The Effect of Green Accounting Implementation on the Firm Value of Indonesian Food Manufacturing Companies

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Abstract. Green accounting implementation has a positive impact on society because it relates to environmental management carried out by companies in the community. The purpose of this study is to examine green accounting implementation's effect on the firm value of Indonesian food manufacturing companies which has been disclosed using the Global Reporting Initiative Standards 2016 Environmental. This study is a quantitative research that uses secondary data which were obtained from the annual report of food manufacturing companies that are listed in the Indonesia Stock Exchange from 2017-2021. Testing of the data obtained in this research was carried out using EViews. This study shows that the green accounting disclosure index has a significant and positive effect on firm value. for the control variable like Property, Plant, and Equipment has a negative relationship with firm value, firm size has a positive relationship with firm value, and growth did not have any effect on firm value.

Keywords: Green accounting, Firm Value, Indonesia, GADI, PPE, Firm Size, Growth..

1 Introduction

Company activities can cause environmental problems, such as air pollution, waste, and excessive use of natural resources. Thus, companies need to include environmental costs in their financial statements. The level of success of a company is determined by the actions they carry out. In the past, investors only determined the success of a company from an economic perspective, but over time, with an increase in corporate activities that can change the environment, investors began to prioritize corporate responsibility from a social and environmental perspective [1]. Environmental problems can affect financial statements in many ways, such as recognizing asset impairments and redressing costs, compensation, or legal costs. So, companies are required to run a business that pays attention to the environment, by carrying out green accounting-based management practices by identifying, measuring, and disclosing costs in the company's business activities related to the environment in which the costs will be applied when the company makes a business decision and will be reported to stakeholders [2]. This then makes companies start to include environmental costs in their financial reports by using a green accounting system, which will

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help management understand the company's sustainable development responsibilities and conclude that green accounting is necessary at the company level [3].

The main objective of this study is to examine the effect of green accounting on the firm value of Indonesian food manufacturing companies using green accounting disclosure measurement that refers to Global Reporting Initiative Standards 2016 GRI 300 Environmental Topic. The reason we chose the food manufacturing sector for this study is that in carrying out their business, food manufacturing companies are in direct contact with the production process that starts from raw materials to finished goods that will be sold and will inevitably leave waste, affecting the environment around the company's business area. We use quantitative methods to obtain data from the food manufacturing companies we research, one of which is the annual report we use to disclose the green accounting index. The findings of this study are expected to make a positive impact on stakeholders' interests. A previous study finds that green accounting significantly affects financial performance, impacting firm value [4]. Another previous study used Economic Value Added (EVA) as a medium to determine the effect of green accounting on firm value, as measured by the dimensions of the GRI such as water consumption and emissions, with each dimension producing significant results on EVA, negatively and positively [5]. Therefore, this study aims to obtain results of how much influence green accounting has on firm value by including aspects that have a relationship with firm value such as Plant, Property, Equipment (PPE), firm size, capex, leverage, sales growth, and cash of food manufacturing companies.

2 Literature Review

2.1 Legitimacy Theory

This theory arises from the notion that emphasizes that companies must fulfill their social responsibilities and show a good image to society. Before there was an assumption about social responsibility, the company's benchmark for gaining legitimacy was to maximize profits from the business being run, and over time, the company's benchmark for gaining legitimacy was to avoid things that damage the environment [6].

Legitimacy is needed to avoid problems with the company's business, and one of them is environmental problems. When a company succeeds in solving environmental problems, the company will gain legitimacy from society, and that gives the company a greater opportunity to attract investors [13].

2.2 Stakeholders Theory

A company does not only carry out its business activities to gain profits that are used for the benefit of the company itself, but the company must also provide its responsibilities in the form of providing benefits to stakeholders such as consumers, shareholders, suppliers, community, government, and other stakeholders. Stakeholder's theory was first developed in 1984 by Robert Edward Freeman who used ideas and opinions from stakeholders on matters such as corporate planning and business models, as well as corporate social responsibility models for stakeholder management [6].

Relations with stakeholders determine the operational level of the company because good relations with stakeholders such as consumers, labor suppliers, suppliers of materials used by companies for production processes, the government, and other stakeholders will make the company's business activities run well. Stakeholders can make decisions regarding cooperation or other relationships with the company by assessing the sustainability reports published by the company.

2.3 Green Accounting

Environmental issues are the main discussion of all companies in running their business, due to demands from investors to prioritize social and environmental responsibility in the company's business area. The term green accounting itself was introduced in Europe around the 1980s by Peter Wood. Green accounting or Environmental accounting is an accounting practice that considers environmental costs and benefits by including information about a company's impact on the environment in financial statements. Green accounting is a system where costs are created to get environmental benefits, where companies use it to determine the costing, conduct investment analysis, and provide information that will then be used for management decisions such as information for controlling, evaluating, operating, deciding, and reporting as well as information for environmental protection [7].

2.4 Green Accounting and Firm Value

Firm value is an indicator of the success of a company's business activities that will have a positive impact on shareholders. The existence of good green accounting or environmental accounting disclosure is a concern for investors as a form of relevant value so that it becomes a point that can increase company value and increase company performance[8]. An accurate and reliable disclosure can avoid the appearance of negative audit reports, disappoint investors, and attract the attention of the authorities. green accounting disclosure or environmental disclosure will ultimately increase the company's value. Therefore, this research develops the following hypothesis:

H1: Green accounting disclosure has a significant effect on firm value

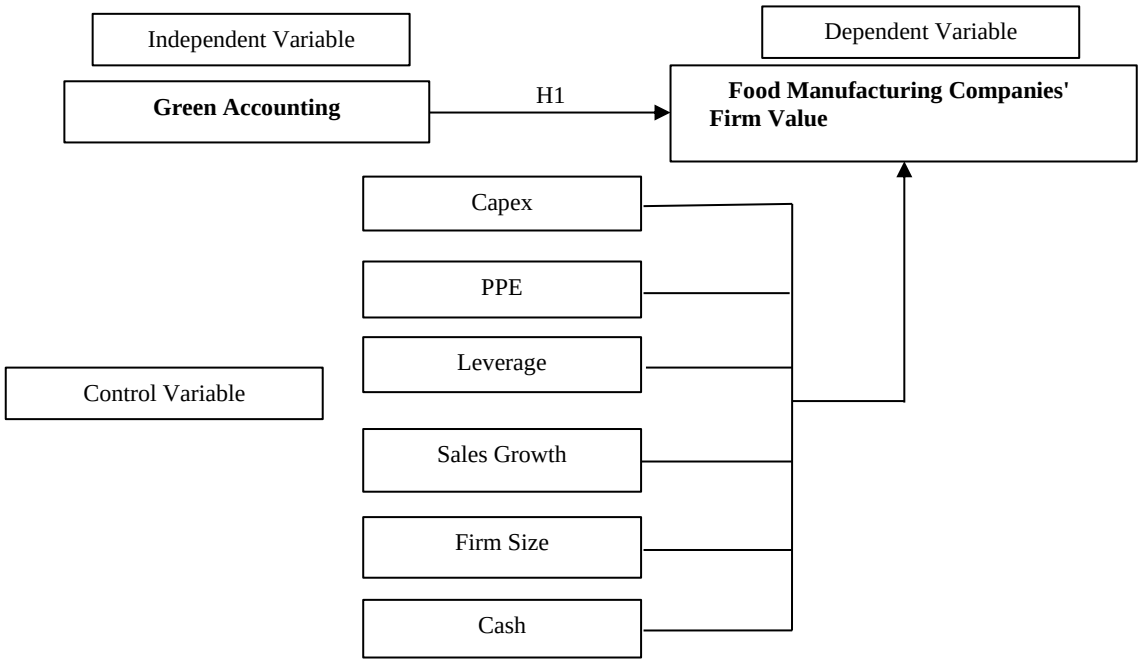

Fig. 1. ARABIC 1 Theoretical Model

3 Methods

3.1 Sample and Data Collection

This research is quantitative research that uses secondary data which were obtained from the annual report of food production companies that are listed in the Indonesia Stock Exchange (IDX) from 2017-2021. All the financial data related to this research were accessed from the *Bloomberg* terminal. As for Green Accounting disclosure measurement, refers to GRI Standards 2016 GRI 300 Environmental Topic. The data we need to finish this research are Green Accounting disclosure, market price per share, book value per share, total assets, total liabilities, total sales, property, plant, and equipment (PPE), cash, and capital expenditure.

3.2 Regression Variables

3.2.1 Green Accounting Measurement

Green accounting is a cost issue related to the environment that is more transparent with company accounting reports and systems [6]. It provides information that helps managers evaluate, operate, control, decide, report, and protect the environment [7]. For the formula, we refer to a previous study [9]. As follows:

$$GADIj = \frac{\sum Xij}{nj} \times 100\%$$

Where:
GADIj = Green Accounting Disclosure Index Company j
$\sum Xij$ = number of items disclosed
nj = number of items in the environmental aspect (GRI 300)

3.2.2 Empirical Model

Previous research indicates that firm characteristics Positioning such as Plant, Property, Equipment (PPE), firm size, capex, leverage, sales growth, and cash has a significant relationship with firm value [10]. Thus, the regression model used in this research is as follows:

$$PBV_{i,t} = \beta_0 + \beta_1 GADij_{i,t} + \beta_2 PPE_{i,t} + \beta_3 LNTA_{i,t} + \beta_4 CAPEX_{i,t} + \beta_5 LEVERAGE_{i,t} + \beta_6 GRWOTH_{i,t} + \beta_7 CASH_{i,t} + \varepsilon_{i,t}$$

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Where:

GADij	= green accounting disclosure
PPE	= ratio of Plant, Property, and Equipment divided by total sales;
LNTA	= log of total assets;
CAPEX	= capital expenditure divided by total sales;
LEVERAGE	= total debts divided by total assets;
GROWTH	= percentage change in sales over the prior year;
CASH	= cash divided by total assets

4 Results and Discussion

4.1 Descriptive Statistic

Table 4.1 below provides descriptive statistics of variables used in this paper. The mean price book value (PBV) was 3,47, implying that the food production and service sector was valued at approximately 3,5 times the book price. PT Unilever Indonesia (UNVR) has the maximum value of PBV with a share price of 82,44 times the actual price. While PT Prasidha Aneka Niaga (PSDN) has the minimum value of PBV with a share price of -8,37 times the actual price.

Green Accounting (GADIj) has a mean value of 0,32 with a maximum value of 0,84 which was held by PT Central Proteina Prima (CPRO), while the minimum value of 0,06 was held by several firms.

Capital expenditures (CAPEX) maximum value was held by PT Austindo Nusantara Jaya (ANJT) with a value of 53,98, while the minimum value of 0,02 was held by PT Prasidha Aneka Niaga (PSDN). The mean value of CAPEX was 7,03.

Firm size (LNTA) has an average of 29,64 and a standard deviation of 1,32. The minimum value was 26,62 which was held by PT Dharma Samudera Fishing Industries (DSFI), while the maximum value was held by PT Indofood Sukses Makmur (INDF) at 32,83.

Plant, Property, and Equipment (PPE) has a mean value of 1,06 with a standard deviation of 1,28. PT Provident Investasi Bersama (PALM) has a minimum value of 0,003 while PT Jaya Agra Wattie (JAWA) has a maximum value of 6,52.

Sales growth (GROWTH) from 2018-2021 has an average of 0,07 in the food production and service sector with a minimum value of -0,70 which was held by PT FKS Food Sejahtera (AISA) in 2017 while the biggest growth throughout the year was at 0,82 which held by PT Jaya Agra Wattie (JAWA) in 2021.

Cash (CASH) has a minimum value of 0,0001 which is held by several firms while the maximum value of 0,53 was held by PT Campina Ice Cream Industry. The mean value was at 0,095 with a standard deviation at 0,10.

Table 1. Descriptive Statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
PBV	159	3,47	10,16	-8,37	82,44
GADIj	159	0,32	0,18	0,06	0,84
CAPEX	159	7,03	7,67	0,02	53,98
LEV	159	33,03	23,38	0,00	119,47
LNTA	159	29,64	1,32	26,62	32,82
PPE	159	1,06	1,28	0,00	6,52
GROWTH	159	0,07	0,23	-0,70	0,83
CASH	159	0,095	0,10	0,00	0,53

4.2 Results

Table 2. Chow Test Table

Chow test			
Effect Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	36.732.762	(31,12)	0.000
Cross-section Chi-square	373.706.508	31	0.000

Chow test was performed to decide which regression model is appropriate between Common Effect Model (CEM) and Fixed Effect Model (FEM). If the Cross-section F Probability < 0.05, then the appropriate model would be FEM. Table 3 above shows that the Cross-section F Probability was at 0.0000 level, meaning FEM was the chosen model

Table 3. Hausman Test Table

Hausman test			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	9.191.459	7	0.0239

Next, the Hausman test was performed to determine which model is better between Fixed Effect Model (FEM) and Random Effect Model (REM). If the Cross-section Probability <0.05, then FEM was a better model than REM. Table 4 above shows the Cross-section Probability was at 0.0239 level, meaning the FEM was the appropriate model. Both tests (Chow test & Hausman test) confirmed that the appropriate model was FEM, therefore Lagrange Multiplier – Bruesch-Pagan test didn't need to be launched.

Table 4. Correlation Table

Multicollinearity test							
	GADij	**CAPEX**	**LEV**	**LNTA**	**PPE**	**GROWTH**	**CASH**
GADij	10000	0,1041	-0,0329	0,2284	0,1183	0,1448	-0,0316
CAPEX	0,1041	10000	-0,0135	0,1587	0,3721	-0,0263	-0,0741
LEV	-0,0329	-0,0135	10000	0,0067	0,3739	-0,0082	-0,4692
LNTA	0,2284	0,1587	0,0067	10000	0,0434	0,1661	-0,0887
PPE	0,1183	0,3721	0,3739	0,0434	10000	-0,1605	-0,3542
GROWTH	0,1448	-0,0263	-0,0082	0,1661	-0,1605	10000	0,0481
CASH	-0,0316	-0,0741	-0,4692	-0,0887	-0,3542	0,0481	10000

Multicollinearity symptoms can be seen if there are any variables with correlation values that exceed the limit of 0.80. Table 5 above shows that the highest correlation value was 0.3739, so it can be concluded that there is no multicollinearity problem occurred.

4.3 Result & Discussion

Table 5. Main Analysis Table

Main Analysis				
Variable	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob.**
C	-22.5511	17.8723	-1.2617	0.2090
GADij	11.6419	4.3489	2.6769	0.0083
CAPEX	-0.1647	0.1099	-1.4984	0.1361
LEV	-0.0790	0.0388	-2.0354	0.0436
LNTA	1.0282	0.6072	1.6934	0.0924
PPE	-1.2201	0.7347	-1.6606	0.0989
GROWTH	-5.1881	3.4515	-1.5031	0.1349
CASH	-18.2168	8.7639	-2.0786	0.0393

Table 4.5 above illustrates the impact of Green Accounting implementation on firm value. The P-value of Green Accounting is 0.0083, which is smaller than 0.05. It implies that the coefficient of GADij (X1) has a positive and significant effect on firm value (Y), consistent with findings in the previous literature [5]. As for the control variables, growth did not have any effect on firm value, in line with a previous study [12]. While, Leverage and Cash has a significant and negative relationship towards firm value. The importance of this findings is that a company that implement Green Accounting will have an advantage in the market, and help them to achieve sustainability.

Legitimacy Theory emphasizes how companies' social function can impact their value. It is because by showing socially positive actions and activities, companies would attain a favorable image. Legitimacy theory is a concept of social contract related to how organizations depend on their environmental and societal expectations and how they seek to rationalize their existence by legitimizing their activities in society [13]. Not only they will attain a favorable image, by obtaining the support from the community, will also help organizations to survive and achieve sustainability [14].

There are 2 types of stakeholders, the primary and secondary groups [15]. The primary groups consist of investors, suppliers, laborers, customers, government, and civilians. It can be concluded that without those primary stakeholders, organizations will not continue to exist. The secondary stakeholders are described as those who are affected, (or affected by), the organization's activities, but are not fundamental to its survival. Based on those explanations, companies should consider not only the economic aspect but also the social and environmental aspects, which relate to various types of stakeholders' concerns. Nowadays, a company's level of success was not only seen from the economic aspect, as investors are also prioritizing the social and environmental aspects [1]. In that regard, companies must deliver the demands and expectations of those stakeholder groups, as it may help them in increasing their firm value [16].

To conclude, this study provides support for the explanation of both the legitimacy theory and stakeholder theory. As Green Accounting implementation based on the GRI indicator will provide companies with legitimating their business activities, while at the same time, seeking to meet different kinds of expectations and views that their stakeholders set in every dimension – namely, economic, social, and environmental dimensions.

5 Conclusion

Green accounting is a type of accounting that record all expenses related to environmental aspects to obtain environmental benefits. Companies will be required to include reports regarding the use of natural resources in their business activities. The food manufacturing industry is one of the sectors supporting Indonesian economic growth, as it consistently contributes to the gross domestic product. But concern arises from the fact that they also generate waste which harms the environment. Wastes such as solid waste, liquid waste, and B3 waste were generated in the production process of food manufacturing companies. Authors believed that if this kind of behavior continues to exist, it will only harm the organizations economically, socially, and environmentally. Therefore, the application of green accounting would be mandatory to fulfill those three dimensions. This is because this study's finding explained a significant and positive relationship between the implementation of green accounting based on GRI environmental indicators and firm value.

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