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Corporate Governance, Innovation and Corporate Performance: A Study of Pharmaceutical Industry of Pakistan

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Abstract: The purpose of the study is to find the relationship between research and development and performance of companies and to check the corporate governance effect on the relationship between performance and innovation.The data has been taken from annual reports of companies. The study cover the period from 2009 to 2018. SPSS has been used for analysis of the study.Corporate performance is measured from ROA and ROE. Innovation is measured from research and development expenditure and managerial compensation is proxy for corporate governance.There is insignificant and positive relationship between corporate governance and firm performance and negative and significant relationship when considering the effect of moderator R&D.There is inverse relationship between performance of companies and corporate governance and R&D.

Keywords: Corporate performance, Innovation, Corporate Governance, Pharmaceutical Industry

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1. Introduction

As science and technology has been changed, companies are highly invest in research and development and develop their core competitiveness. R&D investment needed for innovation activities. A lot of studies have shown that innovation increase the profitability and ultimately the performance of companies. Senior managers' role is very important whether they consider short term benefits or focus on research and development for long term growth. According to the traditional theories there is positive relationship between corporate performance and innovation.

Corporate governance is the system by which organizations are directed and controlled. It is the relationship between shareholders and managers. On the basis of principal agent relationship the managers focus on their own interest and ignore the shareholder interest and cause the agency problems and ultimately decrease the value of the company (Jensen and Meckling, 1976). The main purpose of the organization is to increase the shareholder value. So

corporate governance focus on the alignment of interest between principal and agent. Identification of the relationship between performance and corporate governance is very important. Managers focus on their performance targets and avoid the research and development to cut cost and increase profits. In recent studies mostly focus of the studies on salary incentive and their impact on the innovation and performance of companies (Lu and Yin, 2014; Xu and Xiangyi, 2012) but these studies conclusions and results are not consistent. There is a lot of study on the relationship between corporate governance and firm performance but in developing countries there is also need to do it (John *et al.*, 2008; Mizuno, 2010; Ebehart, 2012)

There are some problems on the innovation activities due to lack of investment in R&D and innovative awareness.The companies which more focus on the research and development achieve the competitive advantage and increase their future value (Lee *et al.*, 2011). Innovativeness is very important for the growth of the company, to enter in the new market and to increase the existing market share and to achieve the competitive advantage. Research and development is not only important to the companies but also play an important role for the economies. So public innovation and companies' innovation cause the benefit to the whole society (Bednyagin and Gnansounou, 2012). Previous studies shows that companies continuously focus on R&D to increase the value of the company. As the companies change its technology, R&D become an important element for their survival, success and growth (Jimenez and Sanz-Valle, 2011; Bell, 2005). Research and development cause the new innovation. The capability of research and development is the major source of innovation (Wang et al, 2013). The most important firm performance determinant is also innovation (Mone*et al.*1998). The study of Renko 2011explains that innovations is key factor for ROA(return on assets).

1.1. Objectives of the Study

The objective of the study is to find the relationship between corporate governance and firm performance and research & development act as a moderator. The objectives are as follows:

- To find the direct relationship between corporate governance and firm performance.
- To find the indirect relationship between firm performance and corporate governance through innovation.
- To suggest recommendations on the basis of findings.

1.2. Significance of the Study

In this study the relationship between corporate governance and firm performance has been checked and R&D playing the role of moderator. This study is very useful for the managers, shareholders and the debt holders in

making the decisions. In the previous studies only discuss the relationship between performance and corporate governance and results are not consistent. This study considers the research and development which is very important for the survival and success of company. R&D plays an important role between firm performance and governance. There is no any study which consider the research and development effect on corporate governance and performance in Pakistan. So this study will be very helpful because previous studies only consider the direct effect of corporate governance on performance but this study consider the indirect effect on performance through R&D. This paper provides the evidence that R&D moderates the relationship between performance and corporate governance.

In the next section literature review of different studies have been discussed. In the third section methodology and conceptual frame work have been discussed. The results have been discussed in fourth section and then conclude the study and discuss the limitations of the study.

2. Literature Review

In this section we will study the prior studies relating to the corporate performance, innovation and corporate governance.

Yin and Sheng (2019) evaluated the effect of innovation on corporate performance and executive incentive scheme effect on the relationship between performance and innovation in china. The study has taken the period from 2009 to 2015 and secondary sources have been used which were databases of WIND and CSMAR. The software which were used for quantitative analysis are SPSS and STATA. The estimation method was 3SLS. The study concluded that there is positive relationship between performance and innovation in capital intensive and technology intensive industries while no significant impact of innovation on performance in labor intensive industries. There is also positive effect of salary incentive on the relationship of innovation and performance of companies.

Feng *et al* (2014) investigated the investment in research and development and its' effect on the relationship between performance and corporate governance. The sample period is 2007-2008 and 99 companies have been selected for analysis and data is taken from CSMAR database andGTA china stock market.The dependent variables in the study are EPS, ROE and ROA while corporate governance is independent variable and research & development taken as mediating or moderating variable. Firm size, CEO age, tenure and industry characteristic are control variables. The study concluded that research and development mediates the firm performance and capital structure relationship. There is need of better public policies of technological innovation for improving the firm performance relationship with corporate governance. The results of this IT industry are not apply to other industries. This research can also be done in pharmaceutical industry and use the panel data instead of cross-sectional data which is used in chines firms.

Xu and Jin (2016) examined the relationship between performance and R&D in china. The data have been taken of 30 Listed companies which are listed in shanghai stock exchange and taken from annual reports of the companies. The study covers the period from 2011 to 2013. The dependent variables used in the study is profit margin and R& D has been taken as independent variable while firm size and asset liability ratio are taken as control variables. The study concluded that first there is non-significant effect of R&D on firm performance. Second there is positive relationship between R&D and performance of companies in the current year and the next year. Third there is negative relationship between firm performance and R&D in cumulative effect. The study recommended that managers should encourage research and development for improving their core competitiveness. It is also suggested that there is a need of abundant funds for basic research, applied research and for experimental research. Government should introduce such policies in which companies can get tax incentive and financial support for research and development.

Mi and Feng (2019) evaluated the relationship between firm performance, R& D and corporate governance in china pharmaceutical industry. The data has been taken of 133 listed companies in china and cover the period of 2009 to 2016. STATA software has been used for analysis. The variables of the study are ROA, RD and SIZE of company, Board size and independent directors. The study concluded that equity ownership has negative impact on the research and development. Board size expansion leads to poor decision making, bad communication and poor management efficiency. The manager's incentives do not play an important role for research and development and they do not inclined to innovation.

Akbar (2014) examined the relationship between corporate governance and firm performance in textile sector of Pakistan. The study cover the period from 2007 to 2011. The sample of 12 textile companies have been taken for analysis. ROA and ROE are dependent variables and board size, ownership structure and duality are independent variables. The study concluded that there is positive relationship between performance and ownership structure because there are major shareholders which enforce the managers to take such decisions which increase the shareholder value. There is positive relationship between small board size and ROA. Smaller board size take the early decisions of investment and financing and big board size cause the delay in decisions making. There is no significant relationship between ROE and board size.There is also positive relationship between CEO/Chairman duality and performance.

Ayaydin and Karaaslan (2014) evaluated the research and development effect onmanufacturng firm performance in turkey. The study cover the period from 2008 to 2013. The data has been taken of 145 manufacturing companies. ROA is used as dependent variable while firm size, leverage and firm liquidity are control variables. Research and development is independent variable which

is measure by research and development expenditure to net sales. GMM has been used for parameters estimation.The study concluded that there is positive relationship between performance of companies and R&D.

Panditharathna and Kawshala (2017) examined the firm performance relation with corporate governance in Sri Lanka. This study takes the period from 2012 to 2015. The sample of 56 companies have been taking which are listed in Colombo stock exchange. The methodology adopted for the analysis is ordinary least squares (OLS). The study concluded that there is no significant relationship between firm performance and corporate governance. Board size, proportion of females' directors and independent directors in the board have no significant relation with performance while effectiveness of board plays an important role for ROE. Future research can be extended by considering the board committees, shareholding of directors and the remuneration of directors.

Javid and Iqbal (2008) evaluated the relationship between corporate governance and firm performance in Pakistan. The data has been taken of 60 companies and taken from annual reports. Study covers the period from 2003 to 2008. The study concluded that ownership concentration has positive effect on the profitability of the companies and more opportunity for investment leads to more ownership concentration.

Ghazi and Rim (2014) examined the relationship between performance and corporate governance and research and development is taken as mediating variable. The sample has been taken of 178 French companies and study covers the period from 2008 to 2012. The study concluded that the research and development has mediating effect on the relationship between corporate governance and performance of companies.

Hassan *et al.* (2013) evaluated the innovation effect on the performance of companies in manufacturing sector of Pakistan. Survey questionnaire has been used for collection of data and 150 respondents used for questionnaire. SPSS has been used for analysis. The study concluded that there is positive relationship between performance of companies and the innovation. Higher performance can be achieved through increased innovation in manufacturing sector. This study can be extended by considering the comparative analysis of companies on the basis of sector and size. Future research can be done on the basis of cross cultural differences.

Ghaffar and Khan (2014) analyzed the relationship between companies' performance and research and development in pharmaceutical sector of Pakistan. The study covers the period from 2007 to 2012. The data is taken from annual reports of the companies so secondary sources have been used for data collection. The sample of 8 companies have been taken for analysis. SPSS has been used for analysis of data. The study concluded that there is positive relationship between performance of companies and research and development. So increase in the budget of the research and development, the performance of companies is increased. The study recommended that there is

a need to increase in the budget of research and development so that companies more focus on the research activities. The study has limited scope and cover only one sector of Pakistan. The future research can be done by considering more than one sector or by comparing the impact of research and development on performance by comparing the developed and developing nations.

Executive compensation plays an important role in increasing the performance of companies. Lin et al examined that salaries of managers is positively related to the research and development and ultimately increase the performance of companies. When managers are more motivated then they more inclined towards innovation. Liu Wei, Lu Tong et al and Peng Zhong *et al* (2014) found the positive correlation between ownership structure and performance.

On the basis of literature following hypothesis is suggested.

Hypothesis 1: There is significant relationship between corporate governance and firm performance.

Previous research found the moderating role of the variables in the relationship between performance of companies and corporate governance. Environment moderates the association between corporate performance and corporate governance (Boyd, 2006). Family control factor also moderates the relationship corporate governance and firm performance (Lam & Lee, 2008). R&D investment is the moderating variable in different context. Business strategy moderated the relationship between firm performance and technology policy. If the investment is very high in research and development then it leads to decrease the performance of companies (Lang, Ofek, & Stulz, 1996). If the corporate governance is effective then it cause the scientific decisions and reduce the risk in research and development and increase the performance of companies (Sah & Stiglitz, 1991). High investment in research and development also cause the agency problems and ultimately affect the relationship between performance of companies and corporate governance (Hitt, Hoskisson, Ireland, &Harrison, 1991). So research and development affect the relationship between corporate governance and performance. According to study of Lu and Wang (2011), there is negative correlation between firm performance and research and development. On the basis of literature following hypothesis is suggested.

Hypothesis 2: R&D significantly moderates the relationship between firm performance and corporate governance.

3. Methodology

3.1. Sample and Data

Data has been taken from pharmaceuticals companies annual reports. The study cover the period from 2009 to 2018. Due to data unavailability only eight companies have been taken for analysis. SPSS has been used for analysis. The statistical methods used in the study are correlation analysis and regression analysis.

3.2. Variables

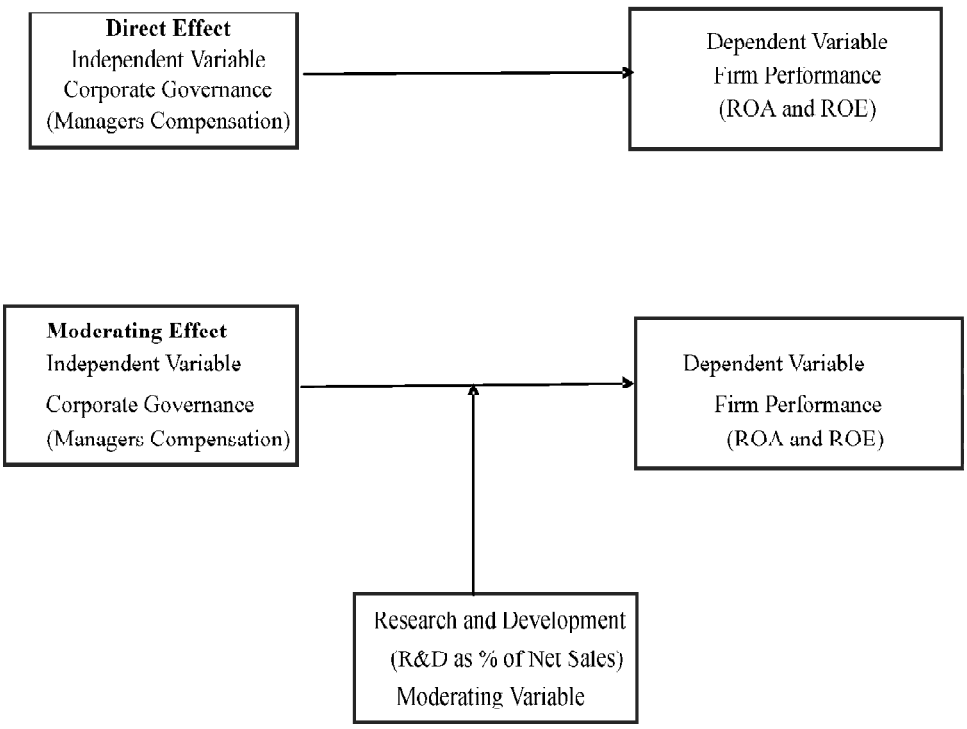
The dependent variables of the study are ROA and ROE. MC is independent variable while Research and development is moderating variable of the study which affect the relationship between performance and corporate governance.

3.3. Operationalization

Operationalization of variables are discussed in Table 1.

No	*Variable*	*Indicator*	*Operational Definition*
Firm Performance Measures			
1.	ROA	Return on Assets	Net Profit after tax divided by total assets
2.	ROE	Return on Equity	Net Profit after tax divided by total equity
Corporate Governance Variable			
3.	MC	Managerial Compensation	Remuneration of Chief executive, Director and Executives
Research and Development Variable			
4.	R&D	Research and Development	Central Research Fund

Conceptual Framework



3.4. Model Specification

The model shows the relationship between corporate governance, corporate performance and research and development. Model of the study is as follows:

Model 1: Corporate Governance and ROA

$$ROA_{it} = \beta_0 + \beta_1 CG_{it} + e_{it} \quad (3.1)$$

Model 2: Corporate Governance and ROE

$$ROE_{it} = \beta_0 + \beta_1 CG_{it} + e_{it} \quad (3.2)$$

Model 3: Corporate Governance, R&D and ROA

$$ROA_{it} = \beta_0 + \beta_1 CG_{it} + \beta_2 R\&D*CG_{it} + e_{it} \quad (3.3)$$

Model 4: Corporate Governance, R&D and ROE

$$ROE_{it} = \beta_0 + \beta_1 CG_{it} + \beta_2 R\&D*CG_{it} + e_{it} \quad (3.4)$$

Where

ROA=Return on Assets

ROE=Return on Equity

CG=Corporate Governance

R&D= Research and Development

Model 1 and 2 shows the direct relationship between performance and corporate governance while the model 3 and 4 shows the indirect relationship between performance and corporate governance due to moderator R&D.

4. Results and Discussion

4.1. Descriptive Statistics

Table 1 shows the descriptive statistics of the study. The mean of R&D is 3.17 percent of net revenue and standard deviation is 7.49 percent. Managerial compensation mean value is 5.35 and standard deviation is 48 percent. ROA mean value is 11.47 percent. The mean value of ROE is 12.38 percent and standard deviation is 49.35 percent. The mean value of moderator is 16.32 percent and standard deviation is 37.51 percent.

Table 1: Descriptive Statistics of key variables

Descriptive Statistics

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
R and D%	80	0.0000%	33.0273%	3.171745%	7.4930148%
MNGCOMP	80	5.0000	6.0000	5.350000	.4799789
ROA	80	-.1261	.3810	.114676	.0932951
ROE	80	-3.8000	.8000	.123750	.4935646
MNGCOM*RD	80	.0000	1.6369	.163217	.3751094

4.2. Correlation Analysis

Correlation analysis is used to check the strength of relationship between variables. There is weak, negative and significant relationship between R&D and manager compensation which is -0.249. The correlation between ROA and R&D is negative, weak and significant which is -0.325. ROE is negatively correlated with R&D and correlation is weak and significant.

Table 2: Correlation Matrix

		Correlation			
		R and D%	*MNGCOMP*	*ROA*	*ROE*
R and D%	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	80			
MNGCOMP	Pearson Correlation	-.249*	1		
	Sig. (2-tailed)	.026			
	N	80	80		
ROA	Pearson Correlation	-.325**	.345**	1	
	Sig. (2-tailed)	.003	.002		
	N	80	80	80	
ROE	Pearson Correlation	-.468**	.175	.507**	1
	Sig. (2-tailed)	.000	.120	.000	
	N	80	80	80	80

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4.3. Regression Analysis

In regression analysis we will check the relationship between variables is either significant or not.

In table 3 the relationship between ROA and managers compensation have been shown. There is insignificant and positive relationship between manager compensation and ROA at 5 percent level of significance.

Table 3: Results of ROA and Managers Compensation

	Coefficients			
Model	*Unstandardized Coefficients*		*T*	*Sig*
	B	*Std Error*		
(Constant)	-.091	.116	**-.784**	.435
MNGCOMP	.038	.0221.78	1	.079

Dependent Variable: ROA

Table 4 shows the relationship between ROE and managers compensation. There is insignificant and positive relationship between ROE and compensation.

Table 4: Results of ROE and Managers Compensation

	Coefficients			
Model	*Unstandardized Coefficients*		*T*	*Sig*
	B	*Std Error*		
(Constant)	-.445	.622	-.715	.476
MNGCOMP	.106	.116	.918	.361

Dependent Variable: ROE

Table 5 shows that there is insignificant and positive relationship between ROA and managers' compensation but ROA has negative and significant relationship with moderator R&D.

Table 5: Results of ROA and CG and R&D as Moderator

	Coefficients			
Model	*Unstandardized Coefficients*		*T*	*Sig*
	B	*Std Error*		
(Constant)	-.051	.112	-.456	.650
MNGCOMP	.033	.021	1.593	.115
MNGCOM*RD	-.072	.027	-2.694	.009

Dependent Variable: ROA

Table 6 shows that there is positive and insignificant relationship between ROE and managers' compensation but with moderator the relationship is negative and significant.

Table 6: Results of ROE and CG and R&D as Moderator

	Coefficients			
Model	*Unstandardized Coefficients*		*T*	*Sig*
	B	*Std Error*		
(Constant)	-.122	.565	-.216	.830
MNGCOMP	.064	.105	.609	.544
MNGCOM*RD	-.586	.134	-4.373	.000

Dependent Variable: ROE

Discussion

The study has hypothesized that there is significant relationship between corporate governance and firm performance but the results shows that there is insignificant positive relationship between corporate governance and firm performance which is consistent with prior studies of (Panditharathna and

Kawshala 2017) so reject the H1.The results are significant when we incorporate the effect of moderator R&D. So there is moderation in the model. Moderation significantly affects the relationship between performance and corporate governance so accept the H2. The results of moderation with ROA and ROE are negative because when there is increase the level of research and huge investment made in innovation along with increase the salary compensation of employees then it will ultimately decrease the profitability of the company and performance. So managers of the companies should consider the decisions relating to the research and development.

First we draw the conceptual framework which check the direct relationship between corporate performance and corporate governance and then check the relationship with considering the effect of moderator R&D. Our study results matched with the previous studies in which corporate governance affect the R&D and R&D affects the firm performance (Hitt *et al.*, 1997; Sougiannis, 1994). So study shows the indirect impact of corporate governance on firm performance through R&D.

5. Conclusion

The study evaluate the relationship corporate governance and firm performance and R&D in pharmaceutical sector. The study covers the period from 2009 to 2018. The study conclude that there is moderation effect between firm performance and corporate governance. The results provide the managerial implication relating to managers salaries and research and development. The research and development cost and managers salaries negatively affects the performance of companies. When the companies invest in research and development then they have to bear cost and pays the higher salaries to researchers which ultimately adverselyaffect the profitability of the companies. So companies should not made a lot of investment in research and development but only made it at small level. So companies should improve their policies and create the favorable environment for research and development. The government should adopt such policies in which they encourage firms by giving tax credits and loans.

6. Limitationsand Recommendations

Our study has some limitations. This study only considers the pharmaceutical sector. Future research can be extended by considering other sectors. This study results cannot be apply to the firms in other industries. Future research can be done by considering the other variables like board size, independent directors and female directors.

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