

DOES WOMEN DIRECTORS EDUCATION MATTERS FOR FIRM PERFORMANCE? EVIDENCE FROM INDIAN TRADED FIRM

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Abstract - Does qualification of women directors impact firm performance? The present study seeks to answer this question. The enacted legislation for Indian listed firm having minimum one women directors. The argument for qualified/ financially literate directors is intuitively appealing; there is very little evidence of the efficacy of qualified/ financially literate directors towards keeping eye on short term profits and long term shareholder value.

In an effort to determine the effectiveness of this policy, the study uses pooled OLS regression with white robust method to examine the relation between women directors' qualification and firm performance. Using institutional and signalling theories, this study tests the impact of women directors' qualification on firm performance. Findings provide some interesting insights into the relation between women directors' qualification and firm performance.

We firmly believe that we add significantly to literature as we could not find a study using women directors' data to explain the relationship between qualification and firm performance.

Key words: Women directors, firm performance, qualification, India, corporate governance

JEL code: G34

Introduction:

The purpose of this study is to examine the impact of women directors' qualification on firm performance. In other words, why women directors' educational qualification would impact firm performance? One evident reason is that educational foundation has a relation between vital decision making activity and constructive outcome over firm performance .For instance, Graham and Harvey (2002) found that the CFO of a firm with an MBA degree would have and utilise refined approaches when directing capital planning and assessing cost of capital.

Kumar and Zattoni(2015) asserted that high profile directors had associations with vital people and connections with government agencies which enhanced firm performance and resulted in positive outcomes for the firm.

Hambrick and Mason(1984) pointed out that procedural knowledge and social ties of executives - owing to their education and social capital - enhanced the intellectual capital of the firm. Thus, executives with educational qualities bring with them administrative ability and social ties which enhance effective asset utilisation and enable greater degrees of learning in the organisation.

Theoretical framework:

Institutional theory derives from path dependence of economic changes, and Powell (1991) provide three factors '*that are part of events or influences that shape this process: interrelationships of strong technology: increasing returns to scale, and; investments in learning that take on a measure of irreversibility*'.

In addition to the neoclassical view that firms are constrained by '*information, finance and technology, institutional theory adds socially constructed limits like norms and rules - as obliged and justified by society - that affect economic choices*' (Oliver, 1991 & 1997a). Emphasis on institutional theory can be from the *regulatory perspective* (Williamson, 1975; North, 1990), *normative perspective* (Parsons, 1934/1990) or *cultural-cognitive approach* (Meyer & Rowan, 1977; DiMaggio & Powell, 1983 & 1991; Zucker, 1987; Scott, 2001). '

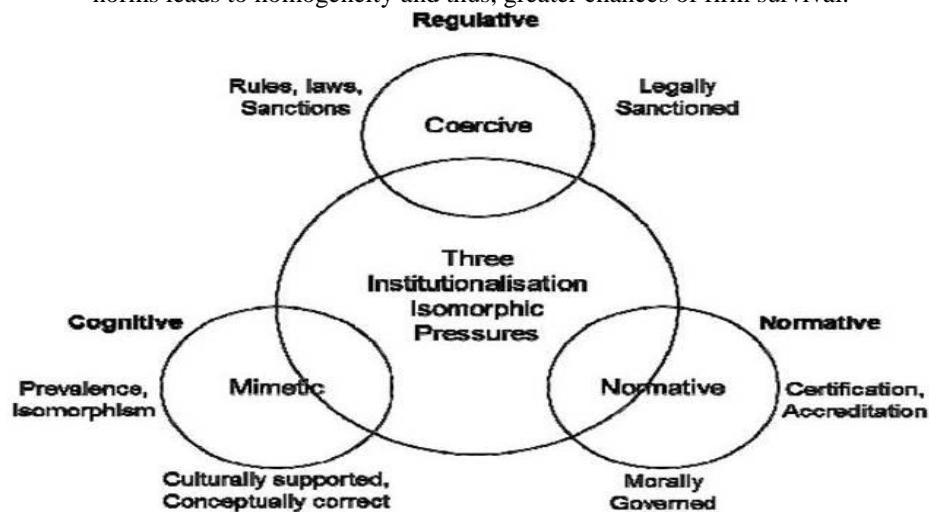
DiMaggio and Powell (1983) provided an explanation for processes that tended to make organizations more similar, but with varying levels of firm efficiency. The authors identify three types of isomorphism, namely coercive, mimetic and normative. They settle on *isomorphism* which is defined as "a constraining process that forces one unit in a population to resemble other units that face die same set of environmental conditions"(Ibid: 146 citing Hawley, 1968). Coercive pressures are typically made and enforced by state and public authorities and firms are usually punished for nonconformance.

Mimetic pressures occur when an organisation mimics some practices that are acquired in its field due to environmental risks and uncertainties associated with some organizational decisions. Mimetic isomorphism, in the words of Baretto and Baden-Muller (2006: 1560), is "a process by which, in ambiguous and uncertain situations, organisational changes are imitated in order to obtain legitimacy". Normative pressures are usually done to achieve professionalism within an organisational segment. This is usually done for legitimacy and acceptance within a broader organisational field.

Scott (1987) introduced four variants of institutional theory: '*institutionalisation as a value- instilling process; a reality-creating process; a class of elements (usually cultural in nature, like symbols, cognitive elements, normative beliefs, and their sources); and distinct societal spheres.*' These four variants bear some similar basic concepts and their explanations can be found in his write-up. By way of contextualising institutions, Oliver (1997a) '*suggests that they can occur at three levels. These are the individual, firm and inter-firm levels. The individual level deals with the decision-maker's norms, habits and values*'. The firm

level deals with organisational culture and politicking of institutional structures (which is where corporate governance and conceptualisation of positivist agency theory fit). The inter-firm level deals with the norms within an industry as well as pressures from regulation and social expectations. It is at the inter-firm level that firms that are common to a specific industry exhibit similar activities, incentives and structures.

The institutionalist argument therefore considers that '*high performing firms are those that best conform to social pressures, and the more homogenous a firm becomes, the better its performance. Institutionalized patterns are as a result of the process inter-relationships of all the three levels. In cross-country studies, firms in similar industries are therefore expected to conform more than those in other industries. Institutionalised patterns bring about firm heterogeneity as well, although some institutionalists* '(like DiMaggio, Scott, Powell, Meyer and Luckman) argue that conformity with external socially accepted norms leads to homogeneity and thus, greater chances of firm survival.

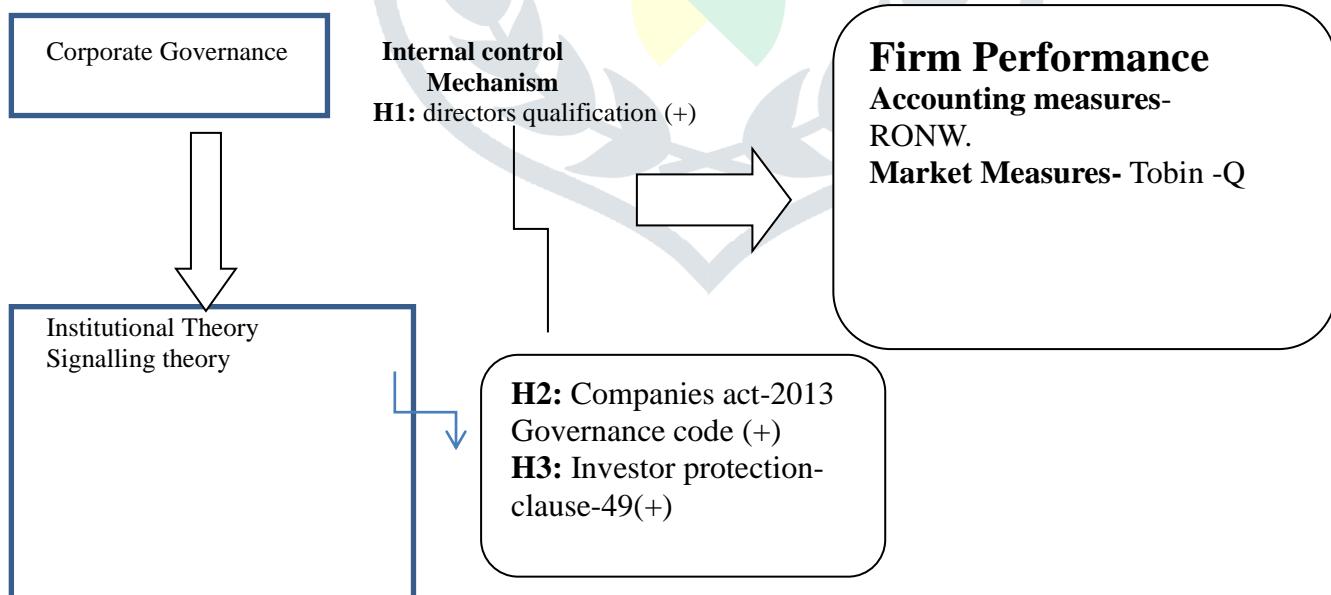


Overview of institutional theory, source-<http://www.ibimapublishing.com/journals/JIBBP/2012/655615/655615.html>

Signaling Theory

Decision making in organisations acquires positive and negative tones, for instance, if management makes the decision to increase the dividend, the share price goes up because shareholders view it as a positive signal even though increasing the dividend has no effect on the company's profitability. Oxelheim and Randøy (2002) have shown that signals can apply to the composition of the board.

Conceptual frame work:



Indian institutional setting:

Section 149(1) of the Indian Companies Act, 2013, states:

"such class or classes of company as may be prescribed shall have at least one woman director" having paid up share capital in excess of Rs.100 crores (16 million US \$; @ Rs. 62 per US \$ on 29th December'2014) or turnover of Rs.300 crores (48 million US \$; @ Rs. 62 per US \$ on 29th December'2014) or more shall appoint a woman director within 3 years from the commencement of the 2nd proviso as above"

On 16th September 2014, SEBI, the capital market regulator in India, relaxed provision for appointing at least one woman director by April 1, 2015.

The qualification clause of directors as per the Companies Act (Appointment and Qualification of Directors) Rules, 2014 are- an independent director shall possess appropriate skills, experience and knowledge in one or more fields of finance, law, management, sales, marketing, administration, research, corporate governance, technical operations or other disciplines related to the company's business.

Literature and hypothesis development:

Adam Smith (1776) argues that the quality of the board of directors acts as a catalyst within the shareholder of the firm. They get results on the basis of their control over the firm.

The law of the country mandates that listed firms at the stock exchange need to have board of directors made of individuals, advisory groups and directors having administrative ability to manage the firm (Hamelin and Weisbatch, 2003).

Women directors and firm performance

Mandell and Pherwani's study (2003), using Bar-On Emotional Quotient Inventory, suggested that female managers had mean emotional intelligence scores that were eleven points higher than their male colleagues.

A report indicates that there is a correlation between performance and proportion of women on the executive board. The link to the report is given below. http://www.europeanpwn.net/files/mckinsey_2007_gender_matters.pdf

Evidence suggests that female directors bring more fairness and transparency, and improve overall efficiency of the company they lead. Catalyst (1993), non-profit research firm in US, notes 82% of the 50 most valuable Fortune 500 firms were found to include at least one-woman director on the board.

Two years later, Catalyst (1995) reported that of the top 100 US companies in terms of revenue, 97 had at least one-woman board member.

Based on the 1993 Ashridge survey of the top 200 UK companies, it was found that 49 companies (25%) had women on their boards - an increase from 21 companies (11%) in 1989. Results also indicated that women were more likely to be non-executive directors, and that women might have a slight edge over men in strategic planning.

Shrader et al. (1997) examined, for large firms, the relationship between a firm's financial performance and gender diversity at middle and upper management levels, and at the board of directors. In general, a positive link was found between women in management positions and firms' financial performance. They explained the positive performance relationship by suggesting that these companies recruited from a relatively larger talent pool, and subsequently recruited more qualified applicants regardless of gender.

Due to the under representation of women, there has been relatively less research conducted on the relationship between women directors and firm performance (Burke, 1997).

Results from Erhardt's (2003) study supported the hypothesis that executive board of director diversity was positively associated with both ROA and ROE.

Thus, diversity in board of directors appears to have an impact on overall organizational performance.

Hypothesis Development:

Various studies by Cheng et al (2010), Hambrick et al (1996), Bhagat et al (2010), and Jalbert et al (2002) indicate a relationship between educational level of directors and firm performance.

Therefore as indicated by these studies *elite class hypothesis* is viewed as decent intermediaries for elevated amount of information base and scholarly skill.

Here, we hypothesize on the basis of advanced educational level proposed by these studies:

Hypothesis-1

There is a positive relationship between women directors' education and firm performance.

Golee (1996) and Bhagat et al (2010) showed that directors holding an MBA degree performed better than those without the degree.

MBA degree makes directors fundamentally sound in business decision, administration, formulating problems and taking productive action (Graham and Harvey, 2001). They guess that MBA directors utilize sort of investigation that are instructed in MBA program for example VAR technique.

Therefore, we hypothesize:

Hypothesis-2

There is a positive relationship between women directors holding MBA education and firm performance.

The background of directors' education determines their disposition. The academic degree offers the director foundation, aptitude and insight. The number of degrees and level of training the directors' picks is maker of his or her esteem and intellectual inclination.

In light of individual esteem, subjective inclination, particular training we deserve distinct models and choice of education and administrative abilities.

Graham and Harvey (2002) revealed that CFOs (directors) holding specialised degrees utilised their knowledge such as NPV, Capital planning, capital resource estimation and capital computation.

Therefore, we hypothesise:

Hypothesis-3

There is a positive relationship between women directors holding finance specialisation (CA) education and firm performance.

Baker and Mueller(2004) found that directors with specialisations had higher speculation for R & D than directors with no specialisation.

Therefore we hypothesize:

Hypothesis-4

There is a positive relationship between women directors holding technical science education and firm performance.

Methodology:

The study by Darmadi (2010) for examining the relationship between directors' education and firm performance used cross section data.

In this study, we make use of pooled OLS for the year 2016 & 2017 which provides good construct validity (Campbell and Stanley,1979).

The regression function takes the form:

Financial performance (Return) = F (women directors' qualification + control variable + error)

Equation #1

Tobin q= $F(\beta_0+\beta_1$ dummy women director with MBA+ β_2 dummy women director with CA+ β_3 dummy women director with science degree + control variable + error)

Equation #2

RONW= $F(\beta_0+\beta_1$ dummy women director with MBA+ β_2 dummy women director with CA+ β_3 dummy women director with science degree + control variable + error)

Estimator: Pooled Ordinary Least Squares Models

'Much of the early research on the relation between CORPORATE GOVERNANCE VARIABLE(QUALIFICATION)and performance has employed the common practice of collecting data on subjects in a population at a single point in time, as a cross section, or over several periods, as pooled independent cross sections. More recently, researchers have begun to examine the relation by treating the data as a panel. The important distinction to be made in the later two cases is that in pooled cross sections over time the researcher pools independent cross sections from population, whereas with panel data the researchers follows the same set of units over time. In either case , researchers can run ordinary least squares regression to obtain estimates and significance levels for the parameters in their model'.(Wooldridge, 2005,P.432-P. 433) In cases where the heterogeneity within groups is minimal, the pooled OLS estimator can be shown to be a consistent estimator of β ,meaning that the parameter estimates are unbiased. However, the pooled OLS estimate is no longer efficient, or of minimum variance due to multiple occurrences of Ci across time periods. Therefore, inferences drawn on the significance of parameter estimates can no longer be considered accurate. In such cases, researchers can correct for this problem using White's (1980) robust standard errors. As noted earlier, many of the early studies documenting non-monotonic relation between corporate GOVERNANCE VARIABLE and performance have employed OLS estimators. Thus, when attempting to replicate the results of previous studies using OLS, robust standard error is employed to control for potential problems with OLS estimator.

Sample

The sample is constructed from the list of BSE-500 firms for the years 2016 and 2017. For the year 2016, the number of firms is 146 whereas for the year 2017, the number of firms is 202.

To make sure that the selected companies for the sample can be used when running the regressions, two requirements are set. The first requirement is that the companies ought to have completed annual reports which go back to the beginning of the test period, i.e., 2016 and 2017, and qualification of women directors mentioned. The second requirement is that the companies must have actively traded during the whole test period (2016-2017).

The data were mainly collected from annual reports and stock exchange indexes. The collected data consisted of yearly observations such as total assets, advertisement expenditure, and women directors' qualification. For the companies' share prices, daily observations were collected and turned into yearly observations.

Dependent variables

Performance measurements are used as dependent variables in this study. The first dependent variable is Tobin q.

Conceptually, Tobinís q measures the value added by management and is usually calculated by dividing the market value of a firm by the replacement cost of its assets. However, in the Indian context, firms do not report the replacement cost of their assets, hence, following Khanna and Palepu (2000), book value of assets is used instead of replacement value of assets. Tobinís q has been calculated as the average market capitalisation of the firm over 365 days divided by book value of the assets. Following Huselid (1995), we use the logarithm of Tobinís q in our study.

The second dependent variable is return of netwoth (Ronw) - RONW is a ratio that shows the extent to which companies manage their own capital (net worth) to effectively measure the profitability of the investments made by its capital owners or shareholders.

Independent variables

Independent variables are variables used to explain the dependent variable. The first independent variable, and the focus of this paper, is the qualification of women directors on the board of directors of BSE-500 Indian firms listed at the stock exchange.

Other independent variables can also be called control variables. These variables are used as control variables in most of the empirical corporate governance studies. The first control variable is size of the asset; others are net sales and advertisement expenditure. To calculate this variable, it was obtained from each company's consolidated balance sheet for each year in the test period. Log was taken of some of this control variable for controlling the heteroskedascity.

The test variable of this study is qualification of women directors.

Women directors with MBA degree (dichotomous variable) are marked with 1; those without MBA degree are marked with 0.

Women directors with a science degree(dichotomous variable) are marked with 1 if they hold a degree in basis science, engineering, pharmacy or biotechnology. Those without a science degree are marked with 0.

Women directors with CA degree (dichotomous variable) are marked with 1; those without CA degree are marked with 0.

A chartered accountant (CA) is defined as a professional member of a country's Institute of Chartered Accountants. He or she must work (and be trained) in the office of a practicing chartered accountant for three years, and pass exhaustive written tests to qualify. On completing the requirements, the trainee is awarded the ACA designation. In most cases, CAs focus on one of four areas: audit and assurance; financial accounting and reporting; management accounting; and applied finance or taxation. Depending on their area of focus, CAs may handle one aspect of a company's business, oversee all of a company's accounting needs, or work as freelance CAs who handle accounting matters for multiple clients.

Univariate statistics

The next step in determining the validity of the data is to test the data's normality. The regressions will yield truer results the closer the data are to being normal. By calculating the skewness and the kurtosis of the variables and then comparing them to the skewness and the kurtosis of a normal distribution (0 and 3 respectively), an estimate of the normality of the data can be made. Results of the normality calculations for women directors' qualifications can be found in table 1.

Table 1 Normality Attributes of Variables for women director

Descriptive statistics of the 248 firms for the year 2016 and 2017

	RONW	LOG_TOBIN_Q	LOG_ASSET	NET_SALES	ADVERTISEMENT
Mean	15.72043	1.811088	3.793377	13576.95	84.67459
Median	13.67000	1.726976	3.645564	3173.790	6.940000
Maximum	96.78000	3.938447	5.906944	202210.6	3470.000
Minimum	-8.610000	0.216215	2.441805	44.85000	0.000000
Std. Dev.	14.71654	0.618878	0.759748	30632.30	281.9277
Skewness	2.716452	0.476277	0.773542	4.359344	8.868541
Kurtosis	15.18657	3.887764	2.974652	24.72338	102.3769
Jarque-Bera	1535.500	14.62356	20.64918	4725.816	87892.04
Probability	0.000000	0.000668	0.000033	0.000000	0.000000
Sum	3254.130	374.8952	785.2291	2810429.	17527.64
Sum Sq. Dev.	44614.80	78.90016	118.9068	1.93E+11	16373551
Observations	207	207	207	207	207

It can be seen that most of the variables are somewhat normal - RONW, LOG_TOBIN_Q , log_asset, all have kurtosis between 3.88 and 102.97. Their kurtosis is much higher with a value of 24 and 102 indicating that the distribution has fat tails. This is because a few of the companies have extreme values for RONW ,net sales and advertisement. As for skewness, the range of variables has skewness less than 0.77 to 8.86. Again, high values are attributed to outliers.

Table -2 Descriptive statistics of women directors with various qualifications

No. of women directors for year 2016& 2017	198
Number of women director with CA degree	9
Number of women director with MBA	35
Number of women director with science	52

Discussion

The regressions analysis begins by performing a pooled ordinary least squares regression on returns as well as Tobin's q and RONW.

The most significant results are achieved when return is used as the performance measure. When using a simple pooled OLS regression with all of the control variables included, the estimate of the coefficient of women directors with science degree (DUMMY_SCIENCE) is significant at 10% level.

With respect to institutional theory, this result provides some evidence that the potential law benefits that women with science degree bring to the board do translate into better firm performance. This could also mean that women directors on listed company boards in India already have satisfactory levels of qualification.

With respect to signalling theory, this result could imply that firms are already hiring women directors with science degree best board members for the job and that signals increase in Tobin q.

Insignificant Results

The negative relationship between women directors' qualification (dummy CA and DUMMY_MBA) and firm performance is not a robust result. When Tobin's q is taken as the dependent variable instead of return, a negative direction of relationship is found. However, this relationship is not as significant as the previous results. The results are even more insignificant when RONW is taken as the dependent variable. These insignificant results reject hypotheses 1 to 4.

Table -3 Regression analysis of qualification on firm performance

Independent Variable	Dependent Variable LOG_TOBIN_Q (I)	Dependent variable RONW (II)
Intercept	1.730658*** (5.404804)	23.62379 (4.717951)
Education variable		
DUMMY_CA	-0.082196 (-0.397880)	-0.931049 (-0.239188)
DUMMY_MBA	-0.028318 (-0.250590)	-0.633814 (-0.274019)
DUMMY_SCIENCE	0.177965* (1.811738)	0.154692 (0.080694)
Control variable		
LOG_ASSET	0.037120 (0.552071)	-3.829985*** (-2.948516)
NET_SALES	2.91E-06* (1.779485)	8.07E-05** (2.330474)
ADVERTISEMENT	-0.000492*** (-3.268269)	0.013074*** (4.013098)
DUMMY_2017	-0.098432 (-0.451893)	4.590227** (2.378583)
R ²	0.087	0.11
F	2.720819**	4.911609***
Observation	207	207
N(firms)	346	346

*** Indicates statistical significance at the .01 level, two-tailed **Indicates statistical significance at the .05 level, two-tailed

* Indicates statistical significance at the .10 level, two-tailed.t-value in parenthesis.

Conceptually, Tobin's q measures the value added by management and is usually calculated by dividing the market value of a firm by the replacement cost of its assets. However, in the Indian context, firms do not report the replacement cost of their assets, hence following Khanna and Palepu (2000), we use the book value of assets instead of replacement value of assets. Tobin's q has been calculated as the average market capitalisation of the firm over 365 days divided by book value of the assets. Following Huselid (1995), we use the logarithm of Tobin's q in our study. RONW is a ratio that shows the extent to which companies manage their capital (net worth) to effectively and measure the profitability of investments made by their capital owners or shareholders.

Conclusion

Directors' qualification has been the amended law in India, the focus of discussion has been on the educational qualification of directors. However, there has been debate on the benefits of qualifications to firm performance. This study has come to the conclusion that there is no benefit of directors' qualification to firm performance.

In this study, four hypotheses were tested:

Hypothesis-1: There is positive relationship between women directors' education and firm performance.

Hypothesis-2: There is positive relationship between women directors holding MBA degree and firm performance.

Hypothesis-3: There is positive relationship between women directors holding finance specialisation (CA) and firm performance.

Hypothesis-4: There is positive relationship between women directors holding technical science education and firm performance.

Empirical findings of this study reject hypotheses 1 to 3, but partially support hypothesis 4. Based on institutional theory as well signalling theory, and previous research on how qualification impacts firm performance. Our study reveals negative direction of CA and MBA qualification with firm performance which is in confirmation with the study by Darmadi (2010). However, there is partial acceptance of the hypothesis that technical science qualification has some impact on Tobin q but not on RONW.

However, the decision of listed BSE-500 Indian firms to include qualified women directors is based on law and convention, and not firm performance.

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