Shannon index. Both indexes are considered complementary to each other. In the case of the Blau index, the values can range between 0 and 0.5, when the proportion of males and females are equal; we get the index at 0.5 and the diversity is said to be maximum. In the Shannon Index, the value would range between 0 and 0.69 as we are considering only male and female (2 groups) as classification. “The Shannon index is more sensitive to small changes in the gender diversity of boards because it is a logarithmic measure”. (Abad et al., 2017)

## **Descriptive Statistics**

Basic descriptive statistics of the dependent and independent variables used in the model are presented in table 2. Among the dependent variable, VAIC of all firms is 4.858; HCE has the highest mean among sub-components at 4.117 followed by SCE at 0.488 and lastly CEE at 0.253. The mean leverage of all companies is within the acceptable standard. The productivity of all firms is around 0.743 on average.

The number of board members of any company was around 13 on an average, with some like State Bank of India (SBI) having 32 members and some firms just having six members on their board. The maximum number of women on board by any company was five on one hand and others did not have even a single women representation on board. A maximum of one-third of the board has been represented by women among all companies, the average being just 0.13.

*Table 2: Descriptive Statistics: Dependent and Independent Variables*

| S. No | Variable                    | Mean   | Minimum | Maximum | Std. Dev. |
|-------|-----------------------------|--------|---------|---------|-----------|
| 1     | LEV                         | 1.324  | 0.020   | 7.540   | 1.308     |
| 2     | SALESLOG                    | 12.493 | 7.406   | 15.613  | 1.383     |
| 3     | CEE                         | 0.253  | -0.089  | 1.584   | 0.276     |
| 4     | HCE                         | 4.117  | -13.714 | 45.024  | 5.433     |
| 5     | SCE                         | 0.488  | -19.190 | 5.109   | 1.596     |
| 6     | VAIC                        | 4.858  | -19.139 | 46.985  | 5.909     |
| 7     | Women on board              | 1.668  | 0       | 5       | 0.934     |
| 8     | Total board size            | 13.284 | 6       | 32      | 3.713     |
| 9     | W-Proportion                | 0.130  | 0       | 0.364   | 0.072     |
| 10    | BLAU index                  | 0.216  | 0       | 0.463   | 0.095     |
| 11    | Independent directors total | 6.708  | 0       | 13      | 2.038     |
| 12    | Independent proportion      | 0.522  | 0       | 0.833   | 0.139     |
| 13    | IWD                         | 1.088  | 0       | 4       | 0.807     |
| 14    | IWD Proportion              | 0.171  | 0       | 0.6     | 0.129     |
| 15    | Two or more IWD             | 0.204  | 0       | 1       | 0.404     |
| 16    | Shannon's index             | 0.365  | 0       | 0.655   | 0.126     |
| 17    | Age of firm                 | 46.540 | 13      | 113     | 25.343    |

*Source: Estimated by the author*

The Blau index shows clearly that only a few companies have diversity on their board at the optimum level. On average the index hovers around 0.216; the Shannon index is also averaging at 0.365, and the higher end is 0.65, which is lower than the perfect evenness of 0.69. Firms do have at least one IWD on their board on an average, with a maximum of four IWD by one firm. The firms on average are meeting the statutory requirement of fifty percent of independent directors on board, with some firms having a proportion of as much as 0.83 of independent directors.

## **Results and Discussion of Panel Regression**

The results analyze the impact on intellectual capital and its sub-components' performance.

### **IC Performance and Gender Diversity**

Tables 3 and 4 below present the panel regression results on the impact of gender diversity on intellectual capital and its sub-components performance. It can be observed that all the models specified are statistically significant. The overall intellectual capital performance is highly associated

only with the size of the board (0.274) and CEO duality (2.179). (Kamath, 2019; Buallay and Hamdan, 2019) Both the Blau and Shannon indexes of gender diversity are seen not to be having any statistically significant impact on the IC performance of these firms. It is possible that since the representation of women on board is quite recent in nature, and has been made mandatory by the regulator for listed firms, just their presence in terms of number, which is very small in proportion to the size of the board, may not have been enough to make a significant impact on performance. Similar results were obtained by several earlier studies. (Swartz & Firer, 2005)

The results in the context of IC sub-components are varied in nature. In the case of capital expended efficiency, it is seen that the size of the board (-0.011) has an inverse impact on its performance. CEE of these firms is also associated with debt equity ratio (-0.049) and age (0.001).

*Table 3: Results of Regression- Intellectual Capital Performance*

| <b>Dependent Variables</b>                  | <b>VAIC</b>    |        | <b>CEE</b>     |        | <b>VAIC</b>    |        | <b>CEE</b>     |        |
|---|----------------|--------|----------------|--------|----------------|--------|----------------|--------|
|   |                |        |                |        |                |        |                |        |
| N   | 50             |        | 50             |        | 50             |        | 50             |        |
| Adjusted R <sup>2</sup>                     | 0.134          |        | 0.284          |        | 0.141          |        | 0.294          |        |
| F statistic                                 | 3.669          |        | 9.381          |        | 3.886          |        | 9.838140       |        |
| p-value                                     | 0.000          |        | 0.000          |        | 0.000          |        | 0.000          |        |
|   | <b>t-value</b> |        | <b>t-value</b> |        | <b>t-value</b> |        | <b>t-value</b> |        |
| Intercept                                   | 13.916***      | 4.931  | 0.363***       | 2.628  | 14.432***      | 5.168  | 0.382***       | 2.749  |
| <b>Explanatory Variables</b>                | <b>Beta</b>    |        | <b>Beta</b>    |        | <b>Beta</b>    |        | <b>Beta</b>    |        |
| <b>Size of Board</b>                        | 0.274***       | 3.064  | -0.011***      | -3.218 | 0.281***       | 3.211  | -0.010***      | -3.274 |
| <b>Independence of Directors</b>            | -0.217         | -1.410 | 0.008          | 1.531  | -0.239         | -1.600 | 0.007          | 1.509  |
| <b>Board Activity</b>                       | -0.024         | -0.224 | 0.001          | 0.262  | -0.023         | -0.212 | 0.0007         | 0.124  |
| <b>CEO Duality</b>                          | 2.179***       | 3.513  | -0.007         | -0.296 | 2.122***       | 3.505  | -0.003         | -0.139 |
| <b>Independent Women Directors on Board</b> | -0.155         | -0.056 | 0.191          | 1.418  | -0.370         | -0.141 | 0.176          | 1.362  |
| <b>BLAU Index</b>                           | 0.225          | 0.065  | -0.282*        | -1.678 | --             | --     | --             | --     |
| <b>Shannon Index</b>                        | --             | --     | --             | --     | 0.318          | 0.130  | -0.200*        | -1.729 |
| <b>Service/Manufacturing Sales</b>          | -0.294         | -0.555 | -0.031         | -1.084 | -0.325         | -0.613 | -0.025         | -0.909 |
| <b>Lev</b>                                  | -0.952***      | -3.993 | -0.002         | -0.191 | -0.989***      | -4.289 | -0.002         | -0.233 |
| <b>Age</b>                                  | -0.111         | -0.478 | -0.049***      | -5.501 | -0.131         | -0.567 | -0.047***      | -5.335 |
|   | 0.0002         | 0.027  | 0.001***       | 4.137  | 0.0008         | 0.118  | 0.001***       | 4.203  |

Source: Estimated by the author

The gender diversity index is seen to be statistically significant and has an inverse association with CEE. Blau (-0.282) and Shannon's (-0.200)

both indicate that in the sample firms, the CEE decreases with an increase in gender diversity on boards. Similar results were reported by Nadeem et al., 2019

*Table 4: Results of Regression- Intellectual Capital Performance*

| <b>Dependent Variables</b>                  | <b>HCE</b>     |        | <b>SCE</b>     |        | <b>HCE</b>     |        | <b>SCE</b>     |        |
|---|----------------|--------|----------------|--------|----------------|--------|----------------|--------|
| N   | 50             |        | 50             |        | 50             |        | 50             |        |
| Adjusted R <sup>2</sup>                     | 0.183          |        | 0.087616       |        | 0.189          |        | 0.080363       |        |
| F statistic                                 | 5.317          |        | 2.266296       |        | 5.523          |        | 2.062286       |        |
| p-value                                     | 0.000          |        | 0.015          |        | 0.000          |        | 0.028          |        |
|   | <b>t-value</b> |        | <b>t-value</b> |        | <b>t-value</b> |        | <b>t-value</b> |        |
| Intercept                                   | 13.424***      | 5.812  | 0.564          | 1.049  | 13.763***      | 6.008  | 0.579          | 1.064  |
| <b>Explanatory Variables</b>                | <b>Beta</b>    |        | <b>Beta</b>    |        | <b>Beta</b>    |        | <b>Beta</b>    |        |
| <b>Size of Board</b>                        | 0.239***       | 3.457  | 0.023          | 1.290  | 0.255***       | 3.758  | 0.022          | 1.169  |
| <b>Independence of Directors</b>            | -0.228*        | -1.941 | -0.019         | -0.680 | -0.261**       | -2.279 | -0.022         | -0.772 |
| <b>Board Activity</b>                       | 0.021          | 0.248  | -0.024         | -1.107 | 0.035          | 0.417  | -0.025         | -1.134 |
| <b>CEO Duality</b>                          | 1.818***       | 3.661  | 0.149          | 1.553  | 1.779***       | 3.654  | 0.146          | 1.487  |
| <b>Independent Women Directors on Board</b> | 0.120          | 0.057  | -0.553         | -1.159 | -0.612         | -0.302 | -0.562         | -1.222 |
| <b>BLAU Index</b>                           | -1.243         | -0.472 | 0.780          | 1.186  | --             | --     | --             | --     |
| <b>Shannon Index</b>                        | --             | --     | --             | --     | 0.035          | 0.018  | 0.560          | 1.152  |
| <b>Service/Manufacturing Sales</b>          | 0.274          | 0.649  | 0.041          | 0.379  | 0.261          | 0.618  | 0.024          | 0.216  |
| <b>Lev</b>                                  | -0.929***      | -4.868 | -0.021         | -0.529 | -0.976***      | -5.293 | -0.022         | -0.555 |
| <b>Age</b>                                  | -0.066         | -0.363 | 0.066***       | 3.399  | -0.085         | -0.468 | 0.065***       | 3.210  |
|   | -0.006         | -1.055 | 0.0002         | 0.136  | -0.004         | -0.822 | 0.0003         | 0.161  |

*Source: Estimated by the author*

The model w.r.t human capital efficiency (HCE) is statistically significant ( $p < 0.000$ ). It can be observed in Table 4 that among the independent variables, the size of the board and CEO Duality have a strong direct impact on HCE. The independence of directors (-0.228) is negatively associated with human capital performance. Both independent women directors and the gender diversity index do not influence the HCE. The model of the last sub-component of IC is SCE; it is seen to be having low goodness of fit (0.087) and is seen to be also statistically significant only at 10 percent. It is also observed that none of the characteristics of the board, gender diversity index has any impact on the performance of this IC sub-component. Thus, none of the hypotheses related to IC performance and gender diversity can be accepted.

## **Research and Policy Implications**

There has not been enough evidence yet regarding the association between women representation and IC performance. The results may be justified in terms of the regulations mandating women on board, which are of recent origin. There are many firms that have nominated directors, just to comply with the regulations; others have very few independent women directors. The research results may vary with the passage of time and the broadening of the sample size. Further parameters such as age, educational qualifications, skills, corporate experience, and representation on other companies' boards may be some factors that may be able to explore the relationship in a wholesome manner. Without undermining the significance of the present study, which provides a good starting point for analyzing this area from a multi-dimensional perspective.

As far as the policy implications are concerned, the regulator not only has to mandate the number of women on board, but also take cognizance of the proportion of independent women directors, in large boards, just having one women director doesn't help in enforcing the views and opinions. Besides this, there must be advocacy programs conducted for firms to appreciate and recognize the significance of women representation. Consistent efforts towards gender diversity are expected to bring in new insights and perspectives and help in improving organizational performance in long run. (Siciliano, 1996) "A board of directors without any women is more likely to be missing some key skill sets that could improve the board's advisory effectiveness". (Wright, 2013) The representation of women to bring in diversity should be more voluntary in nature rather than regulatory or for compliance. The practitioners can internally study and design their own requirements of optimal gender mix on the firm's boards for improving performance. The rules cannot change culture and belief patterns.

Concerted effort not only from the regulator but the management of firms and other stakeholders is required to ensure that the representation of women on board improves in every listed company. "The primary argument against board gender diversity is that the board must seek diversity not in terms of gender, but rather with respect to expertise, opinions, and perspectives, since it is heterogeneity in these traits—not gender diversity per se—that improves the firm's long-term value" (Wright, 2013). The results of this study may be limited to the small sample size and period of study. Availability and processing of disaggregated data is a major

constraint. The scope of research in this area is immense in the Indian context; future research can focus on the study of the impact of gender diversity in pre-regulation and post-regulation scenarios. The researcher can take up sector-specific studies and provide inputs to policy makers as to which sector requires higher levels of gender diversity, as all sectors may not respond similarly to changes in board characteristics. There may be studies taken up to include the impact of gender diversity not only at the top management levels, but gender inclusiveness at the middle and general level in specific firms.

## **Conclusion**

The role and significance of women on board of companies have been a subject of research interest across various sectors and country contexts. Whether there should be diversity with regard to gender on board has also been debated by policy makers and researchers. The study of the impact of gender diversity on IC performance has shown mixed results (Adams and Ferreira, 2009; Christiansen et al., 2016; Arora & Sharma, 2016). Though there have been very few studies related to gender diversity and firm performance in India, this is the first study of its kind, which attempts to look at its impact on IC performance and sub-components. IC performance is associated with the size of the board and CEO duality. The characteristics of board and gender diversity do not influence the IC performance for the sample firms in the period of study. Even in the case of sub-components of IC, it is observed that only CEE has a statistically significant relation with gender diversity. HCE shows association with independence and size of the board, whereas no factor of board characteristics influences SCE of these firms. Firm characteristics of size, age and leverage have varying impacts on the IC performance as well as on its sub-components.

Though the results of the study do not provide a strong case for including gender diversity on the board of the firms, as it does not have any impact on the IC performance of the firms; there may be several factors that may be causes for such statistical results as mentioned in the previous sector. Not getting too much influenced by the results of this study, there is still a need to look into this issue of women representation from a different perspective beyond firm performance. The major factor inhibiting the representation and participation of women on board is cultural rather than economic. The efforts of businesses toward gender inclusiveness are also



inconsistent, as observed in our sample where only 20 percent of the firms are voluntarily providing more representation to women than the mandated requirements. Fixing mandatory quotas can only be a starting point for achieving gender parity, the actual role of women in decision making and policy issues is what is to be stressed rather than just their mere presence in numbers. The effort of businesses to improve gender participation and representation at all levels, especially at the middle management level rather than just at the top would help in achieving the much required parity smoothly.

## References

- [1] **Abad, D., Lucas-Pérez, M.E., Mínguez-Vera, A. and Yagüe, J.** 2017. "Does gender diversity on corporate boards reduce information asymmetry in equity markets?", *BRQ Business Research Quarterly*, 20(3): 192-205.
- [2] **Abdullah, S.N. and Ku Ismail, K.N.I.** 2013. "Gender, ethnic and age diversity of the boards of large Malaysian firms and performance", *Jurnal Pengurusan*, 38: 27-40.
- [3] **Adams, R.B. and Ferreira, D.**, 2009. "Women in the boardroom and their impact on governance and performance", *Journal of financial economics*, 94(2):291-309.
- [4] **Ahmadi, A., Nakaa, N. and Bouri, A.** 2018. "Chief Executive Officer attributes, board structures, gender diversity and firm performance among French CAC 40 listed firms", *Research in International Business and Finance*, 44:218-226.
- [5] **Arora and Kumar.** 2016. "Women on Boards: A Gap Analysis of India vis-a-vis World" *Chartered Secretary*, March: 61-67.
- [6] **Arora, A. and Sharma, C.** 2016. "Corporate governance and firm performance in developing countries: evidence from India" *Corporate governance*, 16(2): 420-436.
- [7] **Buallay, A. and Hamdan, A.** 2019. "The relationship between corporate governance and intellectual capital", *International Journal of Law and Management*, 61(2): 384-401.
- [8] **Campbell, K. and Mínguez-Vera, A.** 2008, "Gender diversity in the boardroom and firm financial performance", *Journal of business ethics*, 83(3): 435-451.
- [9] **Carter, D.A., D'Souza, F., Simkins, B.J. and Simpson, W.G.** 2010, "The gender and ethnic diversity of US boards and board committees and firm financial performance", *Corporate Governance: An International Review*, 18(5):396-414.

- [10] **Chapple, L. and Humphrey, J.E.** 2011. "Does board gender diversity have a financial impact? Evidence using stock portfolio performance", *Journal of business ethics*, 122(4): 709-723.
- [11] **Christiansen L., H. Lin, J. Pereira, P. Topalova and R. Turk.** 2016. "Gender diversity in senior positions and firm performance: evidence from Europe", IMF Working Paper, 50.
- [12] **Ciavarella, A.** 2017. "Board diversity and firm performance across Europe", CONSOB Working Papers No. 85.
- [13] **Daunfeldt, S.O. and Rudholm, N.** 2012. "Does gender diversity in the boardroom improve firm performance", *Departamento de Economía de la Universidad de Dalarna*, 781:88.
- [14] **Farrell, K.A. and Hersch, P.L.,** 2005. "Additions to corporate boards: The effect of gender", *Journal of Corporate finance*, 11(1-2): 85-106.
- [15] **Gómez, J.I.M., Cortés, D.L. and Betancourt, G.G.** (2017), "Effect of the board of directors on firm performance", *International Journal of Economic Research*, 4.
- [16] **Jurkus, A.F., Park, J.C. and Woodard, L.S.** 2011. "Women in top management and agency costs", *Journal of Business Research*, 64(2): 180-186.
- [17] **Kamath, B.** 2019. "Impact of corporate governance characteristics on intellectual capital performance of firms in India", *International Journal of Disclosure and Governance*, 16(1): 20-36.
- [18] **Khan, W.A. and Vieito, J.P.** 2013. "CEO gender and firm performance", *Journal of Economics and Business*, 67: 55-66.
- [19] **Low, D.C., Roberts, H. and Whiting, R.H.** 2015 "Board gender diversity and firm performance: Empirical evidence from Hong Kong, South Korea, Malaysia and Singapore", *Pacific-Basin Finance Journal*, 35: 381-401.
- [20] **Lückerath-Rovers, M.** 2013 "Women on boards and firm performance", *Journal of Management & Governance*, 17(2): 491-509.
- [21] **Mahadeo, J.D., Soobaroyen, T. and Hanuman, V.O.** 2012. "Board composition and financial performance: Uncovering the effects of diversity in an emerging economy", *Journal of business ethics*, 105(3): 375-388.
- [22] **Marimuthu, M. and Kolandaisamy, I.** (2009). "Ethnic and gender diversity in boards of directors and their relevance to financial performance of Malaysian companies", *Journal of Sustainable Development*, 3(2): 139-147.
- [23] **Mukherjee Shubham & Namrata Singh.** 2014. "Companies with woman board members make more money", TOI, Oct 27, <https://timesofindia.indiatimes.com/business/india-business/companies-with-women-board-members-make-more-money/articleshow/44943363.cms> (accessed in May 2019).

- 
- [24] **Nadeem, M., Suleman, T. and Ahmed, A.** 2019. "Women on boards, firm risk and the profitability nexus: Does gender diversity moderate the risk and return relationship?", *International Review of Economics & Finance*, 64: 427-442.
- [25] **Nadeem, M., Zaman, R. and Saleem, I.** 2017. "Boardroom gender diversity and corporate sustainability practices: Evidence from Australian Securities Exchange listed firms", *Journal of Cleaner Production*, 149: 874-885.
- [26] **Nguyen, T., Locke, S. and Reddy, K.** 2015. "Does boardroom gender diversity matter? Evidence from a transitional economy", *International Review of Economics & Finance*, 37: 184-202.
- [27] **Opstrup, N. and Villadsen, A.R.** 2014. "Gender Diversity in Top Management and Financial Performance: The Role of Organizational Structure", *Academy of Management Proceedings*, 2014(1):14056. Briarcliff Manor, NY 10510: Academy of Management.
- [28] **Opstrup, N. and Villadsen, A.R.** 2015. "The right mix? Gender diversity in top management teams and financial performance", *Public Administration Review*, 75(2): 291-301.
- [29] **Pletzer, J.L., Nikolova, R., Kedzior, K.K. and Voelpel, S.C.** 2015. "Does gender matter? Female representation on corporate boards and firm financial performance-a meta-analysis", *PloS one*, 10(6).
- [30] **Reguera-Alvarado, N., De Fuentes, P. and Laffarga, J.** 2017. "Does board gender diversity influence financial performance? Evidence from Spain" *Journal of Business Ethics*, 141(2): 337-350.
- [31] **Rodríguez-Domínguez, L., García-Sánchez, I.M. and Gallego-Álvarez, I.** 2012. "Explanatory factors of the relationship between gender diversity and corporate performance", *European Journal of Law and Economics*, 33(3): 603-620.
- [32] **Rose, C.** 2007. "Does female board representation influence firm performance? The Danish evidence", *Corporate Governance: An International Review*, 15(2): 404-413.
- [33] **Siciliano, J.I.** 1996. "The relationship of board member diversity to organizational performance", *Journal of Business Ethics*, 15(12): 1313-1320.
- [34] **Smith, N., Smith, V. and Verner, M.** 2006. "Do women in top management affect firm performance? A panel study of 2,500 Danish firms" *International Journal of productivity and Performance management*. 55(7): 569-593.
- [35] **Swartz, N.P. and Firer, S.** 2005. "Board structure and intellectual capital performance in South Africa", *Meditari Accountancy Research*, 13(2): 145-166.

- [36] **Tejedo-Romero, F., Rodrigues, L.L. and Craig, R.** 2017. "Women directors and disclosure of intellectual capital information" *European Research on Management and Business Economics*, 23(3): 123-131.
- [37] **Vaibhavi, T. and Soundarya, V.L.** 2015. "Representation of Women on the Board of Directors under the Companies Act, 2013", *Christ University Law Journal*, 4(1): 33-47.
- [38] **Van der Zahn, J.W.M.** 2006. "Impact of Gender and Ethnic Composition of South African Boards of Directors on Intellectual Capital Performance", *International Scientific Journal*, 2(1): 7-22.
- [39] **Wright, M.** 2013. "Why the world's most valuable brands embrace women on boards", <https://www.theguardian.com/women-in-leadership/2013/dec/18/interbrand-valuable-brands-women-board> (accessed in April 2019).
- [40] **Zelechowski, D. & Bilimoria, D.** 2004. "Characteristics of women and men corporate inside directors in the US", *Corporate Governance: An International Review*, 12(3): 337-342.
- [41] **NSE official Website:** [www.nseindia.com](http://www.nseindia.com), [https://www1.nseindia.com/products/content/equities/indices/nifty\\_50.htm](https://www1.nseindia.com/products/content/equities/indices/nifty_50.htm)

*Article history:* Received: November 15<sup>th</sup>, 2021

Accepted: June 5<sup>th</sup>, 2022