

Factors Affecting Profitability of Retail Company in Indonesia with DUPONT Model Approach

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Keywords: DuPont, Return on Equity, Net Profit Margin, Total Asset Turn Over, Equity Multiplier.

Abstract: In the end of 2017 some retail's outlet was closed to survive in the business competition. This research will determine the factors that affect the profitability of the retail industry in Indonesia. DuPont model shows that profitability (ROE) could be divided into three ratios, namely Net Profit Margin (NPM), Total Asset Turn Over (TATO), and Equity Multiplier (EM). This study aimed to determine how significant the influence of NPM, TATO and EM factors had on profitability (ROE). The method used in this study was quantitative. The number of samples used was 21 companies with a population of all retail companies listed on the Stock Exchange for the period of 2010-2017. The results of this study indicated that in part the independent variables significantly influence the variable profitability (ROE).

1 INTRODUCTION

The development of retail business in Indonesia has proceeded to impact on intense business competition. Throughout 2017, there were quite surprising phenomena in Indonesia's retail industry, some industries closed a number of outlets to survive the business competition, and even some international retail industries closed their businesses. Take Lotus as an example. At the end of 2017, Lotus closed three outlets in Thamrin, Cibubur, and Bekasi; besides that Ramayana Supermarket closed eight outlets on October 28, 2017. Not to mention that Matahari Department store also closed its outlets in Pasaraya Manggarai and Pasaraya Blok M in September 2017, and in mid-November 2017, Matahari closed its outlets in the Lombok city center and Taman Angrek mall. Even at the end of June 2017, PT. Modern International, tbk closed all *Seven Eleven* outlets in Indonesia. This, of course, will be one particular concern to the stakeholders, especially investors, because the steps taken by market participants are expected to increase the company's profits once more.

With regard to generating profits, according to Harahap (2006:300), the ability of a company to make a profit through all capabilities and existing resources is called profitability. Profitability can be a major attraction for investors because profitability can be considered as a result obtained through a management effort on the invested funds.

Based on the mentioned phenomena, the authors are interested in conducting research on the retail sector, especially regarding the performance of retail companies in Indonesia in relation to generating profitability. ROE is a parameter which can be used as a comparison between the net incomes of an issuer with its own capital (Harahap 2007: 156). Regarding profitability, the DuPont model can be utilized to measure the variables affecting a company's profitability through analyzing profitability ratios, into more detailed elements, so factors which can affect the profitability of the company can be searched.

2 LITERATURE REVIEW

2.1 Profitability and DuPont Model

According to Burja & Mărginean (2014), the name of the DuPont model came from the name of the company which began to introduce the formula in 1920, and was also known as the "Strategic Profit Model". In the DuPont model, profitability based on the ROE variable can be illustrated in the following diagram:

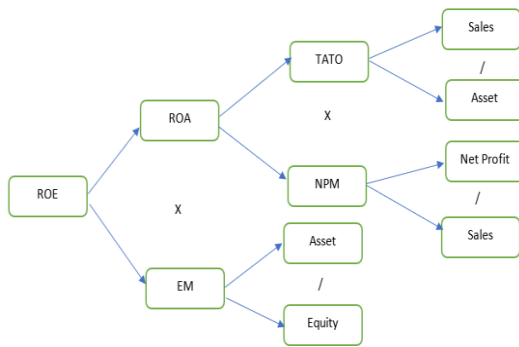


Figure 1: ROE Profitability of DuPont Model.

From the description of the DuPont model above, the main ratio components can be described as follows:

2.1.1 Net Profit Margin (NPM)

Net Profit Margin is a profitability ratio which describes the number of profits generated from sales (Anarfi & Danquah, 2017). This means that the size of the sales value will affect the ratio of the net profit margin. Based on the DuPont model in figure 1, the Net Profit Margin ratio can be formulated as follows:

$$NPM = \text{Net Profit} / \text{Sales}$$

2.1.2 Total Asset Turn Over (TATO)

Total Asset Turn Over is a ratio which describes the company’s efficiency to generate sales (Anarfi & Danquah, 2017). This is related to the efficiency in the company, where the more efficient the company uses its assets, the higher the sales. The Total Asset Turn Over ratio can be formulated as follows:

$$TATO = \text{Sales} / \text{Asset}$$

2.1.3 Equity Multiplier (EM)

Equity Multiplier is a ratio which can depict the percentage of financed/owned assets by shareholders (Anarfi & Danquah, 2017). Equity Multiplier ratios are often known as Financial Leverage. Financial Leverage is determined by debt policy, dividend policy and financial risk factors in the business. Based on the DuPont model in figure 2-1, the ratio of Total Asset Turn Over can be formulated as follows:

$$EM = \text{Asset} / \text{Equity}$$

2.1.4 Return on Equity (ROE)

According to Harahap (2007: 156), ROE is a comparison between the net incomes of an issuer with its own capital. High ROE reflects that the company

managed to generate profits from its own capital. In this study, the ROE variable will be used as a measurement of profitability. The reason for choosing this variable is because ROE can provide a level of profit for capital invested by investors. The increase in ROE will also boost the book value of the company which impacts on the value of investment. The ROE ratio can be calculated using the following formula:

$$ROE = \text{Net Profit} / \text{Equity}$$

$$ROE = NPM \times TATO \times EM$$

$$ROE = \text{Net Profit} / \text{Sales} \times \text{Sales} / \text{Asset} \times \text{Asset} / \text{Equity}$$

2.2 Research Model

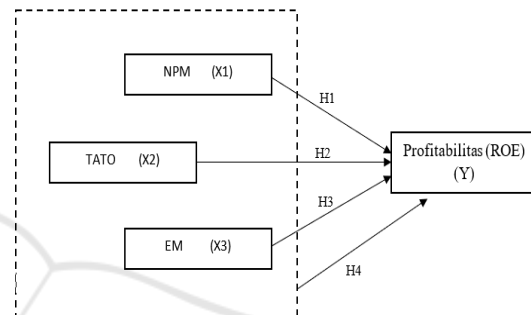


Figure 2: Research Model.

Based on the research model in Figure 2, the hypothesis which will be proposed in this study are:

- H1: Net Profit Margin (NPM) variable has a positive and significant effect on profitability
- H2: Total Asset Turnover (TATO) variable has a positive and significant effect on profitability
- H3: Equity Multiplier (EM) variable has a positive and significant effect on profitability
- H4: Net Profit Margin (NPM), Total Asset Turn Over (TATO) & Equity Multiplier (EM) have a positive and significant effect on profitability

3 RESEARCH METHOD

3.1 Research Types

The research type used in this study was associative causal, based on the purpose of this study which is to prove the causal relationship of several independent variables on the dependent variable according to established theories/models.

3.2 Sample and Population

The population is 25 retail companies which have been marketed on the IDX stock market for the period 2010-2017. The sampling technique in this study used purposive sampling, namely:

- The retail companies are listed on the IDX and have complete financial statements for the period of 2010-2017
- The retail companies which have complete financial statements for the period of 2010-2017
- The Retail companies whose financial statements do not have total equity, total assets and total sales equal to 0 (zero), because it will result in failure at the time of calculation

3.3 Data Collection

This study used secondary data collection methods, namely data obtained from financial statements in the period of 2010-2017. The data source used in this study was the company's financial statements for the period of 2010-2017 which can be obtained from the company's official website.

3.4 Research Operational Variables

In detail, the variables used in this study are as follows:

Table 1: Research Operational Variables.

Variable	Definition	Formula	Scale
ROE	Return on Equity is a comparison on the net profit of an issuer with its own capital (Harahap 2007:156).	$ROE = \frac{Net\ Profit}{Equity}$	Ratio
NPM	Net Profit Margin is a profitability ratio which depict how significant the profit produced from sales is (Anarfi & Danquah, 2017).	$NPM = \frac{Net\ Profit}{Sales}$	Ratio
TATO	Total Asset Turn Over is a ratio which depicts company's efficiency in producing sales (Anarfi & Danquah, 2017)	$TATO = \frac{Sales}{Total\ Asset}$	Ratio
EM	Equity Multiplier is a ratio which can show the financed/owned asset percentage of the stakeholder (Anarfi & Danquah, 2017).	$EM = \frac{Total\ Asset}{Equity}$	Ratio

3.5 Descriptive Statistic Analysis

Descriptive analysis refers to the statistical values of the data which have been collected, such as: mean value, standard deviation, maximum value, minimum value of all variables in the study, namely: profitability (ROE), net profit margin (NPM), total asset turn over (TATO), and equity multiplier (EM).

3.6 Estimation Selection of Common Effect Model and Fixed Effect Model

To determine the model used in the regression between the Common Effect Model and the Fixed Effect Model, the F Statistic Test (Chow) is performed. The hypotheses used in the F Test (Chow) are as follows:

H0: Model Common Effect

H1: Model Fixed Effect

H0 is accepted if the P-value is greater than the value of α , whereas if the P-value is smaller than the value of α , then H0 is rejected, and H1 will be accepted.

3.7 Estimation Selection of Fixed Effect Model and Random Effect Model

If the result of the F Test (Chow) shows that the P-value is smaller than the value of α or the fixed effect model is used more significantly than the common effect model, further testing is needed to determine whether to use the fixed effect model or random effect model.

3.8 Estimation Selection of Common Effect Model and Random Effect Model

If the result of the F test (Chow) shows that the P-value is greater than the value of α , or the common effect model is used more significantly than the fixed effect model, further testing is needed to determine whether the common effect model will still be selected or the random effect model. To determine whether to choose the common effect model or random effect model, the Lagrange Multiplier (LM) test is used.

3.9 Classic Assumption Test

To find out whether the regression model that we used in the study fulfilled the BLUE criteria, then a

multiple linear regression prerequisite test was conducted, namely the Classic Assumption test. According to Gujarati (2015), only multicollinearity and heteroscedasticity tests are needed in panel data regression for classical assumption tests.

3.9.1 Multicollinearity Test

According to Ghozali (2005), Multicollinearity Test aims to detect whether the independent variables in the regression model are correlated. If there is a correlation between the independent variables, then the variable can be said to be not orthogonal. To measure the occurrence of multicollinearity in the regression model, it can be seen from the correlation coefficient between each independent variable. If the **coefficient is > 0.80**, multicollinearity occurs in the regression model.

3.9.2 Heteroscedasticity Test

According to Ghozali (2013:139), Heteroscedasticity test aims to detect whether inequality of variance between a variable to another variable in the regression model happened. If the residual variance between one variable and another variable was constant then it is called homoscedasticity, otherwise it is called heteroscedasticity. A good regression model is a model without heteroscedasticity. Heteroscedasticity test can be done by the following Glesjer test:

$$|e_i| = \beta_1 X_i + V_t$$

note:

β = absolute value, residual value of the estimated equation

X_i = explanatory variable

V_t = interference element

3.10 Regression Equation Analysis

The data analysis technique used is multiple regression analysis. Its function is to predict the value of the dependent variable (Y) if the independent variable (X) is two or more (Abdurahman & Muhidin, 2007: 198). In this study, the variables measured are the effects of Net Profit Margin, Total Asset Turn Over and Equity Multiplier as the variables on profitability by using the following equation:

$$Y_{i,t} = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + \mu_{i,t}$$

Note:

Y : dependent variable, namely retail company’s profitability

X_1 : Net Profit Margin

X_2 : Total Asset Turn Over

X_3 : Equity Multiplier

a : variable/constant number

b_1, b_2, b_3 : regression equation

$\mu_{i,t}$: residual variable, the i entity, t

period

3.11 F Test

The purpose of this test is to find out whether the independent variables simultaneously or as a whole have a significant effect on the dependent variable. The hypothesis used in this test is:

H0: The independent variables as a whole have a significant effect on the dependent variable

H1: The independent variables as a whole have no significant effect on the dependent variable. This test is conducted by comparing F_{count} with F_{table} .

3.12 T-Test

The T-test is a test conducted to find out whether the independent variable has a single influence on the dependent variable by comparing the value of t_{count} in each independent variable with the value of t_{table} . The hypotheses that can be used in this test are:

H0: singly independent variable (X) has a significant effect on the dependent variable (Y)

H1: singly independent variable (X) does not have a significant effect on the dependent variable (Y)

4 ANALYSIS AND DISCUSSION

4.1 Descriptive Statistic Analysis

Table 2: Descriptive Statistic Analysis.

	ROE	NPM	TATO	EM
Mean	15.90	5.52	190.13	245.11
Median	12.66	3.23	190.34	220.11
Maximum	160.99	68.10	717.94	873.47
Minimum	-39.91	-13.46	6.40	-151.68
Std. Dev.	19.48	7.72	104.87	138.38
Skewness	3.60	3.67	1.43	1.01
Kurtosis	24.38	27.67	7.88	5.64
Observations	168	168	168	168

Based on descriptive statistical analysis in table 2, the maximum value of profitability is 160.99, and the average value is 15.90.

4.2 Estimation Selection of Common Effect Model and Fixed Effect Model

To determine the most suitable approach, Chow Test is used. The hypothesis used is as follows:

- H0: Value of $F_{count} > F_{table}$ (0.05), then Common Effect Model is chosen
- H1: Value of $F_{count} < F_{table}$ (0.05), then Fixed Effect Model is chosen

Table 3. Chow Test Result.

Effect Test	Statistic	d.f	Prob	Result
Cross-section F	2.741470	(20.144)	0.0003	H0 is rejected, H1 is accepted
Cross-Section Chi Square	54.202488	20	0.0001	

4.3 Estimation Selection of Fixed Effect Model and Random Effect Model

To determine the approach chosen between Fixed Effect and Random Effect, the Hausman method is used.

- H0: Value of $F_{count} > F_{table}$ (0.05), then Random Effect Model is chosen
- H1: Value of $F_{count} < F_{table}$ (0.05), then Fixed Effect Model is chosen

Table 4: Hausman Test Result.

Effect Test	Ch-Sq. Statistic	Chi-Sq. df	Prob.	Result
Cross-section random	8.392824	3	0.0386	H1 is accepted

4.4 Estimation Selection of Common Effect Model and Random Effect Model

Lagrange Multiplier (LM) tests to choose between the Common Effect Model and Random Effect Model do not need to be conducted. This is because from the results of the F (Chow Test) and Hausman tests, the most effective model is the Fixed Effect Model.

4.5 Multicollinearity Test

Table 5 illustrates the results of the Multicollinearity test. From the results of these tests, it can be seen that

Table 5: Multicollinearity Test Results.

	NPM	TATO	EM
NPM	1.000000	-0.008336	0.096208
TATO	-0.008336	1.000000	0.434725
EM	0.096208	0.434725	1.000000

there is no correlation coefficient value above 0.8, this proves that the data do not occur multicollinearity.

4.6 Heteroscedasticity Test

Table 6. Heteroscedasticity Test Results.

Variable	Coefficient	Std. Error	t-statistic	Prob.
NPM	0,0187	0,0137	1,3592	0,1762
TATO	0,0017	0,0013	1,2945	0,1975
EM	0,0012	0,0008	1,3421	0,1817

From the results of the Heteroscedasticity test in Table 6, it is seen that the probability value of each variable is above 0.05 so that the data does not have heteroscedasticity towards the variables.

4.7 Panel Data Regression

Table 7 illustrates Panel Data Regression result, it is seen the correlation between the independent variable and dependent variable.

Table 7. Panel Data Regression Result.

Dependent Variable: ROE
 Method: Panel Least Squares
 Date: 11/12/18 Time: 21:15
 Sample: 2010 2017
 Periods included: 8
 Cross-sections included: 21
 Total panel (balanced) observations: 168

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-24.86763	4.283403	-5.805577	0.0000
NPM	1.577377	0.178288	8.847371	0.0000
TATO	0.063305	0.017858	3.544884	0.0005
EM	0.081733	0.011594	7.049572	0.0000

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.580871	Mean dependent var	15.90463
Adjusted R-squared	0.513927	S.D. dependent var	19.48073
S.E. of regression	13.58176	Akaike info criterion	8.186896
Sum squared resid	26562.84	Schwarz criterion	8.633177
Log likelihood	-663.6993	Hannan-Quinn criter.	8.368018
F-statistic	8.676950	Durbin-Watson stat	1.151039
Prob(F-statistic)	0.000000		

4.8 F Test

Table 8: F Test Result.

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.580871	Mean dependent var	15.90463
Adjusted R-squared	0.513927	S.D. dependent var	19.48073
S.E. of regression	13.58176	Akaike info criterion	8.186896
Sum squared resid	26562.84	Schwarz criterion	8.633177
Log likelihood	-663.6993	Hannan-Quinn criter.	8.368018
F-statistic	8.676950	Durbin-Watson stat	1.151039
Prob(F-statistic)	0.000000		

From the results of the data processing above, the F value is 8.68, while the F table value is 2.66, so the calculated F value is greater than F table. Besides that the value is seen from P-value, the value is 0.0000, which is smaller than 0.05. From these results, it can be concluded that simultaneously and as a whole, net profit margin, the total asset turn over and equity multiplier as the independent variables significantly influence the variable profitability (ROE).

4.9 t-Test

Table 9. t Test Result.

Variable	Coefficient	Std. Error	t. statistic	Prob	Result
NPM	1.577377	0.178288	8.847371	0.0000	Influenced positively and significantly
TATO	0.063305	0.017858	3.544884	0.0005	Influenced positively and significantly
EM	0.081733	0.011594	7.049572	0.0000	Influenced positively and significantly

Based on the table 9, all variables partially influence profitability, where $t_{\text{statistic}} > t_{\text{table}}$ (1.654).

5 CONCLUSION & SUGGESTION

5.1 Conclusion

5.1.1 Net Profit Margin's (NPM) Influence toward Profitability

The hypothesis one proposed in this study is the variable of Net Profit Margin (NPM), which has a positive and significant effect on profitability. Based on the results of data processing, it can be seen that the variable of Net Profit Margin (NPM) affects profitability by having the highest coefficient of 1.58

on profitability. In addition, the value of t_{count} is $8.85 > t_{\text{table}}$ (1.654), and the significance value is $0.00 < 0.05$. Thus, it can be concluded that H1 in this study was **accepted**.

5.1.2 Total Asset Turn Over's (TATO) Influence toward Profitability

The second hypothesis proposed in this study is that the Total Asset Turn Over (TATO) variable has a positive and significant effect on profitability. Based on the results of data processing, it can be seen that the Total Asset Turn Over (TATO) variable has an effect on profitability by having a coefficient that is 0.06 on company profitability. In addition, the value of t_{count} is $3.54 > t_{\text{table}}$ (1.654), and the significance value is $0.00 < 0.05$. Thus, it can be concluded that H2 in this study was **accepted**.

5.1.3 Equity Multiplier (EM) Influence toward Profitability

The third hypothesis proposed in this study is that the Equity Multiplier (EM) variable has a positive and significant effect on profitability. Based on the results of data processing, it can be seen that the Equity Multiplier (EM) variable affects profitability by having a coefficient that is 0.08 on the retail company's profitability. In addition, the value of t_{count} is $7.05 > t_{\text{table}}$ (1.654), and the significance value is $0.00 < 0.05$. Thus, it can be concluded that H3 in this study was **accepted**.

5.2 Suggestion

- Based on the conducted calculations, the results show that all variables have a positive and significant influence on the retail company's profitability. However, the Net Profit Margin variable has the highest coefficient, which needs to be considered for retail market players. The one way that can be done to increase the ratio of Net Profit Margin is to reduce the operating costs, so it can increase its net profit.
- It is recommended to add variables that affect the retail company's profitability in Indonesia in order to find other factors as the profitability determinants of retail companies.
- In this study, the obtained results showed the highest coefficient in generating the profitability of a retail company is from Net Profit Margin. Therefore, further research can continue to analyze the factors which affect the Net Profit Margin variable.

- It is recommended that further research can add a wider scope such as ASEAN or other countries, so it can be a study for retail companies in various countries.

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