IMPACT OF CORPORATE GOVERNANCE ON RESEARCH & DEVELOPMENT INVESTMENT IN THE PHARMACEUTICAL INDUSTRY IN INDONESIA

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Article Information	Abstract
	Deciding the investment scale of a company's Research & Development is a strategic investment decision related to creating long-term value of the company and it is a very important decision because it has a certain level of risk and the cost is not small. Corporate governance of a company differs according to the ownership structure of each company, and corporate governance will affect the company's decision-making. The purpose of this study is to examine the effect of corporate governance structure, namely major shareholder, institutional investor, and outside directors to investment research & development at a pharmaceutical company listed in Indonesian Stock Exchange period 2010 to 2017. The population of this study is a pharmaceutical company listed on the Indonesia Stock Exchange. The number of pharmaceutical companies listed during the period 2010 to 2017 is as many as 11 companies. By using purposive sampling, obtained a sample of 5 companies. The data analysis technique used in this research is multiple linear regression analysis. The results of this study indicate that major shareholders have a positive significant influence on research & development investment. Meanwhile, the institutional investor has a positively significant influence on research & development investment. And the outside directors have an insignificant negative effect on investment & development investment.

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INTRODUCTION

In 2017 the Indonesian Pharmaceutical Entrepreneurs Association (GP) noted that the pharmaceutical industry, traditional medicine and chemical drugs grew by 6.85%, then the investment value increased around 35.65%, and the addition of investment in the pharmaceutical sector reached 5.8 trillion, (Vincent, 2018). Growth in the pharmaceutical industry was influenced by Presidential Instruction 6 of 2016 concerning the Acceleration of the Development of the Pharmaceutical Industry and Medical Devices aimed at realizing independence and increasing the competitiveness of the pharmaceutical industry and medical devices. To achieve this goal, an innovative pharmaceutical industry is needed that develops every year with optimal mastery of technology, so that it can meet the needs of affordable drugs and can provide medicinal raw materials in the future. Lee & Choi (2015) stated that pharmaceutical companies tend to develop new drugs to treat new diseases through Research & Development

(R & D) investments to create sources of profit in the future or develop drugs that are relatively cost-effective to maximize company value.

According to Sujadi (quoted from Utomo, 2017), R & D is a process or activity carried out by the in order to create products that are better than existing products, and can also improve the quality of old products for the better. Establishing the scale of investment (R & D) of the company requires important decisions related to the formation of long-term corporate values and mature decisions because it has certain advantages or disadvantages depending on the scale set (David, 2011). Corporate R & D investment is influenced externally by the market where the company operates as well as the economic environment faced by the company and internally influenced by ownership structures (Jensen, 1976; Ghosh, 2007). In Indonesia, there are no regulations regarding R & D investment in pharmaceutical companies. In the long run, government reform policies will be very important in the pharmaceutical industry, due to the relatively high cost of drugs compared to developed countries (Lee, 2015). The pharmaceutical industry is expected to have long-term growth on an ongoing basis, due to the increasing public interest in good health and quality of life, and requires active promotion and investment by the government and the private sector for the continuity of this business (Lee, 2015)

Good Corporate Governance (GCG) or interpreted in Indonesian, namely corporate governance can influence decision making, direction, management, and control of a company. GCG is a process and structure that is used to direct and manage business and company affairs, in order to improve business prosperity and corporate accountability, with the main goal of realizing shareholder value in the long term, while still taking into account the interests of other stakeholders. (Malaysian Finance Committee on Corporate Governance in February 1999). Therefore, changes in ownership structure influence company policy in assessing investments including R & D (Jensen, 1976).

Hansel and Hill's (2011) study reports that there is a positive relationship between share ownership and R & D investment. Furthermore, Hansen & Hill (1991) also argues that there is a positive relationship between investor institutional ratios and R & D investment. In another study, Lee (2015) stated that majority of shareholders have a positive effect on R & D investment. In addition, independent commissioners have a negative influence on R & D investment, and the latter opinion of institutional investors does not have a significant influence on R & D investment (Lee, 2015). Therefore, based on differences of opinion and results of existing research, researchers are interested in conducting research by taking samples in Indonesia.

LITERATURE REVIEW

Agency theory in corporate governance is based on contractual relationships between shareholders and management. Based on this agency theory, it will be difficult to achieve good relations between managers and owners, due to differences in interests that will often occur. Agency relations in agency theory will occur if the principal delegates his authority to the agent. The relationship between principals and agents can cause a situation where the information obtained is not balanced, this event is caused by the condition of agents who have more information than the principal (Astrid Kurniawati, 2014).

This study examines the influence of corporate governance on R & D investment in pharmaceutical companies in Indonesia. Corporate governance in this study is explained by 3 variables found in this study, namely the major shareholders, institutional investors, and independent commissioners. The relationship between variables in this study is illustrated in Figure 1.

Figure 1. Research Model
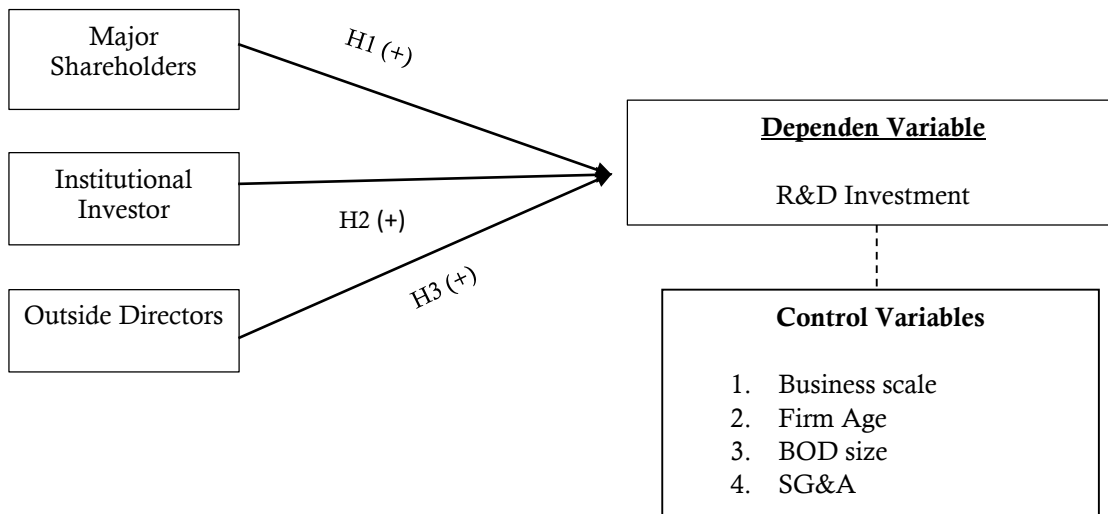
Independent Variables

Figure 1 illustrates the effect of independent variables and controls on the dependent variable. The independent variables in this study are the majority shareholders, institutional investors, and independent commissioners.

The straight line illustrated in Figure 1 indicates that there is a direct influence between the independent variable and the dependent variable. While the dashed line illustrated above means that there is an indirect influence between the dependent variable and the control variable. The control variables referred to in this study are business scale, company age, board size, and SG & A.

Effect of Major Shareholders on Research & Development Investments

Ojok, et al. (2016) say, based on the agency theory perspective, agency relations occur because of the contractual relationship between the principal delegates his authority to the agent. This agency problem will easily arise where the principal as the owner of the company wants what the manager does according to his wishes, but the agent or manager who is expected to do the task does not act like the principal's wishes, causing a conflict of interest (Ojok et al 2016). Utomo (2017) says that a shareholder has a desire to value shares or investments to grow steadily, but managers may want financial compensation or for personal gain. So that it

can be concluded that the majority shareholders are things that are quite influential in the R & D decision.

In empirical studies in North America, Hansen and Hill (1991) state that there is a positive relationship between majority shareholders and R & D investments. Lee (2015) in an empirical study in South Korea, the majority shareholders have a positive relationship to company R & D investment, the greater the ratio of majority share ownership, the greater the investment of R & D of the company.

Based on some of these explanations, the researcher has a description of the hypothesis as follows:

H1: Major Shareholders have a positive influence on Research & Development Investment.

Effect of Major Institutional Investor on Research & Development Investments

According to Jensen and Meckling (quoted from Wiranata & Nugrahanti, 2013) states that agency theory in institutional investors has an important role in minimizing agency conflicts that occur between shareholders and managers. The existence of institutional investors is considered to be able to optimize the supervision of management performance by monitoring every decision made by the management as the company manager (Jensen & Meckling, 1976). Therefore, institutional investors can promote

an increase in the value of the company in the long term and actively monitor the activities of managers and participate in decision making, (Lee, 2015).

David et al (2011) stated that the institutional role of investors is based on the activities of shareholders increasing R & D investment in the short term or long term. Furthermore, Hansen and Hill (1991) argue positively that there is a positive relationship between the ratio of share ownership of institutional investors to R & D investments. Whereas Lee & Choi (2015) argues that institutional investors do not have a significant influence on R & D investment.

Based on some of these explanations, the researcher has a description of the hypothesis as follows:

H2: Institutional investors have a positive influence on Research & Development Investment.

Effect of Outside Directors on Research & Development investments

Ojok, et al. (2016) say agency theory has a monitoring role as the main functional role of the board of commissioners, the commissioner must examine and approve the company's operating and financial decisions and other company plans. This is intended to reduce the possibility of a manager in carrying out activities that do not maximize the interests of shareholders. The role of monitoring is done to overcome the moral hazard that might occur due to the separation of ownership, or agency conflict (Ojok, et al. 2016).

Ashwin et al. (2016) have the opinion that independent commissioners have a positive relationship with R & D investment. They further said that companies with several independent commissioners are more likely to carry out or have higher R & D investments. Therefore, with the existence of independent commissioners, it is hoped that it will be able to protect the wishes of shareholders who prefer high-risk investments, thereby increasing R & D investment. Utomo (2017) argues that independent commissioners have a not significant positive influence on R & D investment. Whereas Lee & Choi (2015) argue that independent commissioners have a positive influence on R & D investment.

Based on some of these explanations, the researcher has a description of the hypothesis as follows:

H3: Outside Directors have a positive influence on Research & Development Investment

RESEARCH METHOD
Research Variable

The dependent variable used in the study is research & development investment. Research & development (R & D) refers to business investment activities carried out to improve the quality of existing products and procedures or to develop new products and procedures. Investment research & development in this research is measured in the following ways: Investment R & D = (R & D / sales costs) x 100.

The ones used as independent variables in the study include majority shareholders, institutional investors, independent commissioners. Shareholders who have an interest in supervising a company; more ownership and 50% of shares are necessary for this purpose, but in companies that have entered the stock exchange, the most votes can be obtained by combining minority shareholders so that they reach more than 50% (majority stockholders).

Outside block, investors can manage funds and have relatively high shareholder ratios (Lee, 2015). Independent commissioners are indices that are often used in empirical studies on the influence of independent BOD structures. on company performance, values and strategic decisions (Lee, 2015).

This study uses several control variables including business scale, company age, board size, and SG & A. The scale of business is a significant factor that influences R & D investment. In other words, the greater the scale of business, the greater the efficiency of asset use (Baysinger, 1990), and the greater the desire for investments that are at risk such as R & D (Kochhar, 1996).

The age of the company can influence the strategic decisions of a company. The longer the company is established and registered, the higher the investment decisions in the long run such as R & D. In this study, the

age of the company can be seen from how long the company is listed on the exchange (Lee, 2015).

The board of directors can observe the actions of managers and determine according to their views and participate in making key business decisions. These results indicate that R & D investment can increase through the size of the board of directors (Lee, 2015).

SG & A is an abbreviation of selling, general, and administrative expenses or sales, general and administrative costs. The company assumes operational costs are the same as SG & A. SG & A can display the level of agency problems, due to wasteful costs, which may arise when using Lee's company resources, 2015).

Population and Sample

The population of this study is pharmaceutical companies in Indonesia which are listed on the Indonesia Stock Exchange in 2010-2017. Determination of the sample using purposive sampling method or sampling that meets the specified criteria. The criteria for selecting this research sample are presented in table 1.

Table 1. Criteria for research samples

No	Information
1.	Pharmaceutical companies listed on the Indonesia Stock Exchange (IDX) in 2010-2017.
2.	The company that issued audited annual reports on the Indonesia Stock Exchange respectively in 2010-2017.
3.	Providing data that researchers need to measure the dependent variable, independent variables, and control variables specified in this study.

Types and Data Sources

This study uses secondary data, namely the company's annual report in the period 2015 - 2010 as a data source. The data for this study are sourced from the Indonesia Stock Exchange and company web.

Analysis Methods

To test the hypothesis the regression model in this study are as follows:

$$RD = a + \beta_1 OWN + B_2 INS + B_3 ODR + B_4 SIZE + B_5 YEAR + B_6 BS + B_7 SAE + \varepsilon$$

RD	=	Research & Development Investment
α	=	Constant
β	=	Regression Coefficient
OWN	=	Major Shareholders
INS	=	Institutional Investor
ODR	=	Outside Directors
SIZE	=	Business Scale
YEAR	=	Firm Age
BODsize	=	BOD size
SAE	=	SG & A
ε	=	Error coefficient

RESULT AND DISCUSSION

Description of Research Object

The object in this study is pharmaceutical companies in Indonesia, which are listed on the Indonesia Stock Exchange in 2010-2017. The research sample is the companies in the research object that meet the criteria that have been determined. The details of the objects and research samples are explained in the following table 2.

Table 2. Object of Research

No	Information	Total
1	Pharmaceutical companies listed on the Indonesia Stock Exchange in 2010-2017	88
2	Pharmaceutical companies that have incomplete information data	(48)
3	The number of pharmaceutical companies that are eligible to be sampled for 8 years (2010-2017)	40

Table 2 shows that of the total 88 research objects, only 40 samples that could be used in the study.

Table 3. Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation
RD	40	0,01	2,17	0,5801	0,53451
OWN	40	9,39	95,06	63,3268	29,94699
INS	40	0,00	95,06	41,8561	32,63850
ODR	40	20,00	80,00	42,2976	13,80263
SIZE	40	25,33	30,44	28,2821	1,53496
YEAR	40	9,00	26,00	15,9000	4,90839
BS	40	2,00	12,00	5,4250	2,80007
SAE	40	10,82	60,99	33,4350	13,69531

Source: Secondary data processed, 2019

Descriptive Statistics

In testing this descriptive statistic, later it will produce values from research variables statistically so that they can be easily understood, which can be seen from the standard deviation value, average, minimum value and maximum value. The results of the descriptive statistics calculation on the data in this study are in table 2. In testing this descriptive statistic, later it will produce the values of the research variables statistically so that they can be easily understood, which can be known from the standard deviation value, the average, minimum value and maximum value. The results of the calculation of descriptive statistics on the data in this study are in Table 3.

Classic Sssumption Test

The classic assumption test carried out in this study consisted of normality test, multicollinearity test, autocorrelation test and heteroscedasticity test. From all the classic assumption tests that have been done, it can be concluded that:

i. The normality test using the Kolmogorov-Smirnov test shows a probability value of 0.152 for each regression model. This shows that the residual is normally distributed because the probability value is greater than 0.05.

ii. The multicollinearity test shows the tolerance value of all variables greater than 0.10 and has a VIF value below 10. This shows that there is no multicolonity between the independent variables and controls in the regression model.

iii. Heteroscedastic testing with a scatterplot graph shows the distribution of points on a graph that do not show a particular pattern. This shows that there is no heteroscedasticity in the regression model, so the regression model is feasible to use for research. And also using the benchmark test shows a significance value above 0.05. Thus, it can be concluded that there is no heterocedasticity in this regression model.

iv. The autocorrelation test with the Runs Test shows a sig value of 0.149. This value shows there is no autocorrelation in the regression model.

Hypothesis Testing

Hypothesis testing conducted in this study using multiple regression tests. The test results that have been carried out are shown in Table 4. Based on Table 4, the major shareholders have a coefficient of 6.984 and a significance value of 0.020> 0.05. These results indicate that majority shareholders have a significant effect on R & D investment. Furthermore, institutional investor have a coefficient of 0.007 and a significance value of 0.030 <0.05. These results indicate that institutional investors have a significant effect on R & D investment. And then, the outside directors have a coefficient of -0.003 and a significance value of 0.635> 0.05. These results indicate that outside directors have no significant effect on R & D investment.

Tabel 4. Regression

	HIPOTESIS	B	Sig	Ket
H1	Major shareholders have a positive influence on Research & Development Investment	6,983	,020	Significant
H2	Institutional investor have a positive influence on Research & Development Investment	,007	,030	Significant
H3	Outside directors have a positive influence on Research & Development Investment	-,003	,635	Not significant

Sources: Output SPSS, 2019

Results Interpretation
Hypothesis 1

In testing the statistics above it has been found that majority shareholders are significant and have a positive effect on research & development investment. The results of this test are supported because in this case the regression coefficient of the OWN is 6.983 with a significance of 0.020. Due to the significance value of 0.020 <0.05. The results of this study were also supported by previous researchers, Lee (2015); Lee & Choi (2015); Hansen & Hill (1991) who argue that majority shareholders have a positive effect on R & D investment.

Lee & Choi (2015) who argues that a person / institution becomes the majority shareholder, he will make an R & D investment which is expected to have a long-term benefit value for the future rather than investing in other values that have short-term benefits. With the existence of a majority shareholder making an R & D investment, it is expected that in the future it will provide innovation and development for the sustainability of the company.

The results of this hypothesis test indicate that the majority shareholders influence decision making in investing R & D because it is very important for the development of the company in the future.

Hypothesis 2

The test results that have been carried out are that the majority shareholders are significant and have a positive effect on research & development investment. The test results are supported because in this case the regression coefficient of the OWN is 0.007 with a significance of 0.030. Due to the significance value of 0.030 <0.05. The results of this study are also supported by previous researchers, namely, David P, et al (2001); Lee (2015); Hansen & Hill (1991) which states that institutional investors have a positive effect on R & D investment.

Kochhar & David (1996) consider institutional investors as rational investors, because institutional investors have economies of scale in collecting and evaluating investment information, so institutional investors have better knowledge of the stock market than individual investors. Lee (2015) added that institutional investors have incentive activities to promote companies in increasing long-term value by actively monitoring manager behavior and participating in decision making.

The results of this hypothesis test indicate that institutional investors have an influence on R & D investment decision making because institutional investors have a broad view of the stock market and have a long-term effect on the sustainability of the company..

Hypothesis 3

In the third hypothesis which states that independent commissioners have a positive effect on the performance of firms not supported by the results of the analysis. Based on the results of the previous t test the value of

OWN regression coefficient -0.003 and significance 0.635 <0.05. This shows that H3 is not accepted. This result is in line with Lee's research (2015); Francis & Samuel (2016); Lee & Choi (2015) stated that independent commissioner variables had no significant effect on R & D investment.

In a previous study conducted by Ojok et al. (2016), the number of interrelated board members in one board could reduce monitoring, because they did not have time to prepare themselves for meetings so that their contribution would be limited and annual company R & D investments would decrease.

This may be due to conflicts of interest that usually arise between executive members and independent commissioners due to power struggles, and these disputes may be detrimental to the company's R & D investment (Utomo, 2017). This insignificant result illustrates that most independent commissioners have limited knowledge about the company's internal affairs and therefore independent commissioners cannot influence R & D investment (Utomo, 2017).

CONCLUSION

This study aims to analyze the effect of corporate governance structure on research & development investment in pharmaceutical companies in Indonesia. The research sample consisted of pharmaceutical companies listed on the Stock Exchange for eight years (2010-2017). The sample used amounted to 5 companies with an 8-year period, resulting in 40 observation data.

Based on the testing and analysis that has been done, it can be concluded that the results of this study are as follows:

1. Based on the results obtained from the hypothesis 1 test, majority shareholders have a significant positive influence on research & development investment.
2. Based on the results obtained from hypothesis 2, institutional investors have a significant positive influence on research & development investment
3. Based on the results obtained from hypothesis 3, independent commissioners have no significant negative influence on research & development investment.

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