



Research Article

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Quality of Management and Its Influence on Market Valuation: A Study of the Indian Pharmaceutical Industry

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Abstract

This paper aims to highlight the relevance of the quality of management in the well-being of a firm and its influence on market valuation. The study which is based on the Indian Pharmaceutical Industry, measures and employs the quality of Management and directorship, together with the Return on Capital Employed (ROCE), to assess the influence on market valuation and the efficiency of assets employed. The study employs forty companies that are listed on the Bombay Stock Exchange, for a period of 12 years from the fiscal year 2008-09 to 2019-20. Through Path Analysis, it is established that ROCE, Quality of management, and Directorship in that order influence the market valuation which is represented by the Q ratio. ROCE & Dividends impact the efficiency of assets under use, which is represented by the Asset Turnover Ratio (ATO).

Keywords: Management, Directors, Valuation, Market

1. Introduction

Stewardship of a business organization is one of the key pre-requisites for its success. Research has established that companies that have high-quality and focused management who have consistently and judiciously allocated capital, kept low on leverage, have managed well their working capital and other parameters, have done better than others that have not focused on quality of management. Mukherjea et al (2021, 2018) and Mukherjea, 2016 clearly show that family-owned businesses that have handed over the core management to professionals, managements that have consistently generated free cash flow and employed the free cash flow so generated to expand, companies that have invested in technology to further their business, that has steadily advanced their competitive advantage, managements that have taken more variable pay, than fixed pay, depending on the performance – have succeeded much ahead of their competitors. For all these decisions, the quality of management and directorship that lead the company towards financial success is key. Chemmanur et al (2009) were the first ones to quantify the quality of management and examine the relationship

between the quality/reputation of management and the firm's financial decisions and the information asymmetry. However, the authors have not evaluated the impact of management quality on market valuation. Saravanan et al (2021) and Bird et al (2018) examine the impact of directorship on the success of firms. The authors use the structure of the board and independent directors as two independent variables. We use the methods used by Chemmanur et al (2009), the path followed by Saravanan et al (2021) / Bird et al (2018), and the concepts used by Mukeherjea et al (2021, 2018) and Mukherjea (2016) in examining the impact of Management Quality and Board of Directors on the market valuation of firms in the Indian Pharmaceutical Industry.

According to India Brand Equity Foundation (IBEF) Report (2022), India enjoys a key position in the world in the production and exports of pharmaceuticals. This has been due to several factors, primarily being, the availability of a highly skilled biotech and pharmaceutical workforce, low cost of production, continuous investment in R&D by the pharma companies, the impetus given by the Government of India, and continuous flow of domestic and foreign investment. The R&D and production capabilities in India have increased since the implementation of the TRIPS agreement in 2005.

Given the requirement for high-quality management & Intellectual Capital in the pharma industry, the objective of this paper is to examine the impact of Management quality, quality of directorship, and ROCE on (1) Market valuation (2) Efficiency of Asset Turnover.

2. Literature Review

Chemmanur et al (2009) for the first time in literature quantify & examine the relationship between the quality/reputation of management and the firm's financial decisions and the information asymmetry. The authors look at the positions of Vice President and above and quantify the number of management positions (STRU). The educational qualification of the management is assessed to find the number of management members in STRU who have degrees of MBA/CA or equivalent or more (EDU). In the third stage, the number of members in STRU that have been assigned to core activities like Research, Marketing, and Manufacturing is tabulated (CORE). The combination of these three parameters i.e., STRU, EDU, and CORE give the weighted management quality. The study establishes that management reputation and quality have a positive impact on investment decisions and a negative impact on leverage & dividend decisions. The study is based on US firms.

Tipuric et al (2020) shed light on developing a measurement mechanism for measuring corporate governance. The authors opine that the measurement of corporate governance is still in the nascent stage and the construction of any index for measuring corporate governance boils down to three dimensions – compliance, performance, and accountability. However, the study does not prescribe any method of constructing such an index.

Saravanan et al (2021) examine the effect of independent directors on the board by examining pre and post-regulation change in 2013. The authors verify this aspect on all firms listed on NSE during the period 2004-2017. The study uses Tobin's Q to measure firm performance. The finding of the study is that independent directors influence firm performance.

Bird et al (2018) use the 2003 NASDAQ and NYSE rules on board independence to see the causal relationship between board independence and firm performance variability. The findings of the study are, Decisions made by firms with more independent directors are less extreme, thereby reducing the variability in performance.

Fauzi & Locke (2012) confirm the non-linear relationship by using the Generalized Linear Model (GLM) and confirm that the board of directors, board committees, and managerial ownership have a positive relationship with firm performance.

Baker et al (2013) used the newly developed Economic Policy Uncertainty (EPU) index to study the effects of EPU on investment and hiring, finding negative effects for firms heavily exposed to government contracts. Bhagat & Obreja (2013), used a measure of firm-level cash flow uncertainty to establish that uncertainty has a strong negative impact on corporate employment and

investment. Panousi and Papanikolaou (2012) establish a strong negative relationship between uncertainty and investment.

The studies of Chemmanur et al (2009) are US based and we have not come across any study in the Indian context that uses similar methods. Further, the study supports analyzing investment, leverage, and dividend decisions and examining the impact of management quality on information asymmetry. The study or subsequent studies do not examine the impact of management quality thus established, on market valuation and asset turnover efficiency.

The studies done by Saravanan et al (2021) and Bird et al (2018) examine the influence of independent directors. The studies look at the Board Structure and Independent Directors as separate variables. We consider the Board Structure and Independent Directors as composite variables and examine their influence on market valuation.

The studies relating to EPU are US based and there is no study relating to EPU in India. Further, there is no study that links the EPU to the market value of firms. It can be observed in our study that, the ROCE and EPU make a composite variable of ROCECOMP and in effect, ROCE is after controlling for the EPU.

3. Methodology

3.1 Construction of Variables

Table 1: List of variables

Independent Variables	Mediating Variables	Dependent Variable
ROCE Management Structure Management Education Management Core Team Directors Independent directors EPU	Dividend Ratio Leverage	Q Ratio Asset Turnover Ratio (ATO)

The methods of calculating these shortlisted variables are in table 2 below.

Table 2: Method of calculating each variable

Sl.	Independent Variable	Method of calculation / Collection
1	Return on Capital Employed (ROCE)	$(\text{PBIT} / ((\text{opening position of Equity capital} + \text{Retained Earnings} + \text{Long Term Borrowings}) + (\text{closing position of Equity capital} + \text{Retained Earnings} + \text{Long Term Borrowings}))) / 2) \times 100$
2	Management Structure (STRU)	The number of Senior Managers in a Company above the rank of Vice President. Source: Company Websites, Company Financial statement
3	Management Education (EDU)	Of the Management Structure above, the number of managers having Post graduation, MBA, ACA, or equivalent qualifications Source: Company Websites, Company Financials, Linked In, Bloomberg.
4	Core Team (CORE)	Of the Management Structure above, the number of senior managers in Production, Quality Control, R&D & Marketing
5	Directors (DIR)	Total number of directors at the end of the financial year Source: Financial Statements
6	Independent Directors	Number of independent directors on the board of directors at the end of the year. Source: Financial statements
7	Economic Policy	EPU index for India obtained from www.policyuncertainty.com.

Sl.	Independent Variable	Method of calculation / Collection
	Uncertainty (EPU)	
Sl.	Mediating Variables	Method of calculation / Collection
1	Leverage (LEV)	$((\text{Long term} + \text{Short Term borrowings}) / \text{Total Assets}) \times 100$
2	Dividend Ratio (DIV)	$(\text{Cash dividends paid during the year} / \text{Profit After Tax}) \times 100$
	Dependent Variables	Method of Calculation / Collection
1	Financial Q (in the place of Tobin's Q)	Calculation: $(\text{Market Capitalization} + \text{Book Debts}) / \text{Total Assets}$
2	Asset Turnover Ratio (ATO)	Total Sales for the year / Total Assets at the end of the year

3.2 Collection of data

Data is sourced from the Annual Reports of companies for the years 2008-2009 to 2019-20. The financial year for every company ends on the 31st of March. The financial statements are downloaded from www.screener.in. The information relating to shares i.e., The market price and face value are taken from www.moneycontrol.com. The data relating to directors, promoter shareholding, R&D expenses, and intangible assets are taken from the Annual Report of companies. We shortlist forty companies among the pharmaceutical companies listed in the Bombay Stock Exchange (BSE) on the following criteria:

1. The companies have made profits in all years of study
2. Dividend is paid in all years under study
3. There has not been any discontinuance of business for any time during the period

Table 3: List of companies shortlisted

Sl.	Company	Sl.	Company
1	Lupin Ltd.	21	Shilpa Medicare Ltd.
2	CIPLA Ltd	22	Lincoln Pharmaceuticals Ltd.
3	Dr. Reddy's Laboratories Ltd.	23	Amrutanjan Health Care Ltd
4	Aurobindo Pharma Ltd.	24	Anuh Pharma Ltd.
5	Glenmark Pharmaceuticals Ltd.	25	Jagsonpal Pharmaceuticals Ltd.
6	Sun Pharmaceuticals Industries Ltd.	26	Jenburkt Pharmaceuticals Ltd.
7	Torrent Pharmaceuticals Ltd.	27	Novartis India Ltd
8	Divi's Laboratories Ltd.	28	Sanofi India Ltd
9	Cadila Healthcare Ltd.	29	TTK Healthcare Ltd
10	IPCA Laboratories Ltd.	30	Hikal Ltd
11	Glaxo SmithKline Pharmaceuticals Ltd.	31	Natural Capsules Ltd
12	BIOCON Ltd.	32	Coral Laboratories Ltd
13	NATCO Pharma Ltd.	33	Syncom Healthcare Ltd
14	Ajantha Pharma Ltd.	34	Gufic Biosciences Ltd
15	Nectar Lifescience Ltd.	35	Vikram Thermo India Ltd
16	Unichem Laboratories Ltd.	36	Albert David Ltd.
17	Granules India Ltd.	37	Abbott India Ltd
18	JB Chemicals & Pharmaceuticals Ltd.	38	Jubilant Life Sciences Ltd.
19	Aarathi Drugs Ltd.	39	Strides Pharma Sciences Ltd.
20	FDC Ltd.	40	Pfizer

3.3 Analysis in this paper proceeds as follows

The data is evaluated for reliability and Cronbach’s Alpha is established. We then proceed with the descriptive statistics and correlation analysis. The independent variables are evaluated on Principal Component Analysis and then the convergent & discriminant validity of the components is evaluated. This is followed by Unit Root Test, first by visual inspection of the graphs and then by using the Dickey-Fuller Test. Finally, we do various iterations in the Structural Equation Model to arrive at the best fit. This is followed by the analysis of results and finally the conclusion.

4. Results and Discussion

- The reliability test of the data shows Cronbach’s Alpha score of 0.728, which is acceptable.
- The highlights of the summary statistics are that there is a wide range in each variable. This indicates that the industry is made up of a few large companies which hold more than 70% of the market share and a vast number of smaller companies that account for the balance 30% of the market share. Each variable is skewed and has a high kurtosis, except for ROCE which is efficiency based.

Table 4: Summary Statistics

	STRU	EDU	CORE	DIRECTORS	INDDIRECTOR	EPU	ROCE
Mean	9.80	7.61	5.75	8.89	4.66	4.70	19.20
Standard Error	0.21	0.20	0.15	0.11	0.07	0.80	0.61
Median	9.00	7.00	5.00	9.00	5.00	1.75	16.42
Mode	7.00	2.00	2.00	10.00	5.00	4.13	15.00
Standard Dev.	4.66	4.43	3.26	2.32	1.54	17.50	13.31
Sample Variance	21.71	19.62	10.64	5.38	2.36	306.25	177.16
Kurtosis	0.47	-0.15	-0.36	-0.18	0.41	57.67	13.33
Skewness	0.83	0.71	0.66	0.18	0.40	7.32	2.32
Range	21.00	19.00	14.00	12.00	9.00	182.78	138.35
Minimum	3.00	1.00	1.00	4.00	1.00	0.00	-10.70
Maximum	24.00	20.00	15.00	16.00	10.00	182.78	127.65
Count*	480	480	480	480	480	480	480

*After removing the outliers, 426 observations are obtained.

- The correlation analysis shows a strong and positive correlation among the management variables (Mgt. Education, Mgt. Structure, and Core Team), and between Directors & Independent Directors.

Table 5: Correlation Analysis

	STRU	EDU	CORE	DIRECTORS	INDDIRECTOR	EPU	ROCE
STRU	1.00						
EDU	0.95	1.00					
CORE	0.95	0.96	1.00				
DIRECTORS	0.31	0.32	0.33	1.00			
INDDIRECTOR	0.23	0.27	0.31	0.72	1.00		
EPU	0.27	0.24	0.25	0.12	0.09	1.00	
ROCE	(0.02)	0.01	(0.01)	(0.03)	(0.07)	0.11	1.00

- The PCA is conducted on the independent variables. The rotated component matrix gives the following three components. The components are named by the main characteristics of the component:

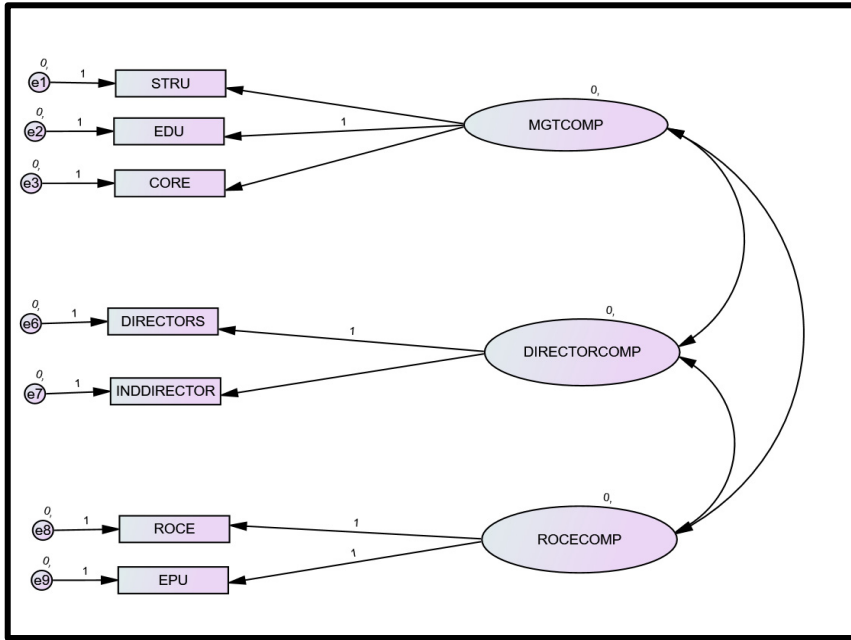


Figure 1: Graphical representation of the three components given by the PCA

MGTCOMP: STRU, EDU, and CORE

DIRECTORCOMP: Directors and Independent Directors

ROCECOMP: ROCE and EPU

- The convergent and discriminant validity of the selected components is evaluated. It is observed that the data passes the tests for convergent & discriminant validity.

4.1 Results of the Unit Root Test:

This aspect is achieved through the following:

1. Visual inspection of the plots to ensure that the mean does not have a trend
2. By conducting Augmented Dicky Fuller Test

Table 6: Results of the ADF Test

Sl.	Variable	P value
1	MGTCOMP	0.000
2	DIRECTORCOMP	0.015
3	ROCECOMP	0.000
4	DIVIDEND	0.000
5	LEVERAGE	0.000

4.2 Results of Structural Equation Model

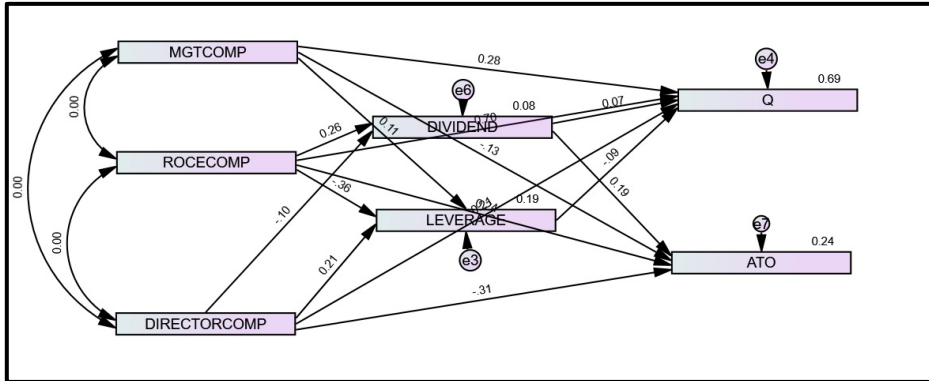


Figure 2: Structural Equation Model

Table 7: Regression Weights

			Estimate	S.E.	P
LEVERAGE	<--	ROCECOMP	-.165	.020	***
DIVIDEND	<--	ROCECOMP	.251	.045	***
DIVIDEND	<--	DIRECTORCOMP	-.097	.045	.031
LEVERAGE	<--	DIRECTORCOMP	.097	.020	***
LEVERAGE	<--	MGTCOMP	.051	.020	.011
Q	<--	MGTCOMP	.215	.021	***
Q	<--	ROCECOMP	.545	.023	***
Q	<--	LEVERAGE	-.150	.051	.003
Q	<--	DIVIDEND	.060	.023	.009
Q	<--	DIRECTORCOMP	.166	.022	***
ATO	<--	MGTCOMP	-.110	.037	.003
ATO	<--	ROCECOMP	.207	.038	***
ATO	<--	DIRECTORCOMP	-.272	.037	***
ATO	<--	DIVIDEND	.177	.040	***

Table 8: Standardized Regression Weights

			Estimate
LEVERAGE	<---	ROCECOMP	-.361
DIVIDEND	<---	ROCECOMP	.260
DIVIDEND	<---	DIRECTORCOMP	-.101
LEVERAGE	<---	DIRECTORCOMP	.211
LEVERAGE	<---	MGTCOMP	.112
Q	<---	MGTCOMP	.277
Q	<---	ROCECOMP	.702
Q	<---	LEVERAGE	-.089
Q	<---	DIVIDEND	.074
Q	<---	DIRECTORCOMP	.214

			Estimate
ATO	<---	MGTCOMP	-.126
ATO	<---	ROCECOMP	.237
ATO	<---	DIRECTORCOMP	-.311
ATO	<---	DIVIDEND	.195

Table 9: Fitness of Model

Sl.	Test	Acceptable Limit	Result
1	CMIN / DF	<5	1.708
2	NFI	>0.9	0.991
3	RFI	>0.9	0.935
4	TLI	>0.9	0.972
5	CFI	>0.9	0.996
6	RMSEA	<0.08	0.041

4.3 Analysis of the Structural Equation Model

It is observed from the above results that the influence on Q is highest from ROCECOMP ($\beta_{ROCECOMP} = 0.702$) followed by Management Quality ($\beta_{MGTCOMP} = 0.277$) and Directorship ($\beta_{DIRECTORCOMP} = 0.214$). Leverage has a negative impact on Q ($\beta_{LEVERAGE} = -0.089$) and Dividend has the least positive impact ($\beta_{DIVIDEND} = 0.074$). With the R^2 of 0.69, it is observed that 69% of the variance is explained by the model. ATO is impacted by ROCE the highest ($\beta_{ROCECOMP} = 0.237$) followed by Dividend ($\beta_{DIVIDEND} = 0.195$). In fact, Management and Directorship have a negative impact on ATO. With R^2 of 0.24, only 24% of the variance is explained by the model towards ATO.

To summarize, the market value is impacted by ROCE, followed by Management Quality and Directorship. Leverage has a negative impact on Market Valuation and Dividend plays an insignificant role. Similarly, ROCE plays a major role in ATO followed by dividends. Management and Directorship have a negative impact on ATO.

5. Conclusion

With the ever-changing business scenario, the relevance of the quality of management and board of directors that can steer through the complexities of businesses and ever-increasing competition and generate free cash flows is of paramount importance. Extant literature has demonstrated that the quality of management is negatively correlated with dividends and asymmetric information. With good quality management, investors look at long-term wealth creation than short-term gains in terms of dividends. There is also a negative relationship between quality of management and leverage, as good quality management looks to plow back funds into the business than expand businesses with borrowed capital.

In their books *Diamonds in the Dust* (Mukherjea et al, 2021); *Coffee Can Investing* (Mukherjea et al, 2018); and *Unusual Billionaires* (Mukherjea, 2016); the authors emphasize extensively the need for good quality management and give case studies of companies that have generated stupendous wealth with quality management and best practices. The authors give instances where the promoters of family-run businesses have handed over the management to professional managers, invested heavily in technology, generated free cash flow, and plowed back funds for expansion. These books speak of the actions of good quality management. On the other hand, Chemmanur & Paeglis (2009) measure the quality of management based on three parameters. Here, the authors do not apply the quality of management to evaluate the market valuation. Saravanan et al (2021) and Bird et al (2018) examine the role of directors and independent directors and establish that independent directors have an influence on the market value of the firm. However, these studies look at the two separately.

We apply the method of Chemmanur & Paeglis (2009) to evaluate the market valuation. Further, as against all other studies so far, our study combines the strength of the Board of Directors and Independent Directors as a composite variable to explore the influence on market valuation.

With the help of PCA, we develop composite variables as follows:

MGTCOMP: STRU, EDU, and CORE

DIRECTORCOMP: Directors and Independent Directors

ROCECOMP: ROCE and EPU

These independent composite variables are used along with Dividend and Leverage as mediating variables to explore the effect on Market Valuation (Q) and Asset Efficiency (ATO).

ROCE, Management, and Directorship in that order influence the market valuation. Leverage has a negative impact on Q and the dividend has a limited role to play. ATO is impacted more by ROCE followed by Dividends but is negatively impacted by Management & Directorship. It can be concluded that the management & directorship through ROCE impact the ATO.

The Study reinforces the argument that the quality of management and directorship is of critical importance, apart from profitability. One needs to go beyond the financial statements to analyze these variables

6. Limitation & Scope for Future Work

The scope of this research is limited to the Indian context and further, only to the pharma industry. Further, the study is done for 12 years i.e., FY 2008-09 to 2019-20, and to only those companies that have paid dividends.

Going forward, a comparative study between India and other developed countries may be conducted to see if the model works in other countries as well. Further, in India, it would be worthwhile to verify the model with Nifty 50 companies to compare the impact of variables on the market valuation of a wide spectrum of industries. As regards the pharma industry, the number of years of study can be stretched to explore the variation before and after the implementation of the TRIPS agreement. More macroeconomic considerations like the Impact of the US treasury rate change could be explored.

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