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BOARD CHARACTERISTICS RELATING TO FIRMS PERFORMANCE: A STUDY ON MANUFACTURING FIRMS IN INDIA

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Abstract *The present research study will throw light on the fact whether board characteristics have any impact on the financial performance of manufacturing companies belonging to Bombay Stock Exchange (BSE) during 2010-11 to 2014-15. This study has investigated the independent variables and dependent variables, i.e. the firm's performance related indicators such as ROA, ROE and Tobins Q which depend upon the accounting and market based measures. The eight independent variables area taken into consideration for the study especially for board characteristics and control variable of the firm which might have some impact on the firms' performance covering 275 companies under 18 major sectors. The OLS regression has been tested to find out the determinant factors of firms' performance in relation to board characteristics. It is observed from the study that board characteristics (size, independence, meeting) are significant negative relationship exists towards firms' performance indicators. In this study further attempt has been made to examine the determinant factors of firms' performance such as board size, board Independence, CEO duality, and size of the firm are significantly influencing factors of manufacturing firms in India.*

Keyword: *Corporate Governance, Board Characteristics, Firms Performance, Return on Assets, Return on Equity, Shareholders*

INTRODUCTION

Corporate governance has become a popular discussion topic in developed and developing countries. Corporate governance comprises several elements of the structure of the government, which includes capital, labour, market, organisation along with their regulatory mechanisms. The widely held view that corporate the interests of shareholders has led to increasing global attention. Today corporate governance has become a worldwide issue and the development of corporate governance practices has become a prominent issue in all countries in the world. Corporate governance is a system of structures and processes to direct and control the functions of an organisation by setting up rules, procedures, and formats for managing decisions within an organisation. It specifies the distribution of rights and responsibilities among company's stakeholders (including shareowners, directors, and managers) and articulates the rules and procedures for making decisions on corporate affairs. It thus provides the structure for defining, implementing and monitoring a company's goals and objectives and ensuring accountability to appropriate stakeholders. Hence, the corporate governance issue widely debated in the developed market economies needs to be discussed in a different vein in the Indian context. India for example did not share the set of factors responsible for the Asian crisis, which were largely macroeconomic and related to bank failure due to unprecedented and unchecked growth (Jaiswal & Banerjee, 2010). Similarly, structural characteristics in the Indian corporate sector are quite different from that of US and UK leading to a different set of corporate governance issues here.

Corporate governance norms in India have evolved well over the years post the economic liberalisation, with SEBI constituting a number of committees to suggest codes of conduct for good governance of corporate organisations. This was followed by the listing agreement under Clause 49 and by the Voluntary Guidelines of Corporate Governance in 2009 laid out by the Ministry of Corporate Affairs. These norms are inherently related to the legal and institutional environment in the country. India has had the legal framework for regulating corporate form of organisations since the formulation of the Companies Act 1956 and the Companies Act, 2013 and also with fairly functional stock exchanges and their detailed listing requirements and companies must be ensured that globally accepted standards. India is one of the major, emerging economies in the world and the importance in the global economy has increased in recent years in the aspects of global commerce is expected to grow in the future. The Indian approach to corporate governance, accounting, and auditing while differs in many ways from the U.S. model (and the Chinese model). India, as well as many other developing countries, often have the form but not the substance of the governance when it comes

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to matters of law. Strict enforcement of laws and speedy punishment of the violators are as much a part of the rule of law as the written law itself (Narayanasamy, Raghunandan, & Rama, 2012).

LITERATURE REVIEW

The effect of corporate governance on firm performance is the focus of extensive analysis in majority of the previous studies (Choi, Park, & Yoo, 2007; Donaldson & Davis, 1991; Jensen, 1993). In order to understand corporate governance in Indian context, a review of relevant literature is essential one to deliberating corporate governance practices and firm performance in the organisation perspective. Moreover, studies of Hermalin and Weisbach (2003), Dwivedi and Jain (2005), Garg (2007), Bhagat and Bolton (2008), Jackling and Johl (2009), have shown that the relationship between board composition and firm performance is endogenous in nature.

Gompers *et al*. (2003) developed a governance index from a sample of 1500 large firms using the governance rules and investment strategy. They also found that the firm with strong shareholder's rights has higher fund value and higher growth. Block (2001) found that the governance practices are strongly related to implied price-earnings ratio and similar results with Klapper and Love (2004). Shleifer and Vishny (1997) view corporate governance as a set of mechanisms which ensures that potential providers of external capital receive a fair return on their investment, because the ownership of firms is separated from their control. It also increases the firms' responsiveness to the need of the society and results in improving long-term performance (Gregory & Simms, 1999).

The monitoring role of the boards and its effectiveness on the behalf of shareholders depends upon its size and composition is carrying out for the functional areas of the corporate governance (John & Senbet, 1998). The board characteristics like size, independence, and meetings have an impact on current or prior performance and found a weak association between the two in the case of Indian firms (Arora & Sharma, 2015). Another study by Brick and Chidambaran (2010) also stated the intensity of board activity as an important dimension of oversight function performed by the board. Furthermore, it had used number of 'director-days' to proxy for the level of board monitoring activity. Some studies used board composition and board size to represent the board's monitoring ability it is the outside directors that have the ability to provide more effective internal monitoring more specifically, appointment of the independent directors (Mak & Li, 2001; Choi *et al*., 2007; Agarwal & Knoeber, 1996). The board index which consist of composition and meetings has been found that negative and significant association on firm performance with reference to selected IT companies in India (Palaniappan & Rao, 2015). Kathuria and Dash (1999) observed that size of the board had increased with the size of the corporation. Using the sample of top Indian BSE listed companies, Jackling and Johl (2009) had also showed significant positive correlation between firm size and size of the board (Kumar and Singh, 2013). The average board size was significantly different between small and large firms. However, in contrast, Lange and Sahu (2008) in their study on Nifty Indian listed companies found an insignificant (but negative) effect of firm size (measure for scale) on board size. Substantiating the same, Linck *et al*. (2008) found that small firms had smallest boards with greatest proportion of insiders. In addition to the frequency, board meeting attendance also acts as a proxy for supervising quality of the board (Lin, Yeh, & Yang, 2013). The measures of board attendance to determine the participation of directors in meetings, also called board diligence that have been tested in supplement to the one followed in a study which was conducted on the firms listed on NSE in India (Ghosh, 2007).

As far as the relationship between board characteristics and firm-specific characteristics is concerned, the past literature has established that large firms need more number of directors due to the complexity involved in their operations (Boone, Field, Karpoff, & Raheja, 2007; Chen & Al-Najjar, 2012; Coles, Daniel, & Naveen, 2008; Monem, 2013). However, those studies, in the percentage of non-executive directors (NEDs) on the board was not found as statistically different. Connell and Cramer (2010) also noticed a significant difference between the average board size of small and large firms listed on Irish stock markets. Indeed, previous studies in several other countries also find a negative relationship between board size and firm performance. A positive relationship between the variables of corporate governance and firm's performance found in Sri Lankan companies (Velnampy & Pratheepkanth, 2012). According to the studies by Black, Jang, and Kim (2006); Drobetz, Schillhofer, and Simmermann (2004); Ong, Wan, and Ong (2003), and Gedajlovic and Shapiro (2002), there was a positive significant relationship between corporate governance practices and firm's performance in various countries. In contrast, based on the studies of Gugler, Mueller and Yurtoglu (2001), Hovey, Li, and Naughton (2003), and Alba, Claessens, And Djankov (1998), there was no significant relationship between corporate governance and firm's performance.

The primary contribution of the study is that it examines the determinants of firm performance on board characteristics for which existing literature is limited, especially in the Indian context. This study further contributes to the literature by providing a comprehensive analysis of the relationship between board characteristics and firm performance. The empirical analysis focuses on a large number of companies (around 357 firms) covering 15 important industries of

the manufacturing sector in India moreover, instead of considering just a single measure of firm performance, consider three alternate measures of performance covering both accounting (ROA, ROE) and market-based (Tobin's Q) measures. Finally, this study also proposes another governance measure; board meeting which is also related to firm performance.

DATA AND METHODS

The data for empirical analysis is extracted from PROWESS (Release 4.0), a research database widely used in India; and from the corporate governance and annual reports of companies. The firms in our sample are chosen from important industries of the manufacturing sector. The firm classification of these 18 sectors is given in Table 1. The total manufacturing firms listed under Bombay Stock Exchange in these sectors are 3230 firms. The firms with missing data are excluded from the sample and left with the final sample size of 275 firms. This study covers the time period 2011-2015.

Table 1: Sample Companies for Various Sectors

S. No	Sectors	No. of Samples
1	Apparels	9
2	Automobile & Auto Parts	5
3	Cement	11
4	Chemical and Paint	36
5	Commercial Trading	7
6	Consumer Electronics	11
7	Diversified Range of Products	6
8	Engineering Products	23
9	Fertilizers & Agro-Chemicals	15
10	Fibres and Plastic Products	9
11	Coal Mining, Gas & Oil Exploration	13
12	Iron and Steel	27
13	Packed Foods and Personal Products	19
14	Sugar and Paper	13
15	Pharmaceuticals	12
16	Power	16
17	Textiles	25
18	Misc. Industries	16
	Total	275

Variables Construction

For the estimation purposes, we use ROA, ROE, and TQ as the firm performance measures whereas in respect of board characteristics like size, independence, board meetings and CEO duality as the dependent variables in the analysis. For firm performance measures, we use both accounting - and market-based measures, which include ROA, ROE, and TQ. The market firm performance measure, TQ is calculated similar to that of Gompers *et al*. (2003). The calculation of these variables has been shown in detail in Table 2.

Table 2: Description of Variables

S. No	Variables	Full Form	Description	Expected Outcome
Panel A: Corporate Governance Measures				
1	BS	Board Size	Number of directors serving on board	Positive / Negative
2	BI	Board Independence	Number of non-executive independent directors on board	Positive
3	BM	Board Meetings	Number of Annual meetings	Negative
4	CEODUAL	Duality	A binary variable which equals 1 if a chairman of the board is also the CEO of the firm and 'zero' otherwise	Negative
Panel B: Firm Performance Variables				
	ROA	Return on Assets	PBDIT/Total Assets	-
	ROE	Return on Equity	PBDIT/ Paid-up Equity Capital + Reserves funds	-
	TQ	Adjusted Tobin's Q	Total assets + Market Capitalisation – Book value of equity – deferred tax liability)/ total assets	-
Panel C: Control Variables				
	Age	Firm Age	No. of years of a firm since its Incorporation	Positive
	Lev	Leverage	Borrowings / Total Assets	Negative
	Size	Natural log of sales	Sales is deflated using WPI, then natural log is taken	Negative
	Growth		Growth rate in net sales over that of the previous year	Positive

Hypotheses Development

Board Size

The corporate governance literature is highly contradictory on board size is linked with corporate performance. The

number of directors on board is an important variable, though literature does not have a consensus on the influence of board size towards increasing its firm's performance. Some studies report a positive association between firm's performance and board size due to lag in decision making due to lack of consensus. Valenti, Luce, & Mayfield (2011) pointed out that when there is some dispute regarding the effect of board size on performance in general (Alexander, Fennell, & Halpern, 1993; Yermack, 1996), the evidence suggests that larger boards are preferable for smaller firms (Dalton, Daily, Ellstrand, & Johnson, 1999). In the previous literature, both smaller boards and larger boards have been favoured on different grounds. For instance, larger boards have been favoured on the grounds of greater monitoring and effective decision making. According to Shivdasani (2004), board composition of a firm is affected by the fall in financial performance because companies react to performance downturns by adding outside directors to the board for corrective actions and effective decision making Bradbury, Mak, and Tan (2006) report no association. Thus we observe the association without predicting its direction and hypothesize as:

H1: There is no association between firm's performance and size of the board of directors.

Board Independence

The role of board of directors as effective monitoring mechanism for management is dependent upon them being non-executive and independent. Further, the inclusion of independent directors on corporate boards is an effective mechanism to reduce the potential divergence between management and shareholders. The independent directors are invited onto the board for oversight on behalf of shareholders (Baysinger & Butler, 1985). Rosenstein and Wyatt (1990) also suggested that higher proportion of independent directors is positively associated with excess returns. Similarly, Mak and Kusnadi (2005) revealed that a higher fraction of independent directors on the board is linked to greater firm value. Outsider dominated boards in terms of percentage of independent directors enhances the reputation of the firm as following good corporate governance improving the reliability of its financial disclosures. These shortcomings can be taken care of by choosing efficient board members. We have conflicting results on the association between board independence and firm's performance, with studies by Beasley (1996), Klein (2002) and Davidson, Goodwin-Stewart, & Kent, (2005) finding significant negative association between the two. On the other hand, Park & Shin (2004), Peasnall *et al*. (2005) and Bradbury *et al*. (2006) fail to report any association between earnings management and independence of the board. Board independence is measured by the number of non-executive independent directors working on the board. Thus, to test the related issue, we examine the following hypothesis:

H2: There is a positive and significant association between firm's performance and board independence.

Board Meetings

Next, we estimated the impact of firm performance on board meetings, which is measured by the frequency of meetings annually. According to Vafeas (1999), board meeting is an important board attribute; but the relationship between firm performance and board meetings is not clearly established. There are several costs associated with board meetings such as managerial time, travel expenses and directors' remuneration. If a firm is not performing well, it might be possible that it may reduce the number of board meetings to avoid the costs associated with them. Jensen (1993) also pointed out that the meeting time might not be utilised for a significant dialogue among directors. Hence, the company might try to save upon the meeting costs by reducing the number of board meets. On the contrary, it is also likely that for a relatively poor performing firms to conduct more meetings to discuss crucial issues like the reasons for their poor performance and setting strategies for improvement in performance. When directors meet frequently, they are more prone to discuss the concerned issues and monitor the management effectively, thereby performing their duties with better coordination (Lipton & Lorsch, 1992). If a firm is reasonably efficient in setting the frequency of its board meetings, it will also likely to attain high efficiency in agency costs. Thus, the impact of firm performance on board meetings is a valid research question which should be examined empirically by following hypothesis.

H3: There is a significant negative association between attendance of directors in board meetings and firm's performance.

CEO Duality

CEO position should be independent of the chairperson of the board to enable balance and check on misuse of power by the same. Agency theory supports the same to avoid conflict of interest for the board chairman to formulate the strategies and be responsible for implementing the same. This in turn would check firms' performance through better monitoring. Contrary to this view, Rechnar & Dalton (1991) argue for role duality as it would provide better incentives by linking CEO pay with firm performance. Klein (2002) shows that role duality leads to unchecked powers and finds significant positive association with firm's performance. A number of studies report no significant relationship. This suggests that in our sample of firms segregating the role of the Chairman

from the CEO does positive and significantly contribute towards firm's performance.

H4: There is a significant positive association between CEO duality and firms' performance.

Empirical Model

To test the hypotheses, this study adopts following empirical model:

$$ROA = a + b_1 BS + b_2 BI + b_3 BM + b_4 CEODUAL + b_5 AGE + b_6 LEV + b_7 SIZE + b_8 GROWTH + e$$

$$ROE = a + b_1 BS + b_2 BI + b_3 BM + b_4 CEODUAL + b_5 AGE + b_6 LEV + b_7 SIZE + b_8 GROWTH + e$$

$$TQ = a + b_1 BS + b_2 BI + b_3 BM + b_4 CEODUAL + b_5 AGE + b_6 LEV + b_7 SIZE + b_8 GROWTH + e$$

ANALYSIS AND DISCUSSION OF THE RESULTS

This section presents the analysis and discussion of the results**.**

Assumption of Normality Test

The normality assumption assumes that the errors of prediction are normally distributed. The Jarque-Berra statistics might be used to check the null hypothesis that the sample is drawn from normally distributed population (Park, 2002). The statistics Jarque-Bera has an asymptotic chi-square distribution with two degree of freedom and can be used to test the null hypothesis that the data from a normal distribution. The Jarque-Bea statistic would not be significant and p-value should be greater than 5% if the residuals are normally distributed (Brooks, 2008). The results in Table 3 report a p-value of 0.4166 higher than 0.5, suggesting that normality assumption holds.

Table 3: Jarque-Berra Test

Jarque-Berra test for Normality	
Test Value	10.8771
(Prob>chi) p-value	0.4166

Assumption of Homoscedasticity Test

To test for homoscedasticity, the Breush-Pagan Test was used and the results reported in Table 4 indicate that the null hypothesis cannot be rejected since the p-value of both tests are considerably greater than 0.05. The results conclude that there is homoscedasticity so no further corrections for the sample are required.

Table 4: Breusch-Pagan Test

Breusch-Pagan Test - H_0: Constant variance	
Test Value	0.691
p-value	0.4166

Assumption of Autocorrelation Test

The presence of residuals autocorrelation, statistical inferences can be misleading. Since the Durbin-Watson test is only applicable to test autocorrelation in time series, this study also uses Wooldridge (2002) test appropriate in panel-data models where a significant test statistic indicates the presence of serial correlation. The p-value of the test is greater than 5% as shown in table 5, suggesting the presence of no autocorrelation of errors. Drucker (2003) and Maladjian and Khoury (2014) used simulation results showing that the test has good size and power proprieties in reasonably sized samples.

Table 5: Wooldridge Test

Wooldridge test for autocorrelation in panel data	
H_0: No first order autocorrelation	
F(1,3)	1.957
Prob > F	0.2521

Assumption for the Multicollinearity Test

Multicollinearity is the undesirable situation where the correlations among the independent variables are strong. Hence, if multicollinearity problem exists among the independent variables then the regression results will not provide correct results. Lewis-Beck and Michael in their book Applied Regression: An Introduction have stated that if the correlation among the independent variables is greater than or equal to 0.80 then multicollinearity problem is assumed to exist. The same logic has been applied in this paper to define high correlation among the independent variables to give rise to multicollinearity problem. The multicollinearity problem is checked through correlation matrix. Correlation matrix is developed through SPSS between 'firms' performance' and other independent variables. It is observed from Table 6 (Correlation Matrix) that none of the independent variables are having correlation greater than 0.8 hence we can safely deduce that multicollinearity does not exist among the independent variables.

Table 6: Pearson Correlation Test for Explanatory Variables

		Board Size	Board Indep	Board Meetings	CEO Duality	Age	Leverage	Size	Growth	ROA	ROE	Tobins Q
Board Size	r	1	.801**	.785**	-.028	-.088	.097	.079	-.018	**-.733***	**-.764***	**-.752***
	Sig.		.000	.000	.652	.149	.111	.194	.768	**.029**	**.031**	**.019**
Board Independence	r	.801**	1	.590**	-.072	-.083	.106	.033	-.010	**-.110**	**-.101**	**-.025**
	Sig.	.000		.000	.238	.173	.081	.593	.866	**.072**	**.098**	**.685**
Board Meetings	r	.785**	.590**	1	-.030	-.016	.023	.074	-.019	**-.491***	**-.551***	**-.638***
	Sig.	.000	.000		.625	.791	.713	.225	.754	**.034**	**.047**	**.031**
CEO Duality	r	-.028	-.072	-.030	1	.124*	-.183**	.045	.020	**.061**	**.086**	**.183****
	Sig.	.652	.238	.625		.041	.003	.459	.748	.320	.161	.002
Age	r	-.088	-.083	-.016	.124*	1	-.059	.011	-.004	**.481****	-.035	.010
	Sig.	.149	.173	.791	.041		.332	.858	.952	**.000**	.569	.868
Leverage	r	.097	.106	.023	-.183**	-.059	1	.093	-.017	-.025	-.063	-.080
	Sig.	.111	.081	.713	.003	.332		.127	.780	.683	.300	.192
Size	r	.079	.033	.074	.045	.011	.093	1	-.065	.073	.094	**.568****
	Sig.	.194	.593	.225	.459	.858	.127		.288	.229	.123	.000
Growth	r	-.018	-.010	-.019	.020	-.004	-.017	-.065	1	-.021	**.449****	.016
	Sig.	.768	.866	.754	.748	.952	.780	.288		.735	**.000**	.799
Return on Assets (ROA)	r	**-.733***	**-.110**	**-.491***	**.061**	.481**	-.025	.073	-.021	1	.009	.031
	Sig.	**.029**	**.072**	**.034**	**.320**	.000	.683	.229	.735		.884	.612
Return on Equity (ROE)	r	**-.764**	**-.101**	**-.551***	**.086**	-.035	-.063	.094	**.449****	.009	1	.235**
	Sig.	**.031***	**.098**	**.047**	**.161**	.569	.300	.123	**.000**	.884		.000
Tobins Q	r	**-.752**	**-.025**	**-.638***	**.183****	.010	-.080		.016	.031	.235**	1
	Sig.	**.019***	**.685**	**.031**	**.002**	.868	.192	**.000**	.799	.612	.000	
**. Correlation is significant at the 0.01 level (2-tailed).												
*. Correlation is significant at the 0.05 level (2-tailed).												

From Table 6, Pearson correlation for selected explanatory variables show that the Pearson correlation coefficient between Board size and ROA is (-0.733), ROE (-0.762) and Tobin Q (-0.752) which is found to be significant at 0.05 level. This indicates board size and firm performance has been found a strong negative and significant association with firm performance of manufacturing firms in India. The results constant with (Alexander *et al*., 1993; Yermack, 1996). The factor of board independence has been found to have a weak negative association among the firm's performance factors of ROA (-0.110), ROE (-0.101) and Tobins Q (-0.034) and results statistically insignificant and consistent evident with (Lipton & Lorsch, 1992). It is evident that CEO duality has been found that moderate negative and significant relationship with firms' performance indicators for ROA (-0.491), ROE (-0.551) and Tobins Q (-0.638) and results found to be significant at 0.05 level for inconsistent with (Klein, 2002). The age of the firm and ROA have positive and significant relationship for 0.481 and result significant at 0.01 level. The size of the firm and Tobins Q have been found to be positively associated and significant at 0.01 level. The growth of the firm and ROE have been evident that positive and significant association and the results statistically significant at 0.01 level. The remaining factors are resulted with insignificant association with the firms' performance characters.

Furthermore, the existence of multicollinearity is tested by calculating the Variance Inflation Factor (VIF) where a VIF coefficient greater than 10 indicates the presence of multicollinearity (Chatterjee & Price, 1977). The VIFs for individual variables was also very low, supporting the previous conclusion that the explanatory variables included in the model are not substantially correlated with each other. The results VIF among all the cases shown in Table 7.

Table 7: Variance Inflation Factor (VIF) of the Explanatory Variables

Variable	ROA		ROE		TOBINS Q	
	VIF	Toler.	VIF	Toler.	VIF	Toler.
Board Size	0.205	4.888	0.205	4.888	0.205	4.888
Board Independence	0.351	2.852	0.351	2.852	0.351	2.852
Board Meetings	0.374	2.677	0.374	2.677	0.374	2.677
CEO Duality	0.942	1.061	0.942	1.061	0.942	1.061
Age	0.969	1.032	0.969	1.032	0.969	1.032
Leverage	0.940	1.064	0.940	1.064	0.940	1.064
Size	0.975	1.026	0.975	1.026	0.975	1.026
Growth	0.995	1.005	0.995	1.005	0.995	1.005

Test to Check Whether the Data is Stationery or Time Series

Before proceeding with our study, we have to check if the data have time series influence or is a stationary one. Durbin Watson test has been conducted using SPSS to check the nature of the data. Computation of Durbin Watson taking the dependent variables (ROA, ROE, and Tobins Q) and all the independent variables together. The result observed from Table 4 reflects that Durbin Watson test results are 1.946, 1.772, 1.689 which falls within the acceptable range of 1.50 to 2.00 and satisfies the assumption of independence of errors. The Durbin-Watson test result is out of the range of -1.5 to +1.5, which proves that the data are not the time series data and are the stationery one. Also, that by checking the Dubin-Watson table it is observed that $d_u < d < 4\text{-}d_u$ (d_u is derived from the table and d is the Durbin-Watson test result). The results become closer to 2 that is acceptable range, which proves that the data are not a time series data and are stationary. Thus, there is no auto correlation between the dependent and independent variables. We can conclude from the above analysis that the data do not have time series influence and are stationary. Hence, we can utilise regression for the present study.

Regression Results

The correlation analysis indicates that there exists a negative relation between Board Characteristics such as board size, board independence and board meetings with firms' performance indicators of ROA, ROE and Tobins Q. So as to further analyze these relationships and to test the hypothesis and the OLS regression was run and to be find out the predictors of firms' performance factors as dependent variable and Board characters as independent variable, controlling for other variables also used.

Tables 8 and 9 sum up the results of regression analysis. It can be seen from Table 4 that in model 1, board variables with ROA is fitted the regression equation and explains 44.6% variance in firms' performance as shown by R square. The F-ratio is 10.653 and is highly significant at less than 1% level. The R-square value of model 2 is 0.438 which means that 43.8% of the dependent variable (ROE) is explained by independent variables. The R-square value of model 3 is 0.570 which means that 57.8% of the dependent variable (ROE) is explained by independent variables. It can be observed from it that F statistics of the respective models are 10.653, 10.183 and 9.170 respectively and the results which is highly significant at 0.000. Hence, as the p-value is less 0.05 there can be a linear relationship between the dependent variables (ROA, ROE, and Tobins Q) and selected independent variables.

Table 8: Regression Model Summary

Sl. No	Dependent Variables	Multiple R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	F-Value	P-Value
1	ROA	0.696	0.446	0.493	1.685	1.946	10.653	.000
2	ROE	0.588	0.438	0.495	3.172	1.772	10.183	.000
3	TOBINS Q	0.608	0.570	0.551	4.170	1.689	19.170	.000

The regression results as shown in Table 8 indicate that there is a statistically significant correlation between firms' performance and board effectiveness. It is also observed from the regression analysis (Model 1) in Table 9 that "Leverage" has a p-value of 0.960 and the corresponding, t-value of 0.150. It signifies that this particular variable is not important in the model. Similarly, "Growth of the firm" (p-value of 768 and the corresponding t-value of -0.295), and "Size of the firm" (p-value of 0.166 and the corresponding t-value of 1.389) have p-value more than 0.05 and t-values within the range of -2 to +2. These variables also seem not to be important enough in the model, so they need to be removed. While it is also observed that "Board Size" having a p-value

of 0.046 and a t-value of -2.082, "Board Independence" having a p-value of 0.021 and a t-value of 3.115, "Board Meetings" having a p-value of 0.047 and a t-value of 2.369, "CEO Duality" having a p-value of 0.049 and a t-value of -2.058 and "Age" having a p-value of 0.000 and a t-value of 8.680 are significant variables in determining the firms' performance (ROA) of manufacturing firms in India.

Table 9: Regression Result

Model & Dependent Variable	Independent Variables	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1 – Return on Assets	(Constant)	-8.695	7.061		-4.241	0.000
	Board Size	-1.371	0.055	-0.081	-2.082	0.046
	Board Independence	0.176	0.546	0.010	3.115	0.021
	Board Meetings	-1.245	0.372	-0.032	-2.369	0.047
	CEO Duality	-4.346	1.311	-0.003	-2.058	0.049
	Age	4.856	0.559	0.474	8.680	0.000
	Leverage	1.191	23.943	0.003	0.150	0.960
	Size	3.683	2.805	0.076	1.389	0.166
	Growth	-1.157	1.727	-0.016	-0.295	0.768
2 – Return on Equity	(Constant)	-9.930	4.024		-2.468	0.014
	Board Size	-2.474	0.099	-0.095	-2.791	0.010
	Board Independence	-2.355	0.012	-0.053	-4.580	0.000
	Board Meetings	1.047	0.075	0.056	0.631	0.529
	CEO Duality	1.923	1.652	0.065	4.164	0.003
	Age	-0.013	0.012	-0.057	-1.041	0.299
	Leverage	-0.436	0.532	-0.046	-0.819	0.413
	Size	1.209	0.507	0.131	2.385	0.018
	Growth	13.363	1.594	0.454	8.383	0.000
3 – Tobins Q	(Constant)	-27.030	17.308		-7.322	0.000
	Board Size	-1.071	0.765	-0.199	-2.833	0.045
	Board Independence	-4.269	1.012	-0.063	-3.763	0.031
	Board Meetings	-2.689	0.101	-0.121	-3.505	0.003
	CEO Duality	4.413	1.496	0.145	2.859	0.025
	Age	-0.711	1.178	-0.030	-0.603	0.547
	Leverage	-7.545	4.423	-0.098	-1.935	0.054
	Size	5.485	3.027	0.579	11.629	0.000
	Growth	146.754	151.054	0.048	0.972	0.332

It is also observed from the regression analysis (Model 2) in Table 7 that "Leverage" has a p-value of 0.413 and the corresponding, t-value of -0.819. It signifies that this particular variable is not important in the model. Similarly, "Board Meetings" (p-value of 0.529 and the corresponding t-value of 0.631), and "Age" (p-value of 0.299 and the corresponding t-value of -1.104) have p-value more than 0.05 and t-values within the range of -2 to +2. These variables also seem not to be important enough in the model, so they need to be removed. While it is also observed that "Board Size" having a p-value of 0.010 and a t-value of -2.791, "Board Independence" having a p-value of 0.000 and a t-value of -4.580, "CEO duality" having a p-value of 0.003 and a t-value of 4.164, "Size" having a p-value of 0.018 and a t-value of 2.385 and "Growth" having a p-value of 0.000 and a t-value of 8.383 are significant variables in determining the firms' performance (ROE) of manufacturing firms in India.

It is also observed from the regression analysis (Model 3) in Table 7 that "Leverage" has a p-value of 0.054 and the corresponding, t-value of –1.935. It signifies that this particular variable is not important in the model.

Similarly, "Age" (p-value of 0.035 and the corresponding t-value of 2.859), and "Growth" (p-value of 0.332 and the corresponding t-value of 0.972) have p-value more than 0.05 and t-values within the range of -2 to +2. These variables also seem not to be important enough in the model, so they need to be removed. While it is also observed that "Board Size" having a p-value of 0.045 and a t-value of -2.833, "Board Independence" having a p-value of 0.031 and a t-value of -3.763, "Board Meetings" having a p-value of 0.003 and a t-value of -3.505, "CEO Duality" having a p-value of 0.035 and a t-value of 2.859 and "Size" having a p-value of 0.000 and a t-value of 11.629 are significant variables in determining the firms' performance (Tobins Q) of manufacturing firms in India.

CONCLUSION

From the study, it can be said that "Leverage", "Age", "Growth", and "Board Meetings" seem not to be statistically important and they do not influence the profitability of the firms of the manufacturing firms in India, whereas "Board Size", "Board Independence", "CEO Duality", and "Size of the firm" are important variables for determining the firms' performance (ROA, ROE and Tobins Q) of the manufacturing firms in India. It can be easily inferred from the results derived above that board characteristics and firms' performance of manufacturing concerns in India. Theoretically, the effectiveness of board of directors, a central governance mechanism, is expected to be positively related to corporate governance quality. The study explores this relationship empirically, and uses Board Size, Board Independence and Board Meeting, found that contradictory results of firms' performance parameters. This results with consistent of previous studies (Arora & Sharma, 2015, Palaniappan & Rao, 2015, Sarpal & Singh, 2013). The results indicate that among the various factors affecting the corporate governance related board characteristics is strongly and negatively related with firms' performance measurement both accounting and market based indicators. This result is as expected and supports the hypothesis that the optimum size of the board, is the improvement of firms' performance.

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