Environmental Management Accounting, Quality of Decision Influence on Environmental Performance in Indonesia

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Keywords: environmental management accounting, quality of decision, environmental performance

Abstract: The aim of this study is to examine the link between environmental management accounting, quality of decision and environmental performance. The data is obtained from the survey. The natural resource based view theory and decision theory used in this study. The results research show both environmental management accounting and quality of decision have a positive and significant effect on environmental performance. The more companies implementation environmental management accounting, the higher environmental performance. This is similar to the higher quality of decision, higher environmental management accounting. The first limitation of this study is a low response rate supports this idea, even though the company contacted in this study is all ISO 14001 certified companies that have achieved environmental management system standards. Future research should research qualitative research. Second, this study only focuses on two variabels impacts on environmental performance. Future research can use other variables.

1 INTRODUCTION

The company's social and environmental responsibility has been the focus of attention by the media and globally in currently, because the company concerns about environmental hazards, such as climate change, greenhouse gas emissions and partly because the company's current performance is measured in not only financial performance but also environmental performance (Stefan Schaltegger, Gibassier, & Zvezdov, 2013). Thus, stakeholders encourage managers to focus more on environmental issues and evaluating environmental performance (Burritt, Schaltegger, & Burritt, 2010; Rodrigue, Magnan, & Boulianne, 2013).

Environmental Management Accounting is "a technique for improving, analyzing and using financial and non-financial information, with the aim of improving the environment and corporate environment, economic performance and contributing to sustainable business" (Schaltegger, Bennet, Burrit, & Jasch, 2009).

The Government, through the Environment and Forestry Ministry since 2002, formed a Corporate Performance Rating Assessment Program in Environmental Management (PROPER). Initially PROPER was one of the policy tools developed by the Environment and Forestry Ministry in order to encourage compliance with the business and / or activity responsible for various laws and regulations in the environmental field. PROPER provides information about the performance of each company to all stakeholders on a national scale (mnlh.go.id).

Staniskis & Stasiskiene, (2006) research environmental management accounting in Lithuania. The finding reveals there is a positive relationship between environmental management accounting and environmental performance. The companies used environmental management accounting to improve their decision making including environment and economics (Staniskis & Stasiskiene, 2006). Environmental management accounting is useful for monitoring environmental costs and environmental performance recordings (Burritt & Saka, 2006). Furthermore, Henri & Journeault (2010) conclude that managers depend on indicators of environmental performance in the evaluation of performance and decision making.

The implementation of ISO 14001, the standard used by companies to implement, maintain and improve their environmental management systems (Solovida & Latan, 2017).

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Indonesia is a country in Southeast Asia and has a complex geographical environment; Deforestation problems are serious according to a 2013 report from the Indonesian Ministry of Environment and Forestry. However, research in Southeast Asia and Indonesia is still rarely carried out that reflects the empirical gap (Derchi, Burkert, & Oyon, 2015). This shows that environmental issues in Indonesia are very important to study.

This research focuses on the link environmental management accounting, quality of decision and environmental performance to companies listed in Indonesia Stock Exchange especially for companies received ISO 14001 certification.

2 LITERATURE REVIEW

2.1 Natural Resources Based View Theory

Natural resources based view theory, argues competitive advantage can be maintained only if the company has the ability to realize profits that are supported by resources that are difficult for competitors to follow (Hart & Dowell, 2011). Hart & Dowell, (2011) to evaluate the theory of Natural Resources Based View Theory based on existing empirical research and conclude that most of Hart, (1995) propositions are supported. However, there has been no further exploration of how the combination of company resources affects environmental performance.

Natural Resources Based View Theory proposed by (Hart, 1995; Hart & Dowell, 2011), which determines that the company's strategy will improve its environmental performance. Thus, this study uses the Natural Resources Based View as a theory that explain the influence of environmental management accounting on the environmental performance (Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008; Christ & Burritt, 2013).

Natural Resources Based View Theory argues that competitive advantage can be maintained only if there is the ability to create profits that are supported by resources that are not easily duplicated by competitors. This consists of three interrelated strategies, namely: (1) pollution prevention; (2) product stewardship; and (3) sustainable development. They have different driving force in the environment, which builds different key resources, and they have different sources of competitive advantage. For example, removing pollutants from the production process can increase efficiency by (a) reducing the input needed, (b) simplifying the process, and (c) reducing costs and compliance obligations Hart & Dowell, 2011)

2.2 Decision Theory

Decision theory is a theory about a decision. Based on decision theory that highlights the important role of information in decision making processes (Hansson, 2005). In particular, with the use of Environmental Activity Management will facilitate better environmental assessment and decision quality because of the provision of more detailed and accurate environmental information that is likely to assist the manager's decision-making process, thereby increasing the quality of environmental decisions, and in turn, leads to improved environmental performance. Thus, in this study propose the link between quality of decision and environmental performance.

Based on decision theory there are two central questions, namely the prescriptive and descriptive approach. First, our prescriptive (rational) approach asks how rational decisions must be made. Second, with a descriptive approach (behavior) we model the actual decisions made by individuals (Hens & Rieger, 2016). Furthermore, decision theory that studies choices between alternatives that involve risk and uncertainty. Risk means here that decisions lead to consequences that cannot be predicted precisely, but follow a known probability distribution. Uncertainty or ambiguity means that this probability distribution is at least partially unknown to the decision(Hens & Rieger, 2016).

2.3 Environmental Management Accounting

Environmental Management accounting has received considerable attention for academic, international organization, professional accounting organizations and business entities. It is reflected in many scientific journals articles, books and also working papers (Stefan Schaltegger et al., 2013).

There are several potential benefits associated with the use of Environmental Management Accounting. These include reducing costs, increasing product prices, attracting human resources, and increasing reputation (Burrit, Rogger, Hahn, & Schaltegger, 2002). The study also notes that the implementation of environmental management accounting usually benefits organizations by giving them different information

for decision making (Burrit et al., 2002). Such information can reveal hidden opportunities, such as better waste management processes, energy reduction and consumption of materials or opportunities for material recycling. From an environmental perspective, this information can also be used in developing more efficient processes and thus leading to innovation.

Burrit, Rogger, Hahn, & Schaltegger, (2002) reveals that environmental management accounting is distinguished between ad hoc and routine information when focusing on past, present or future time frames and short and long term. Based on this environmental management accounting information dimension, Burrit, et.al., (2002) have suggested a framework of environmental management accounting. Furthermore, Business entities use environmental management accounting can improve environmental and financial performance (Gibson & Martin, 2004)

Burritt & Saka, (2006) investigate the link between environmental management accounting and eco-efficiency measurement in Japan. They promoted to business entities in Japan to concern to the environment on their process and consumption of their products. Moreover, Staniskis & Stasiskiene (2006) imply SMEs in Lithuanian implement environmental management accounting and innovation of Cleaner production. They also report base on projects of cleaner production and increase concern from policy makers, industrialists and practitioners.

There are no regulations on environmental disclosure in Spain, but this study reveals that the elaboration of a large number of environmental accounting information used by internal parties is useful for decisions on the implementation of environmental management systems (Masanet-Llodra, 2006). The use of environmental management accounting can improve the companies performance, one of that is environmental performance (Tsui, Christophor, Lee, & Kee, 2014). It is also better to manage the cost of environment and improve process of production (Tsui et al., 2014).

Solovida & Latan (2017) the use of environmental management accounting as an intangible asset has benefited companies by providing information on their operational activities, especially as related to the environment and the results of good environmental performance. Qian et al., (2018) reveals that the implementation of environmental management accounting has a significant positive impact on the company's carbon management and the quality of its disclosure.

2.4 Environmental Performance

The Government, through the Environment and Forestry Ministry since 2002, formed a Corporate Performance Rating Assessment Program in Environmental Management (PROPER). The Company Performance Rating Program (PROPER) is a program used by the Indonesian Environment and Forestry Ministry together with the Environment Agency to monitor and assess the company's environmental performance. Initially PROPER was one of the policy tools developed by the Ministry of Environment and Forestry in order to encourage compliance with the business and / or activity responsible for various laws and regulations in the environmental field. PROPER is closely related to the dissemination of information on the performance of each company to all stakeholders on a national scale (mnlh.go.id).

Solovida & Latan (2017) explained that PROPER (Program of the corporate performance rating) members are assessed on a 5 (five) color scale ranging from the highest, gold, down to green, blue, red, and black. Gold and green rating gave to companies that go beyond mere compliance and include three criteria: (1) implementing an environmental management system, one of that is the certificate of ISO 14001, (2) using resources, and (3) carrying out community development.

2.5 Hypothesis Development

2.5.1 Environmental management accounting (EMA) and environmental performance (EP)

Environmental management accounting is one of the tools of environmental management that is useful for tracking environmental costs as well as physical environmental flows (Burritt & Saka, 2006). Based Natural Resources Based View Theory argue that there is the combination of company resources affects environmental performance (Hart, 1995). One of the company resources is environmental management accounting. In this study proposed that environmental management accounting has relation with environmental performance. The higher environmental management accounting implement in the company, the higher environmental performance.

Previous studies include Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales (2008), and Henri & Journeault (2010) showed that eco-efficient practices are positively related to company performance. Henri & Journeault (2010) use 303 respondents for their analysis. Empirical evidence shows that the use of environmental management accounting has a positive and significant on company's environmental performance (Solovida & Latan, 2017). Solovida & Latan (2017) analyzed from 68 respondents from the survey conducted. The more sophisticated the use of management accounting practices, namely environmental management accounting, the better the process of control and decision making influences the environmental management control system on environmental performance (Solovida & Latan, 2017).

Furthermore, other study revealed that there is a positive and significant influence between organizational resources, the use of environmental management accounting, and the company's environmental performance (Latan, Chiappetta Jabbour, Lopes de Sousa Jabbour, Wamba, & Shahbaz, 2018). Latan, Chiappetta Jabbour, Lopes de Sousa Jabbour, Wamba, & Shahbaz (2018) analyzed 107 respondents using an online survey. Based on the argument above, the hypothesis proposed is in the following:

H1: Environmental Management Accounting have a positive impact on Environmental Performance.

2.5.2 Quality of decision (QD) and Environmental performance

Quality of decisions are decisions taken accurately and in detail specifically related to the environment in this study. Decision theory is a theory about a decision. Based on decision theory that highlights the important role of information in decision making processes (Hansson, 2005). Thus, better environmental assessment and decision quality due to the provision of more detailed and accurate environmental information that is likely to assist the manager's decision-making process, thereby increasing the quality of environmental decisions, and in turn leads to improved environmental performance. The higher quality of decision, the higher environmental performance.

Phan, Baird, & Su (2018) reveal that the management of environmental activities towards the quality of decisions and environmental performance of the company. The study was conducted in Australia to test the management of environmental activities related to Activity Based Costing. The more sophisticated the use of management accounting practices (in this case environmental management accounting), the better the process of control and decision making and the more solid the impact of environmental management control system on the company's environmental performance. Phan, Baird, & Su (2018) research environmental activity based costing and environmental performance through the quality of decision.

It is expected that the quality of their environmental decisions will be improved, which in turn will have a positive impact on environmental management in terms of improving environmental performance. One of the main difficulties in environmental management is the identification and calculation of the costs of organizational activities and processes (Sarkis, Meade, & Presley, 2006). The higher quality of decision, the higher environmental performance as well. Thus, our hypothesis is proposed in the following:

H2: Quality of decision have a positive effect on environmental performance.

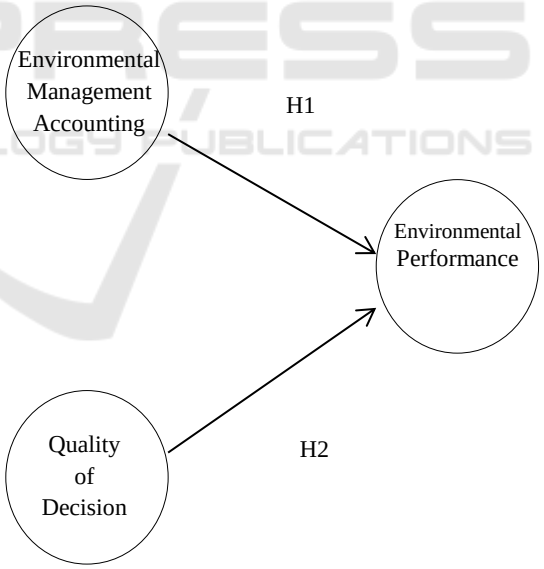

Figure 1: Research Framework

3 METHOD

3.1 Sample

The sample in the study are all companies that have ISO 14001 certification. This is because the company is more concerned than other companies about environmental issues and tends to have a strong commitment to environmental responsibility. The sample in this study as respondents were general managers, operations managers, financial managers and environmental managers in the sample company.

3.2 Instruments

3.2.1 Environmental management accounting

This study uses environmental management accounting instruments are 12 items of environmental management accounting (Ferreira, Moulang, & Hendro, 2010). This study uses seven Likert point scales which indicate 1 "do not do it at all" up to 7 "has been done".

3.2.2 Decision Quality

The measure for decision quality is a five-item instrument derived from (McIntyre, 1982). This study uses seven Likert point scales which indicate that from 1 "not at all applied" to 7 "very applied".

3.2.3 Environmental Performance

This study uses 13 environmental performance instruments of the company (Henri & Journeault, 2010). This study uses seven Likert point scales which indicate 1 "do not at all" up to 7 "to great extent".

3.3 Data Collected Technique

The collection technique is by collecting by the survey. Before the survey was conducted, a pilot test has been carried out. Data obtained from an online survey to companies received ISO 14001 certificate listed Indonesian Stock Exchange. The total company received ISO 14001 around 200 companies. The data use in this study is 56 respondents from the result of the survey.

3.4 Analysis

The hypotheses developed were examined by using Partial Least Square (PLS).

The model of this study is:

$$EPi,t = \alpha + \beta 1\ EMAi,t, + \beta 2\ QDi,t + \varepsilon t \qquad (1)$$

Where:
i, t = sector *i, Year t,*
α = intercept
B = independent variable coefficient
ε = error term
EMA = Environmental Management Accounting
QD = Quality of decision
EP = Environmental performance

4 RESULT AND DISCUSSION

4.1 Result

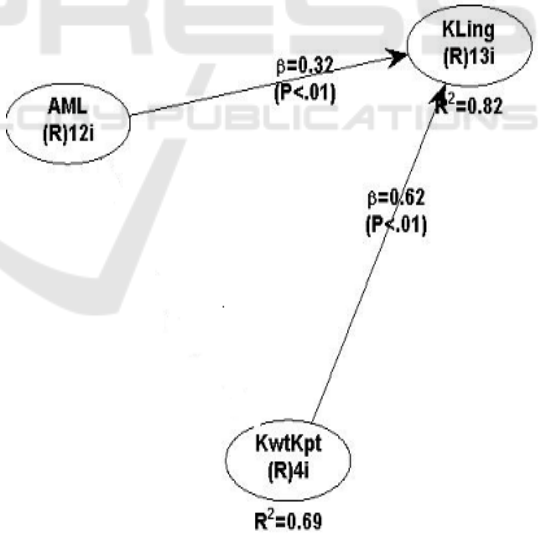

Figure 1: The result of research

Table 1: The hypothesis Result

Hypothesis	Coefficient	p Value	Result
H1	0,32	< 0.01	Supported
H2	0,62	< 0.01	Supported

It can be seen in figure 1 and table II. Based on the results the explanation in the following:

1. The first hypothesis, the link between environmental management accounting and environmental performance. It shows that p= < 0.01. It means that the first hypothesis is accepted at the level below 1 %. The coefficient 0,32. It shows a positive relationship.
2. The second hypothesis states quality of decision has a positive effect on environmental performance. It is also suported. Because p= < 0.01, it is less than 1%. The coefficient (β = 0,62). It means the quality of decision has a positive link with environmental performance

4.2 Discussion

The first hypothesis (H1) which states environmental management accounting have a positive effect on environmental performance. Result research shows H1 is accepted. The results of this analysis indicate that the company's environmental performance is influenced by environmental management accounting. The more often environmental management accounting is used in a company, the higher the environmental performance of the company. This finding is in line with previous studies by (Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008). The finding support Natural resource base view theory. This finding in line to Solovida & Latan (2017); Latan, Jabbour, Lopes de Sousa Jabbour, Wamba, & Shahbaz, (2018).

The argument for the acceptance of the first hypothesis is as follows; the implementation of environmental management accounting has encouraged companies to improve their environmental performance. The finding supports the Natural Resources Based View Theory, that explain the influence of environmental management accounting on the environmental performance (Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008; Christ & Burritt, 2013).

The second hypothesis (H2) which states Decision Quality has a positive effect on Environmental performance. The result of the research shows H2 is accepted. The findings indicate that the quality of decisions has an impact on environmental performance. In particular, information on environmental costs is very important in assisting internal decision makers in various production decisions and resource allocation (Deegan, 2008). Therefore, it is very important for organizations to assess correctly environmental costs to provide better product cost estimates with increasing costs Environmental protection must be passed on to customers through an accurate pricing policy. This finding support (Phan et al., 2018).

The argument for the acceptance of the second hypothesis is as follows; the quality of decision improves their environmental performance. This study supports the decision Theory.

5 CONCLUSION

Both environmental management accounting and decision quality have a positive impact on environmental performance. The more companies implementation environmental management accounting, the higher environmental performance. The higher the quality of decision, the higher environmental management accounting.

One of the roles of environmental management accounting on business in a company is to disclose both financial information and non-financial information. In addition, it is to improve information about the environment and the corporate environment, the economic performance of the company. This environmental management accounting also contributes to sustainable business. However, the quality of decision is a decision taken by a company that has the quality where in decision making requires information not only financial information but also non-financial information especially information related to the environment in company.

This study support two theory that used includes Natural Resources Based View Theory and decision theory. This research also has important implications for the management of the company with regard to environmental management accounting and the quality of decisions that can improve environmental

performance. The actions that can be taken by companies is managing waste and improving all activities that are environmentally friendly which can contribute to environmental performance.

There are several limitations in this study that must be considered. First, this study uses a relatively small sample: many companies are reluctant to provide it information related to environmental performance, because most companies treat this information as "confidential." Information relating to the strategy, use of environmental management accounting and environmental performance are thus not known to the public. A low response rate supports this idea, even though the company contacted in this study is all ISO 14001 certified companies that have achieved environmental management system standards. Second, this study only focuses two variables impacts on environmental performance. Future research can use other variables.

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