

The Impact of Research and Development on Corporate Market Value with Profit Growth as Intervening Variable

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Abstract:- Every establishment of a corporate has clear objectives, one of which is to maximize the wealth or value of the corporate because in the concept of the theory of the firm the higher the value of the corporate describes the higher the wealth of the owner. Signaling theory has the concept that the existence of information released by the corporate on all decisions will show the market how management views prospects. This research aims to determine the relationship between research and development (R&D) costs on the corporate's market value with profit growth as an intervening variable. The research was carried out by quantitative methods at manufacturing companies listed on the IDX in the 2015-2019 observation year. The results of this research are research and development (R&D) costs have a positive and significant effect on the corporate's market value, research and development costs have a positive and significant effect on profit growth, profit growth has a positive and significant effect on the corporate's market value, research and development costs have a positive and significant effect on the corporate's market value through profit growth as an intervening variable.

Keywords:- *Research and Development, Profit Growth, and Corporate Market Value.*

I. INTRODUCTION

Every establishment of a corporation has a clear purpose. Several things express the purpose of forming a corporation. Maximizing profits or getting as much profit as possible is the corporate's first goal. The corporate's next goal is the welfare of the owner or shareholders. Maximizing the value of the corporate is also the goal of the corporate which is reflected in the corporate's stock price [1]. Salvatore [2] reveals in the theory of the firm that the initial goal of the corporate is to optimize the value of the firm. The higher the value of the corporate reflects the more prosperous the owner of the corporate is. The value of the corporate is reflected in the market price of its shares [3].

Research and development vary by industry, and are usually more intense in manufacturing industries than in non-manufacturing industries. For example, the automotive industry has embarked on research and development to develop

new types of technology-based competition in response to current environmental changes, long-term increases in gasoline prices, and regulatory efforts to curb the threat of global climate change. Other companies may argue that pollution is a sign of inefficiency and flawed technology that also hurts the corporate and affects society. More pressure is being placed on the manufacturing industry as they are believed to use more resources, create more waste and have research and development intensity [4].

Research and development costs are related to profit growth because companies can optimally manage intangible assets to create corporate profits. Companies that carry out research and development activities can create innovative products according to market needs and technological developments compared to companies that do not carry out these activities. Maximum resource management by carrying out research and development activities is carried out to improve corporate performance which is reflected in profit growth which will be observed by investors so that it will increase the corporate's market value.

II. LITERATUR REVIEW

A. Theory of The Firm

The theory of the firm is an organization that combines and organizes various resources to produce goods/services for sale. The corporate is related to various things including human resources, tangible assets, finance, and also information systems. Parties that play a direct role: shareholders, management, employees, suppliers, and consumers, are directly related to the corporate's operations. The corporate must be managed optimally. Theory The corporate believes that maximum profit is the main goal of the corporate. First in the short term to maximize corporate profits. In the long term maximize the expected value [5]. Salvatore [2] reveals in the theory of the firm that the corporate's initial goal is to optimize the value of the firm.

B. Corporate Market Value

The most important goal of a corporate according to the theory of the firm is to optimize the wealth or value of the corporate. The corporate's market value is an investor's perception of the corporate, which is often interpreted by the corporate's stock price. High stock prices also reflect the high

market value of the corporate [2]. Kurniawati and Asyik [6] revealed that firm value is an investor's perception of successful corporate management in resource management which is reflected in the corporate's stock price.

C. Research and Development

Research and development is one activity that has a beneficial purpose related to pure scientific research and technological development. According to the Indonesian Accounting Association (IAI) in the Indonesian Financial Accounting Standards (PSAK 20 revision it is written the notion of research is pure and planned research whose results are expected to provide new technical and scientific knowledge and understanding. The definition of development is the application of research results to a plan to create materials, tools, products, processes, systems, or services, before commercial production or use begins.

D. Profit Growth

Profit growth plays an important role for users of financial statements because when potential investors decide whether to participate in a corporate, the rate of return to shareholders or potential investors is determined by the profit growth generated by the corporate. The components of the financial statements change every period which has an impact on profit growth. This profit growth is caused by changes in sales value, changes in the cost of goods sold, changes in operating expenses, changes in income taxes, and others. External factors can also cause changes in profits such as price increases resulting from inflation and the availability of management flexibility that allows managers to set accounting methods and make predictions that can increase profits [7].

III. RESEARCH METHODS

A. Population and Sample

The population in this research are manufacturing companies listed on the Indonesia Stock Exchange for the 2015-2019 period. This research uses manufacturing companies because manufacturing companies are the most relevant sector to the research topic, the production process in manufacturing companies considers Research and Development in the products they produce. The research period chosen was within 5 years, namely from 2015 to 2019. In this research, the normal period from 2015 to 2019 was used because in 2020 the Covid-19 Pandemic occurred. Most of the companies experienced a decrease in revenue due to the weakening public purchasing power. Costs incurred for Research and Development are not mandatory costs for companies, so in a Pandemic condition, companies can reduce costs by reducing spending on Research and Development for the sake of corporate continuity.

The sample selection used a purposive sampling method, which was based on certain criteria set by the researcher. Annual report data retrieval is carried out on the website <http://idx.co.id> of the Indonesia Stock Exchange as well as browsing related corporate websites for additional data collection related to research.

B. Research Variable

There are 3 variables used in this research. Corporate market value is the dependent variable. Research and Development costs as independent variables. Profit Growth as an intervening variable.

➤ Dependent Variable

The dependent variable in this research is the corporate Market Value as measured by using Return Corporate Market Value (CMV). Corporate market value (CMV) is the total value of shares owned by the corporate, namely the value of the number of outstanding shares multiplied by the year-end closing price.

➤ Independent Variable

The dependent variable in this research is Research and Development Costs. Research and Development costs are a comparison between research and development costs to the corporate's total assets. R&D costs see how much the corporation spends to carry out R&D sourced from the assets owned by the corporate.

➤ Intervening Variable

The intervening variable used in this research is profit growth. The growth rate of positive financial report figures (good news) is expected to increase the relevance of the value of financial statement information, on the other hand, the growth rate of negative financial report numbers (bad news) is thought to hurt the relevance of the information value of financial statements for the stock market.

IV. RESULT AND DISCUSSION

Data on manufacturing companies that met the sample selection criteria were 101 companies during the research period from 2015 to 2019. However, from the data of 101 companies that met the criteria, some data had not passed the classic assumption test of normality. After going through the classic assumption test of normality using SPSS software by removing the extreme data (outliers), 81 samples of normal data.

A. Descriptive Statistics

The results of the descriptive statistical analysis are as follows:

Table 1. Model 1 Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
R&D	81	0,00001	0,02959	0,00450	0,00708
PG	81	-0,97640	2,43470	0,11876	0,65448
Return	81	-0,64706	0,45933	-0,04451	0,24151
Valid N (listwise)	81				

Source: Processed secondary data (2022)

Table 2. Model 2 Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
R&D	81	0,00001	0,02959	0,00442	0,00675
PG	81	-0,97640	0,89185	-0,00156	0,36437
Valid N (listwise)	81				

Source: Processed secondary data (2022)

B. Classical Assumption Testing Results

The classic assumption test in this research was carried out by normality, multicollinearity, autocorrelation, and heteroscedasticity tests. The purpose of the classical assumption test is that the regression results are unbiased or free from error.

- Normality test

Table 3. Results of the Normality Test

Model	Sig. Kolmogorov-Smirnov	Statistik	N
Model 1	0,200	0,061	81
Model 2	0,200	0,053	81

Source: Processed secondary data (2022)

The final normality in model 1 and model 2 have a value of Sig. Kolmogorov Smirnov by 0.200 and 0.200 respectively. This value is greater than 0.05 so it can be said that the data has been normally distributed so that the classical assumption of normality has been fulfilled.

- Multicollinearity test

Table 4. Results of the Multicollinearity Test

Model	Variable	Tolerance	VIF
Model 1	R&D	0,987	1,005
	Profit Growth	0,944	1,060
Model 2	R&D	0,996	1,004

Model 1 autocorrelation obtained a Durbin-Watson value of 2.022 between 1.5 and 2.5 meaning that autocorrelation did not occur or was free in this research. Model 2 is 2.249 which is between 1.5 and 2.5 meaning that there is no autocorrelation in this research.

- Heteroscedasticity test

Table 5. Results of Heteroscedasticity Tests

Model	Variable	Sig.
Model 1	R&D	0,100
	Profit Growth	0,501
Model 2	R&D	0,066

Source: Processed secondary data (2022)

The heteroscedasticity test for each independent variable has a significant value above 0.05 (sig>0.05) so it can be said that there is no heteroscedasticity in model 1 and there is no heteroscedasticity in model 2.

C. Model Test

Hypothesis testing is used to determine the effect of independent variables, namely research and development on profit growth which are intervening variables.

Table 6. Model Testing Results

Model	F-test	Sig. F	R ²	Adj. R ²
Model 1	8,004	0,000	0,238	0,208
Model 2	10,847	0,000	0,218	0,198

Source: Processed secondary data (2022)

D. Hypothesis Test

Testing the Model 1 hypothesis (H1, H3) to determine the effect of research and development costs, and profit growth on the corporate's market value using linear regression. Testing the Model 2 hypothesis (H2) to determine the effect of research and development costs on profit growth.

Table 7. Results of Hypothesis Testing Model 1

Variable	Standardized Coefficients	t	Sig.
	Koefisien Beta		
(Constant)		-0,699	0,487
R&D	0,022	2,215	0,083
PG	0,349	3,410	0,001

Source: Processed secondary data (2022)

From table 7, model equation 1 can be written as follows:

$$\text{RETURN} = 0,022\text{RD} + 0,349\beta_3.\text{PG} + e_1$$

It is known that the value of the beta coefficient for the variable research and development costs is 0.022 (signed positive) with a t-test value of 2.215 and a significance of 0.083. So, the results of this test indicate that research and development costs have a positive effect on the corporate's market value at the 10% level. Based on the signaling theory, an action taken by the corporate to guide investors regarding the perspective of the corporate's opportunities to increase the value of the corporate in the future with increasing research and development costs shows that the corporate increases research and development costs more for prospects. corporate in the future so that it becomes good information for investors which will increase the corporate's market value.

Based on the results of multiple linear regression analysis in this research, the research and development cost variable has a positive effect on the corporate's market value with an effect of 0.022 and is significant at the 10% level. Thus, due to the suitability of the results with the theory, the first hypothesis (H1) in this research is accepted.

It is known that the value of the beta coefficient for the profit growth variable is 0.349 (signed positive) with a t-test value of 3.410 and a significance of 0.001. So, the results of this test indicate that profit growth has a positive effect on the corporate's market value and is significant at the 1% level. Based on the theory of the firm which recognizes profit maximization as the main goal of the corporate. First in the short term to maximize corporate profits. In the long term maximize the expected value. The creation of corporate value is done through profit creation as a result of managing corporate resources. Efforts can be made by the corporate in maximizing its value of the corporate is through the management of financial aspects (financial management).

Based on the results of multiple linear regression analysis in this research, the profit growth variable has a positive effect on the corporate's market value with an effect of 0.349 and is significant at the 1% level. Thus, due to the suitability of the results with the theory, the third hypothesis (H3) in this research is accepted.

Table 8. Result of Hypothesis Testing Model 2

Variable	Standardized Coefficients	t	Sig.
	Koefisien Beta		
(Constant)		0,956	0,342
R&D	0,160	2,191	0,061

From table 8, model equation 2 can be written as follows:

$$\text{PG} = 0,160\text{RD} + e_1$$

It is known that the beta coefficient value for the Research and Development cost variable is 0.160 (positive sign) with a t-test value of 2.191 and a significance of 0.061. Thus, the results of this test indicate that research and

development costs have a positive effect on profit growth at the 10% level. Conducting research and development activities aims to create a product or develop an existing product to be better so that it can attract consumers and will affect the increase in sales so that it can increase corporate profits. In this case, the higher the research and development activities that produce products according to market needs, the more sales will increase and in the end, the corporate's profits will grow positively.

Based on the results of multiple linear regression analysis in this research, the research and development cost variable has a positive effect on profit growth with an effect of 0.160 and is significant at the 10% level. Thus, due to the suitability of the research results with the theory, the third hypothesis (H2) in this research is accepted.

Table 9. Effect of Research and Development Costs on Corporate Market Value on Profit Growth

Relation	Effect	
	Direct	Indirect
R&D → Return	0,022	
R&D → PG	0,160	
PL → Return	0,349	
R&D → PG → Return		(0,160×0,349) = 0,509

Source: Processed secondary data (2022)

Based on the results of the path analysis, shows that the direct effect of the research and development cost variable on the corporate's market value return variable is 0.022. Meanwhile, the indirect effect of the research and development cost variable on the corporate's market value return is (0.1600.349) = 0.509. The beta coefficient value is 0.509 > 0.022, so the profit growth variable can mediate the relationship between research and development costs and the corporate's market value return. In line with the signaling theory, research and development activities, and profit growth is good news for investors. Companies can increase firm value by reducing information asymmetry. One solution to minimize the existence of information asymmetry is to provide a signal to shareholders in the form of actual and reliable financial reports that will reduce uncertainty about the corporate's prospects. Thus, due to the suitability of the results with the theory, the fourth hypothesis (H4) in this research is accepted. Based on the research results, it can be concluded that research and development costs have a positive effect on the corporate's market value return through profit growth as an intervening variable.

V. CLOSING

A. Conclusion

This research is empirical research regarding the impact of research and development costs on the return on the market value of companies with profit growth as an intervening variable. The conclusions based on the results of this research are as follows:

- Research and development costs have a positive and significant effect on the corporate market value return.
- Research and development costs have a positive and significant effect on profit growth.
- Profit growth has a positive and significant effect on the corporate's market value return.
- Research and development costs have a positive and significant effect on the corporate's market value return through profit growth as an intervening variable.

B. Implications

The results of this research support the theory of the firm which reveals profit maximization as the corporate's main objective. The creation of corporate value is done through profit creation as a result of managing corporate resources. With the results of this research, empirical evidence has been obtained that profit growth has a positive and significant effect on the corporate's market value as measured by return on corporate market value. With the results of this research, empirical evidence has been obtained that research and development costs, as measured by the ratio of research and development costs, have a positive and significant effect on the corporate's market value, as measured by the return on corporate market value.

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