The Effect of Research and Development, Product Market Competition on Firm Value (Empirical Study on Health Companies Listed on the Indonesia Stock Exchange for the 2018-2020 Period)

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Abstract

This study aims to examine the effect of Product Market Competition(PCM), research and development on company value, in this study, the researchers used a sample of companies moving in the pharmaceutical and health sectors that are listed on IDX period 2018–2020. The number of pharmaceutical and health companies used for the samples in the study are 3 years of data from 10 companies, the total sample of the study was 30 financial statements, and stock prices. The research method used are purposive sampling. Hypothesis tested on this study used multiple linear regression analysis using the Version 25 SPSS Software.

The results of this research indicates that Product Market Competition and Research and development has a significant effect on company value.

Key Words: Product Market Competition, Research and Development, Company Value.

1. Introduction

Progress that is getting closer and closer to all of us certainly feels familiar, this progress is what drives business competition (Hossain et al., 2020). In the current situation, companies in the pharmaceutical and health sectors are experiencing increasingly rapid economic growth counting from the increasing needs of society, due to the pandemic that hit in 2019, this is what drives the growth rate of pharmaceutical and health companies to continue to develop products and facilities in meeting the needs of society over the last few years (Rennert-May et al., 2021). Company efficiency is not always determined by increasing company value but also based on market competition products and research and development (Nugroho & Stoffers, 2020). Many pharmaceutical and healthcare companies are competing to demonstrate their product development and capabilities in overcoming the pandemic (Rennert-May et al., 2021).

(Sheikh, 2018) said that the theory of economic suggested that the existence of competition in a market products is a way to increase every corporate manager's efforts especially when the corporate profit margin are small and the market competition is high, which makes product market competition (PMC) could be said to be an external aspect that increase every corporate manager's effort, which will make the managers to work harder and better in order to make their product above others.

(Kim et al., 2020) said that the effect of R&D on the value of firms is positive and occurs more frequently in paying firms than non-paying firms. Managers who work in companies that are hindered by financial problems can take advantage of the dividends held to provide results from their future projects, which will also increase the value of the firm.

Company value is a way for investor' to see the company's level of success which mainly related to stock prices, where the value of the company will be high, and if the share price is high, then this will make the believe in the firm's capabilities and future opportunities that will determine the firm's success (Suhadak et al., 2019).

1.1 Objectives

The value of the firm will be high, if the stock price is high (Sukesti et al., 2021). In the 2022 pandemic situation, many companies in the health sector are competing to increase the value of the products and services they have in order to create competition between businesses in increasing the firm's main goal, namely to earn profits from providing a product and optimizing the value of the firm (Rennert-May et al., 2021). The value of the farm it self will affect the wheels of the firm's performance both in the short and long term so that it can affect the mindset of potential investors who want to invest in a company.

2. Literature Review

On, CSR, PMC, and firm value by (Sheikh, 2018) it is written on their research that Product market competition's value can increase and reduce investment, which scenarios can be explained by using the product market competition itself and product fluidity. The result from their (Sheikh, 2018) research using IV-GMM Regressions by treating product market competition as endogenous, allows them to find that PMC could increase the value of invest when the PMC is high and or the fluidity of the product is high, which means that when the PMC is low or the product fluidity is low, the product market competition will not have any significant effects on the firm value. Overall the research suggest that high competition on the market and high product fluidity is able to make PMC and CSR a value increasing investments.

On, The Impact of Research and Development Intensity, Dividend Payout Policy, and Financial Constraints on Firm Value by (Kim et al., 2020) it is written on their research that market investors are more confident with firms that has dividend pay-out policies, rather than firms without dividend policy when conducting Research and Development. The researchers believe that their findings could

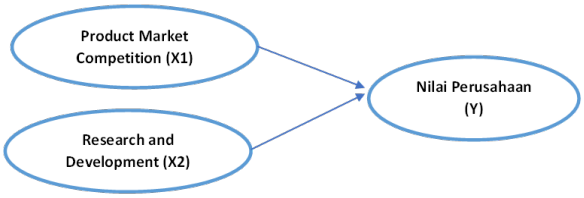
contribute to any literature which has a relationship among R&D Dividend policy and corporate financial constraints (Gupta et al., 2017).

3. Methods

Researchers used Quantitative research as a form of research that produces data with the aim of being able to establish a cause and effect. The relationship of two variables can be measured by mathematical methods, computational methods and statistical methods. This research is also called empirical research because it is accurate and can be measured precisely. The data collected by researchers can be divided into categories or ranks, and can also be measured in units of measure (Ahmad et al., 2019).

Research Model

The form of the research model used in this study is described as follows:



Gambar 1. Research Model

Methods of analysis

Methods of Analysis This research uses quantitative analysis techniques by quantifying the research data to provide the information needed for analysis. Quantitative research data is the result of processing data collected through the company's annual report which can be accessed through the IDX's official website. The population used are pharmaceutical and health companies that have complete data related.

4. Data Collection

The sample company data that we use and meet the requirements in this study are 10 companies in the pharmaceutical & health sector listed on the IDX for the period 2018–2020. This is calculated based on the availability of financial reports and data needed during the observation period that we need in the study.

Company Name
Darya Varia Laboratoria – DVLA
Kimia Farma Persero – KAEF
Kalbe Farma – KLBF
Merck – MEREK
Mitra Keluarga Karyasehat – MIKA
Pharos – PEHA
Prodia Widyahusada – PRDA
Pyridam Farma – PYFA
Siloam International Hospitals – SILO
Tempo Scan Pacific – TSPC

Table 1. Company Name from Indonesia Stock Exchange (Period 2018–2020)

5. Results and Discussion

5.1 Numerical Results

1. Descriptive Statistical Analysis

Descriptive Statistical Analysis Test can provide a description or general description of the characteristics of the object under study. Descriptive statistics are used to explain or provide an overview of the characteristics of a data set without drawing general conclusions (Sukesti et al., 2021). The following are the results of the descriptive analysis for the variables used in this study.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PCM	30	.31	.60	.4672	.09296
RDI	30	.00	.23	.0247	.05978
EPS	30	.00	2.60	.1603	.46538
Valid N (listwise)	30				

Table 2. Descriptive Statistics

a. Product Market Competition (PMC)

On the table it shows company with a sample number of (N) 30 has a minimum value of 0.31 obtained from companies in the Pharmaceutical and Health sector in 2018-2020, while the Maximum value of 0.60 is obtained by companies in the pharmaceutical sector in 2018-2020. The mean value is 0.4672 and the Standard Deviation value is 0.9296.

b. Research and Development (R&D)

On the table it shows company with a sample (N) of 30 has a minimum value of 0.00, while the Maximum value of 0.23 with an average value or Mean of 0.0247 and a Std Deviation value of 0. 0.05978.

c. Firm Value

On the table it shows company with a sample (N) of 30 has a minimum value of 0.00, while the Maximum value is 2.60 with an average value or Mean 0.1603 and a Std Deviation value of 0. ,46538.

2. Classical Assumption Test

Classical Assumption Test is an analytical method used in scientific research to test whether the proposed hypothesis is in accordance with the results obtained during testing.

a. Normality Test Result

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		30
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.45140125
Most Extreme Differences	Absolute	.354
	Positive	.354
	Negative	-.218
Test Statistic		.354
Asymp. Sig. (2-tailed)		.200[c]

a. Test distribution is Normal.

b. Calculated from data.

Table 3. One-Sample Kolmogorov-Smirnov

One the table it shows that the significance value is 0.200 which is greater than the significant value of 0.05, it can be concluded that the residual value is normally distributed or Ha is rejected and Ho is accepted.

b. Multicollinearity Test Result

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.747	.490		1.525	.139		
	PCM	1.265	1.073	.253	1.179	.249	.758	1.320
	RDI	.159	1.669	.020	.096	.925	.758	1.320

a. Dependent Variable: EPS

Table 4. Coefficients

On the table it shows the Tolerance – Variance Inflactor Factor (VIF) test show that the tolerance value is > 0.1 and VIF < 10. It can be seen in the table above that PCM and RDI have a tolerance of 0.758, which is above 0.1 and a VIF value of 1.320, which is below 10. conclusion that the independent variables in this study are not mutually correlated.

c. Autocorrelation test

In the tests conducted by researchers using the Durbin Watson method. With the decisions making criteria : 1.65<Durbin Watson<2.35, it has been determine autocorrelation; 1.21<Durbin Watson<1.65 or 2.35<Durbin Watson<2.79 means that it cannot be concluded and Durbin Watson<1.21 or Durbin Watson>2.79 it has been determine autocorrelation.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.243[a]	.059	.010	.46782	2.116

a. Predictors: (Constant), RDI, PCM

b. Dependent Variable: EPS

Table 5. Autocorrelation

Based on table 5, test value of Durbin Watson is 2.116. On the table it shows, compared with the table value of significance of 5%, with a total sample of 30 (n=30), the number of independent variables as much as 2 (k=2). So it could be concluded that the Durbin Watson value of 2.116 is included in the criteria for being free from autocorrelation because 1.65<Durbin Watson< 2.35 means that there is no autocorrelation.

3. Hypothesis Testing

In this study using multiple regression equation model. Hypothesis testing is done by testing the coefficient of determination (R2), simultaneous / overall significance of the sample regression (F-test), and the individual parameter significant test (t-test).

a. Coefficient of Determination Test (R^2)

The magnitude of the contribution of the independent variables (product market competition, and research and development) in explaining the value of the company can be seen from the R^2. The results of the R^2 is on the following table:

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.243[a]	.059	.010	.46782

a. Predictors: (Constant), RDI, PCM

b. Dependent Variable: EPS

Table 6. Coefficient of Determination

Based on table 6, the Adjusted R^2 value is 0.010. This indicates that the value of the health sector companies listed on the IDX can be explained by the independent variables, namely: product market competition, and the expected research and development of 0.10%. The remaining 99.90% is determined by other variables not analyzed in this study.

b. Overall Significance Test Results From Sample Regression (F-test)

The following table below is the results of the simultaneous test (F-test) for the variables used in this study.

Hasil Uji F-*test*

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.372	2	.186	.849	.439[b]
	Residual	5.909	27	.219		
	Total	6.281	29			

a. Dependent Variable: EPS

b. Predictors: (Constant), RDI, PCM

Table 7. Anova

Based on table 7, it can be seen that the calculated F value is 0.849 with a sig value of 0.439. This shows that the significance value < alpha (α = 0.05) (Ibid., 98). So it can be concluded that there is a simultaneous significant influence between product market competition, and research and development on firm value.

c. Significant Parameter Individual Test (t-*test*)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.747	.490		1.525	.139
	PCM	1.265	1.073	.253	1.179	.249
	RDI	.159	1.669	.020	.096	.925

a. Dependent Variable: EPS

Table 8. Coefficients

Based on the table 8, it can be concluded that the multiple regression equation is as follows:

From the model above, it can be seen that the constant value is 0.747 which means: with the addition of PMC, and research and development, the value of the health sector company will increase by 0.747 in 2018–2020. The PCM coefficient value of 1.265 indicates a positive result, which means that every increase or addition of 1% of product market competition in manufacturing companies will increase the value of the company by 1.265 times in the 2018–2020 period assuming other variables in the regression equation remain.

The RDI coefficient value of 0.159 indicates a positive result, which means that every increase or addition of 1% research and development in manufacturing companies will increase the value of the company by 0.159 in the 2018–2020 period assuming other variables in the regression equation remain.

6. Conclusion

The title of this research is The Effect of Research and Development, Product Market Competition on Firm Value (Empirical Study on Health Companies Listed on the IDX for the 2018-2020 Period) and aims to determine effect of the independent variable on the dependent variable. The test resulted findings that can be concluded as follows:

1. Product Market Competition has a significant positive effect on firm value. This study is consistent with the results of Ammann et al. (2018), Shahbaz Sheikh (2018a) and (2018b). However, the results are not consistent with the research of Beiner, et al. (2018) and Singla and Singh (2019).

2. Research and Development has an effect on firm value. This study is consistent with the results of research by Lubis, et al. (2018), Trisnajuna and Sisyani (2018), Kurniawan and Mertha (2016), and Gupta, et al. (2018). However, the results are not consistent with the research of Murhadi (2018) and Usman, et al. (2018).

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Biography

Silvia Dewiyanti, born in Palembang, on September 30, 1974, obtained her S1 degree from the University of Sriwijaya, and her Master's degree from the University of Diponegoro. She is a lecturer at the Department of Accounting and Finance of Bina Nusantara University where she teaches Financial Accounting, Advanced Accounting, Accounting Theory, and International Accounting in the bachelor's degree.

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