Gender Diversity, Firm Performance, and ESG: Evidence from Indian M&A Participating Firms

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Abstract

Corporate entities are expected to play a significant part in the Sustainable Development Goals by implementing sustainable practices, which are setting a new global target on sustainability. One strategy for encouraging corporations to adopt sustainable practices focuses on the composition of the board. However, the connections between the composition of boards and business sustainability practice are not scientifically investigated. The results were obtained by employing the panel dataset for Indian non-financial NSE (National Stock Exchange) listed Mergers and Acquisitions (M&A hereafter) participating firms for 2013-2022. The study reveals a positive association between board gender diversity (number of females on board) and ESG. Female leadership position positively and significantly impacts the firm performance measures: return on assets (ROA) and Tobin's Q. Presence of females on board positively affects the firm's sustainability and can be beneficial for a firm's necessary decision-making process. The results obtained from this study will help academicians overcome the dearth of study in the field of sustainability performance and M&As and further incorporate a broader length of ESG-related information that can be applied in the context of corporate governance. This study attempted to go beyond the available literature on gender diversity and firm performance to extend the researcher's knowledge and highlight the probable future scope of research related to M&A and corporate governance area. This is the first study that highlights the gender diversity and sustainability relation in the context of India for the M&A participating firms.

Keywords: Gender Diversity, Board Composition, Corporate Governance, Strategy, Mergers, and Acquisitions(M&A)

JEL Classification: J16, G3, G34

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1. Introduction

Corporate governance elaborates on the functioning and structuring of the composition of the board of directors with which firms are organized (Campbell et al., 2007). The connection between corporate governance and firm performance has been highlighted and studied mainly with two approaches: one strand of literature focused on the small data sample and for the developed nations only (Camphell et al., 2007, Hendry et al., 2004) second strand of literature highlighted few variables of corporate governance (CEO duality, percentage of independent directors, age, education of the directors, many more) (Dalton et al., 1999, Mishra and Kapil., 2018). Following this literature, researchers have now focused on the participation of females on the corporate board and their impact on the sustainability performance of the firms. In 2013, India as one of the developing nations, made the initial move for enforcing the mandatory quota for listed companies to have at least one female on the board as directors. This change was studied by researchers offering varied arguments based on the different theories of corporate governance (Dalton et al., 1999; Bhagat et al., 2008; Brown et al., 2006; Kapil et al., 2018). Appelbaum et al., (2003), highlighted the male and female leadership styles affecting the firm's strategy decision-making: M&As and the firm's sustainability performance (SP hereafter). In recent years, Sustainability (ESG score index) has been an important issue among researchers and one of the important issues among the stakeholders of the firm (Galbreath 2013, Tampakoudis 2020). The term ESG was first introduced by the United Nation's Principles of Responsible Investment (UNPRI), and now it is a known term globally and is being discussed extensively among researchers as well in varied contexts. In India, ESG is also grabbing the attention of researchers, and industrialists and is now a new generic variable in the capital market (Saxena et al 2008). Investors are evaluating the firm's profitability and performance in the investment markets based on ESG, which is considered the new variable determining the future of the firms. The question now arises "How do females on corporate boards having a different style of thinking affect SP? "How Indian firms are taking up SP, in the case of M&A participating firms."

M&A (Mergers and Acquisitions) leads to a major restructuring in the composition of a new board with which new business strategies and preferences are also introduced, Provasi and Harasheh (2020) have highlighted that the presence of females on the board leads to an increase in stakeholder's confidence in the firm and females on the board are more concerned about the sustainability scores of the firms especially during M&A activities. India experienced 798 deals in the year 2020 worth US $33.299 (IMAA, statistics by countries). M&A is considered the best event to examine the influence of board supervision on the firm (Schmidt, 2013) and corporate sustainability performance (Vastola and Russo 2021, Russo et al., 2017). The existing literature on M&A highlights the Post integration performance (Datta et al.,1991, Tampakoudis et al., 2018), and reasons for the success or failure of M&As (Renneboog et al., 2019).

The literature witnesses exhaustive studies on analysing the relationship between corporate governance variables and measures of firm performance with varied sample selections in the context

of India. However, the relationship between gender diversity and the sustainability performance of the firm is still a question among the stakeholders that needs to be acknowledged in the context of emerging economies like India where the mandatory inclusion of females on board has altered the firm's performance (Kapil and Kumar (2023); Yadav and Prashar (2022)). M&A that leads to a major restructuring of the corporate board affects the firm's profitability, synergy gains, and perspectives toward sustainability performance (Kapil and Kumar (2023); Kapil and Kumar (2021)). However, the sample of Indian M&A participating firms has not been considered to analyse the relationship between the above-mentioned variables.

Therefore, based on the abovementioned research gaps in the context of gender diversity and a firm's sustainability performance, the objective of the study is to investigate (1) the association between the gender diversity of the board with firm performance and sustainability performance for M&A participating firms in India, (2) to analyse the females' different leadership position affecting the firm's performance and sustainability performance, (3) to examine the relation between some of the specific board variables (board independence) on the firm's performance and sustainability performance for M&A participating firm. We have hypothesized that there is no significant relationship between the considered variables. This paper is theoretically based on the Agency theory, stakeholder theory concept, and resource dependency theory. The author employs the dynamic model analysis to examine the said relationships by considering a data set of Indian NSE (National Stock Exchange) listed M&A participating firms, for the period 2013-2020.

This paper is organized with the following sections: Section 2 as theory and hypothesis development, reviewing the existing empirical and theoretical studies on gender diversity and firm sustainability. Section 3 as Data and Sample. Section 4 Research methodology describes the data used in our study along with the methodology and its model specification. Section 5 is Empirical results and a discussion for discussing the results obtained.

2. Theory and Hypothesis development

The composition of the corporate board has a strategic impact on the firm performance as such events require the approval and care of the board (Harris & Shimizu, 2004; Schmidt, 2015). Therefore, the board must be well organized and includes the desirable candidates who could improve the firm performance (Renneboog et al 2019). Board gender diversity indeed is an important dimension that poses the enormous potential to influence and substantially affect the firm's important decision-making and firm SP. The study is based on three theories of corporate governance, that is, Resource dependency theory, stakeholder's theory, and Agency problem theory. The agency theory (Jensen and Meckling 1976) emphasizes that gender diversity enhances board effectiveness and independence in monitoring the management decision-making and ensuring to maintain the interest of the stakeholders, resulting in improving the firm's sustainability performance (Elmagrhi et al 2018). Resource dependency theory highlights that gender diversity influences the board members to consider and imply varied socially responsible environmental practices to meet the shareholder's/

stakeholder's expectations (Elmagrhi et al 2018). Therefore, it can be summed up that the presence of a female director on the corporate board ensures favourable decisions related to the environment, society, and the corporate's sustainable performance (Al-shaer and Zaman 2016). Resource dependency theory suggests that "gender diverse board enjoy a mix blend of resources improving the firm's operational and social performance" (Ali et al 2014). AlShaer et al (2016) find that the presence of a female on board members is positively associated with the sustainability reporting for 300 plus UK FTSE350 listed firms which increases the stakeholders' confidence in the firm and commits transparency and efficient monitoring. Few researchers (Hillman 2000; Campbell et al 2008; Ismail et al 2015) highlighted that gender diversity enhances the monitory role of the board and brings additional advantages to the shareholders which are supported by the agency theory (Fama and Jensen 1983) and other few researches (Erhardt et al, 2003; Campbell et al, 2008; Carter et al., 2003; Zahra et al, 1988; Adams et al, 2009) highlighted the negative relation or insignificant association between the gender diversity (presence of females on board) and firm performance measures. However, the analyses remained a question for developing countries like India whether "Gender diversity affecting firm performance measures for M&A participating firms" whereas the same has been extensively examined for developed nation nations like the UK, USA, and European nations.

Gender Diversity: Erhardt et al (2003) considered 127 US firms and highlighted that board diversity is positively associated with the firm performance and the firm's sustainability performance (Roa and Tilt 2016). Carter et al (2003) analyzed the presence of females measured as the number of females and important board committees with firm performance measured as ROA and Tobin's Q and found no significant relation between the considered variables for the sample set of US firms. According to the stewardship theory, the presence of females on corporate boards positively affects sustainability performance (Naciti et al., 2019). Tampakoudis et al (2020) concluded from their study that the better the ESG performance, the higher would be the value quoted for the target firm. Huang et al (2017) "male members as executives are more interested in empire building and suffer from overconfidence resultant to which they end up with value destroying M&A deals". Levi et al (2014) agreed with Huang et al (2017) and concluded that having female directors onboard restricts the firm's acquisitiveness reason being they are less likely to overestimate the synergy gains (Renneboog et al 2019, Croson and Gneezy (2009)) and works on the sustainability performance of the firm (Teti et al 2017).

H1**:** Board gender diversity has no relation with firm performance for M&A participating firms.

H2**:** Board gender diversity has no relation with sustainability performance for M&A participating firms.

Female leadership position: According to Agency theory, the separation of leadership positions promotes the independence and effectiveness of the board (Michelon et al 2012) which further results in the indulgence of new ideas, knowledge, and control of the managerial opportunism (Dalton 1999). Nguyen et al (2006) considered publicly listed Australian firms to analyse the relationship between a

firm's market value and gender diversity for the board of directors. The results highlighted that gender diversity promotes the wealth of the shareholders because the presence of female directors on the board or the agency problem is best dealt with gender diversity and better sustainability performance decision is taken into consideration (Teti et al 2019). As per resource dependency theory, gender diversity puts pressure on the firm to undertake social and environment-related decisions (Elmarghi et al 2018). Bazel-Shoham et al. (2020) stated that females on the board of directors declined the number of M&A and improved the sustainability performance (Elmagrhi et al 2018). Parotta and Smith (2013), Peni et al (2014) argued that females holding top positions on boards as CEO/ Chair-person tend to have higher expectations of their assigned roles and responsibilities which further provides additional advantages to the board. Isidro & Sobral (2015); Duppati et al., (2020) examine how the composition of corporate leadership has effects on corporate strategies and other corporate social responsibility.

H3: Females in leadership positions have no relation with firm performance measures for M&A participating firms.

H4: Females in leadership positions have no relation with sustainability performance for M&A participating firms.

3. Data and Sample

The data on corporate governance variables (female CEO (Chief Executive officer), Female Chairperson, number of board members, number of independent directors, board meetings attended by the female director) were collected from Prowess IQ maintained by CMIE (Center for Monitoring Indian Economy) and from the companies' corporate governance reports and firm performance measures (Return on assets (ROA), Tobin's q) were collected from EMIS (maintained by ISI emerging markets) for the NSE listed non-financial M&A participating firms for the period 2013-2022. The M&A deals have been considered based on the Masulis et al (2012) research/ definition of deals: (1) completed deals, (2) Deal Type: Amalgamations, domestic Mergers, Inbound mergers, Takeovers with at least 15% of a substantial stake in the acquired firm, (3) where the deal value exceeded US$1 million. (4) firms participating with max 2 deals during the event window have been considered to avoid the duplicity and effect of mega deals, (5) event window of (-2, +2). The ESG-related data is collected from the Bloomberg database and from the corporate social responsibility reports related to ESG parameters scaled from 0 (representing the worst) to 100 (represents the best) Based on the above definition of deals, "564" total number of firms considered for the analysis.

4. Methodology

The panel data comprises both cross-sectional as well as time-series dimensions. The cross-sectional units were surveyed over time therefore data employed is pooled over time and simultaneously over space. Further, there was endogeneity and unobserved fixed effects that were associated with each firm considered. To overcome this issue pooled OLS estimation was employed

however, when there were unobserved effects which is correlated with the independent variable employed for the study then we get biased estimates. Literature based on the studies suggested employing the fixed effects estimators (De Andres 2008) which is a better model in comparison to the Pooled OLS model as it incorporates the unobserved heterogeneity across different individual firms. For estimating the Fixed Effect model, we employed the within transformation that eliminates the unobserved heterogeneity "by using time-demeaned-dependent and explanatory variables".

$$Y_{i,t} - \bar{Y}_i = \beta (X_{i,t} - \bar{X}_i) + (v_{i,t} - \bar{v}_i)$$

However, Hermalin et al., 2003 highlighted that some of the CG variables are determined endogenously for example board of directors therefore the fixed effects become inconsistent when the exogeneity condition fails. Wintoki et al., (2012) also highlighted that the conditions of fixed effect estimates are biased in some cases of board composition, the reason being sometimes they fail to analyze the effect on firm performance with the present board structure.

Further, before the research of Arellano and Bond (1991), to deal with the issues of autocorrelation, heteroskedasticity, heterogeneity, and endogeneity, we tested our above hypothesis with a Dynamic panel data model which is used "when the dependent variables are expected to exhibit a sufficiently large degree of persistence". Based on the literature review, in our study firm performance measures exhibit persistence that is captured by the lagged firm performance term. The dynamic model is more robust, insightful, and successful in capturing the persistence effect. For our study, two dynamic panel estimation techniques have been considered that is, Difference GMM and System GMM.

$$Y_{i,t} = \alpha + \beta Y_{i,t-1} + \gamma X_{i,t} + v_{it}$$

In the above equations, $Y_{i,t}$ represents the dependent variable that is a firm performance measure of Tobin's Q and ROA and ESG score index. $X_{i,t}$ represents the independent explanatory variables that is, both the set of gender diversity and the control variables. $\bar{X}_i$, $\bar{Y}_i$, $\bar{v}_i$ are the time-demeaned values of $X_{i,t}$, $Y_{i,t}$, and $v_{i,t}$, respectively. $Y_{i,t-1}$ represents the lagged performance term. In our study, the explanatory variables exhibit endogeneity issues which are because of the corporate governance variables that are females on board, the board size, and independent directors on board which influences the past performance of the firm (Arora and Sharma,2016; Mishra and kapil., 2018; Sheikh et al.,2018). Therefore, to overcome this problem of endogeneity, GMM is considered over the Fixed effect model estimator (Arora et al., 2016), and the following model is used for our study:

$$Y_t = \alpha 0 + \beta 0 Y_{t-1} + \beta 1 Board_Female_{i,t} + \beta 2 LD_Female_{i,t} + \beta 3 Board_size_{i,t} + \beta 4 meeting_female_{i,t} + \beta 5\ Fsize_{i,t} + \beta 6 LEV_{i,t} + \varepsilon i,t$$

Table 1. Abbreviations and Definitions of the Variables considered for the study.

Variables	***Abbreviations***	***Definitions***
Sustainability performance (ESG Scores)	ESG	"Composite score index which describes all about the disclosures activities related to the environment, social and governance activities the firm undertakes"
Returns on assets	ROA	Collected from the EMIS database
Tobin's Q	TBQ	Collected from the EMIS database
Female on board	board_Female	Number of females on the board
Female in leadership position	LD_Female	Dummy variable value of 1 if the female is CEO/ chairperson, otherwise 0
Board Size	Board_size	Number of members on board
Board meeting attended by female directors	Meetings_Female	Annual Average of meetings attended by female directors
Firm size	Fsize	The logarithm of total assets
Firm leverage	LEV	The ratio of debt to total assets

5. Empirical Result and Discussion

The descriptive statistics for all the considered variables are reported in Table 2.

Table 2. The table reports the descriptive statistics for all the considered variables.

Variables	***Observations***	***Mean***	***Median***	***S.D***	***Min***	***Max***
ESG	2696	61.77	56.35	21.03	9.08	62.47
ROA	2696	1.550	1.257	0.986	0.085	8.063
TBQ	2696	3.34	2.54	10.98	-3.86	141.00
board_Female	2684	15.507	14.850	10.345	0	60
LD_Female	2696	0.056	0	0.239	0	1
Board_size	2690	11.583	9	2.657	7	25
Meetings_Female	2680	6.997	6	3.453	0	30
Fsize	2696	27.34	20.952	3.234	22.346	25.765
LEV	2696	3.367	2.56	6.570	2.112	156.663

Source: Author's calculation and S.D= Standard Deviation

5.1. Descriptive Results

The firm performance measures Tobins q and ROA have mean and standard deviation as 1.550, 0.986, and 2.54, 10.98. This implies that ROA has a relatively higher variance compared to Tobin's q. In other words, the mean and standard deviation of an accounting-based measure exhibit a higher relative variance in comparison to a market-based performance measure. The sustainability performance (ESG score index) has a mean and standard deviation of 61.77 and 56.35. This implies

that ESG has a higher variance in comparison to the firm performance measures. The presence of females on the corporate board is represented by the following variables that are, board_female, LD_female, board_size, and Meetings_female. The number of females as directors on the board varies from 0 to 4 (as per sample data) meaning some firms still have 0 females on board. There were a smaller number of firms where females were given the positions of CEO/ Chairperson. Among the control variables, leverage measured as debt-to-equity ratio varies between 2.112 and 156.663 with a mean of 3.367 and a Standard deviation of 6.570. The ratio on average being greater than 1, symbolizes that the firms in our dataset are highly leveraged. The size of the firm measured as the natural logarithm of total assets varies between 22.346 and 25.765 with mean and standard deviation of 27.34 and 3.234.

The correlation matrix is shown in Table 3, it can be observed that there are no signs of multicollinearity between any of the explanatory variables considered for our study. Gujarati (2004), and Hussain et al., (2019) highlighted that the multicollinearity problem exists if the correlation between the two explanatory variables exceeds the value of 0.80. Therefore, considering this thumb of rule, there does not exist any multicollinearity between the explanatory variables of our dataset.

5.2. Estimation Results

In Table 4, the regression results from the fixed effect model and dynamic panel (GMM) regression model are shown considering Tobin's q and ROA as dependent variables. Findings highlight that the presence of females on corporate boards is positively valued by the firms. Sustainability performance measured as the ESG score index is also positively associated with the presence of females on board and with females' different leadership positions as CEO /Chairperson which is consistent with the Agency theory. As per agency theory, boards are responsible for monitoring the actions of the managers and agents, here the separation of leadership positions enhances the sustainable performance of the firms. Hussain et al (2019) highlighted that CEO duality, that is, the CEO holding the chairperson's position as well will not be able to deliver effective monitoring. Consistent with the stakeholder's theory, gender diversity significantly affects the sustainability performance of the firm, which is confirmed by Zhang et al (2013) that the more diverse the board is, the more valuable resources would be and the more would be the profitability of the firm.

The robust standard errors were reported for the fixed effect model and Windermeijer corrected standard errors were reported for the dynamic panel models, that is, System GMM (Sys-GMM) and Difference GMM (Diff-GMM). Arellano and Bover (1995), and Roodman (2009) highlighted that Sys-GMM is more robust over the Diff-GMM and Fixed effect estimators. Therefore, considering the statement of Arellano and Bover, Roodman, this study's analyses are based on the results of Sys-GMM estimations. Based on the results of Sys- GMM it can be observed that the presence of females on board measured as board_female is statistically significant at 1% level for both the performance measures viz; ROA and Tobin's q. The lagged performance measures are also found to be significant at the 1% level. The findings are in contrast with the findings of Trinh et al (2018), who considered

the sample of UK firms. These findings highlight that the presence of females on board has a significant role in influencing the performance measured across the diverse metrics. Further, the results of Sys-GMM also implies that female in leadership position and the presence of females on board have a positive impact on the firm performance. The positive and significant at the 1% level, the relationship between females as chairpersons and firm performance is in line with the studies of Peni et al (2014) highlighting the outperformance of females as chairpersons. Females in comparison to males have higher expectations of their responsibilities and have more attempts and have more attempts to demonstrate their additional sense of responsibility to deserve any executive position on the corporate board especially the position of chairperson. Further, females as CEO/ chairperson of any firm can also signal the investors in the stock market as investors and stakeholders may expect that management would be better monitored, and with the presence of a female as chairperson effective decision making would be considered and the relationship between the managers and

stakeholders would be guided well to avoid the agency conflicts

Table 3. Correlation matrix, using the observations 1:1 - 564:5, 5% critical value (two-tailed) = 0.036 for n = 2820

	ESG	**TBQ**	**ROA**	**Board_female**	**LD_female**	**Board_size**	**Meetings_female**	**Fsize**	**Lev**
ESG	1								
TBQ	0.194	1							
ROA	0.165	0.645	1						
Board_female	0.392	0.357	0.650	1					
LD_female	0.384	0.0	0.071	0.049	1				
Board_size	0.131	-0.070	0532	0.048	-0.003	1			
Meetings_female	0.067	-0.049	0.045	-0.032	0.143	-0.047	1		
Fsize	-0.293	-0.375	0.915	0.113	0.034	-0.022	0.522	1	
Lev	-0.027	-0.030	-0.074	-0.106	-0.005	0.008	0.006	-0.174	1

Source: Author's Calculation

Table 4. Findings from the dataset by employing Fixed effect and GMM methodology

Variables	**Fixed Effect**			**Diff-GMM**			**Sys-GMM**		
	TBQ	**ROA**	**ESG**	**TBQ**	**ROA**	**ESG**	**TBQ**	**ROA**	**ESG**
Lagged performance				0.254*	0.381**	0.341**	0.0987***	0.4543***	0.3563***
				(0.087)	(0.0342)	(0.0242)	(0.001)	(0.035)	(0.034)
Board_female	0.0309***	0.1291***	0.1304***	0.2495***	0.4361**	0.0455*	1.081***	0.578***	0.0388**
	(0.000)	(0.009)	(0.002)	(0.004)	(0.045)	(0.0015)	(0.004)	(0.000)	(0.001)
LD_female	0.4851**	0.3224**	0.5851*	0.5505**	0.5344**	0.4751*	0.6541***	0.8790***	0.0393**
	(0.043)	(0.037)	(0.083)	(0.040)	(0.038)	(0.0176)	(0.000)	(0.018)	(0.003)
Board_size	-0.1436***	-0.2112**	0.1406***	-0.2341*	-0.3681**	-0.0463**	-0.820**	-0.9843**	-0.0462**
	(0.000)	(0.046)	(0.013)	(0.087)	(0.034)	(0.0016)	(0.046)	(0.038)	(0.0016)
Meetings_female	-0.001	0.0089	0.0166	-0.0497*	-0.0321	0.0271	0.5334	-0.0734*	0.5322
	(0.996)	(0.387)	(0.001)	(0.075)	(1.671)	(1.652)	(1.562)	(0.098)	(1.653)
Fsize	-0.3753*	0.7057*	0.2751*	-1.756**	-1.807*	0.0182	-0.0993*	-0.0836*	0.0983*
	(0.007)	(0.034)	(0.008)	(0.045)	(0.098)	(0.0019)	(0.078)	(0.043)	(0.087)
Lev	-0.000*	0.003*	-0.004*	-0.1438***	0.0021**	0.002*	0.0652	-0.0226**	0.002*
	(0.009)	(0.083)	(0.009)	(0.000)	(0.192)	(0.076)	(0.783)	(0.047)	(0.084)
Constant	44.942**	35.334**	32.942**	46.721**	85.001**	0.7254**	105.722***	65.769**	33.865**
	(0.034)	(0.018)	(0.018)	(0.043)	(0.087)	(0.0171)	(0.001)	(0.008)	(0.018)
Observations	2685	2685	2685	2680	2680	2680	2680	2680	2680
R-squared	0.021	0.011	0.034						
Number of firms	535	535	535	534	534	534	534	534	534

*Note: ***p < 0.01; **p < 0.05; *p < 0.1*

The meetings_female, that is the number of meetings attended by the female positively impacts the accounting-based measure and negatively impacts the market-based measure which is aligned with the results of Mishra and kapil., (2018) whereas there is no such significant effect of the same on the ESG. The Firms must invest heavily to build their internal controls mechanism of corporate governance for example: attending board meetings, fees of directors, other travel expenses, and so on. The higher these costs, the lower will be the investor's/shareholders' interest and the lower will be the TBQ value. Further among the considered control variables leverage is found to be statistically significant and negative for the accounting-based measure ROA. The negative relationship highlights that the highly leveraged firms are shelling out their funds in terms of finance costs and therefore leading to a decline in the value of ROA whereas the leverage is positively associated with the market-based measure TBQ, which may be because firms having good experience in the market which would be building faith and confidence of potential investors.

6. Conclusion

Women are more effective and efficient in catering to the needs of different stakeholders of the organization (Hillman et al., 2000) and more focused on the social and ethical issues of the company (Bear et al., 2010). This paper examines the relationship between gender diversity and the sustainable performance of the M&A participating firms employing the dynamic panel model. The research adds to the existing literature on corporate governance by highlighting first, the females' attitude towards risk and decision-making behaviour to firm performance. Bazel- Shoham et al (2021) highlighted the same by considering the presence of females on board and linguistic gender marking on M&A deals. M&A firms experience major changes with the corporate restructuring Second, the paper also contributed to the literature gap on the presence of females on board for M&A participating firms' performance and more importantly on the sustainability performance of the firms. Third, this study is the first to highlight the probable new research gap in analysing sustainability performance for the Indian listed firms who were participating in M&A activities. M&A firms keep on restructuring their board at every deal so this event is considered the appropriate event to examine the association between gender diversity, firm performance, and sustainability performance. The analyses of 8 years of data highlight the positive relationship between the female on board and the performance measures then the leadership positions of female on board positively impacts the firm performance and sustainability performance.

This study highlights the varied leadership roles female holds on corporate board and their impact on a firm's profitability and covers different theories of corporate governance: As per the agency theory, female on board could minimize the subjective factors associated with the board's decision-making however this agency theory does not predict this relationship between gender diversity and firm value (Duppati et al 2020). The resource dependency theory further suggests that the "unique set of human capital attributes of females may not always bring positive or negative results on firm valuation." The results from our study suffice the suggested theory's aspects and

further suggest that the female's leadership position and firm's profitability depend on how the firm utilizes its available human capital to achieve its said targets of profitability and sustainability responsibility (Tampakoudis et al 2020).

This study can further be expanded, First, this study is limited to a sample of M&A participating firms. The results may vary for different sectoral studies as M&A deals result in different synergy gains for varied sectoral samples. Second, the study conducted considered the quantitative aspects of the board however, the qualitative aspects can broaden the approach. Third, moderating and mediating variables can be further considered.

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