Volume 11 Issue 1
June 2016

ISSN 1675-3194

ASIA-PACIFIC MANAGEMENT ACCOUNTING JOURNAL

APMAA

Asia-Pacific Management Accounting Association (APMAA)

ASIA-PACIFIC MANAGEMENT ACCOUNTING *JOURNAL*

APMAJ is indexed in Ebscohost, Cabell's Directory of Publishing Opportunities in Management (www.cabells.com), Ulrichs (www.ulrichsweb.com) and the Journal Ranked List of Australia Research Council with ERA (Excellence in Research for Australia) and Australian Business Deans Council (ABDC). It is also indexed by UDLedge Social Science & Humanities Citation Index (SS&HCI) and Focus (Journals and Conference Proceedings). Since September 2015 APMAJ is indexed by the Emerging Sources Citation Index (ESCI) of Thomson Reuters.

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Volume 11 Issue 1
June 2016

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Environmental Management Accounting: Identifying Future Potentials

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ABSTRACT

This study evaluates the use of environmental management accounting (EMA) in maintaining business processes among industrial companies. EMA is a management tool related to environment accountability. It is utilised to improve the financial and environmental performances of companies to achieve sustainability. This study reviews management accounting literature that has examined industrial environmental pollution. Results show that companies that conduct environmental activities identify the problem associated with the environment as environmental cost. This cost is reported in the environmental cost report, which provides a clear, detailed picture of all environment costs. The environmental cost report assists managers in their decision-making process. Generally, companies do not adhere to environmental accountability. In addition, the environmental cost report of companies cannot separated from their financial statements.

Keywords: *environmental management accounting, environmental accounting, financial performance, environmental performance, environmental costs*

INTRODUCTION

Environmental accounting is a concern and often the focus of a nation. Managers of companies also share such a concern and have become increasingly alert and responsible for the environment surrounding their respective companies (Okoye & Ngwakwe, 2004). Environmental accounting is important because companies are expected to convey information related to environmental protection activities to their stakeholders. Among the challenges in the world are poverty and systematic environmental destruction. The inability of environmental management to deal with such challenges has led to factories causing pollution and the gradual destruction of the ozone layer (atmosphere), oceans and land, which ultimately lead to global warming. Thus, the world today is in a critical condition.

Environmental accounting does not merely focus on environment issues. It also focuses on the economic and political interests of developed nations. Environmental issues should be regarded as a complex problem because of their association with the economic and production processes of industrial companies. Manufacturing companies that have caused environmental problems need to ensure that such problems would be resolved to maintain their business processes and subsequently implement appropriate strategies to achieve sustainable development (Rustika, 2011). A corporate environmental strategy is required to support the concept of environmental management planning and help stakeholders obtain clear, detailed information on environmental performance for decision-making purposes. Such a concept is known as environmental management accounting (EMA). EMA can serve as a benchmark of environmental performance.

Companies generally disclose information on financial operation results to their stakeholders. However, companies tend to ignore operational externalities, such as air and water pollution and termination of employment. Many recent studies have examined the effect of non-environmental operations on companies. These studies suggested that EMA could resolve such a problem because it is a part of environmental accounting that extends beyond conventional management accounting. EMA focuses on the analysis of information related to monetary and physical environments that involve both financial and non-financial information. This feature results

in enhanced financial performance and helps environmental organisations improve (Bartolomeo, Bennett, Bounna, Heydkamp, James & Wolters, 2000; Bennett & James, 1997).

Environmental problems have become controversial in economics and cost accounting despite the existence of extensive discussion on relevant topics during the past few years. These controversial problems are often caused by the general criteria of value measurement and unmarketable and unprofitable resources. In the past, the focus of a company was to maximise profits and increase the wealth of shareholders. Only recently have people begun to raise concern on the environment and anticipate the devastation caused by the arbitrary use of natural resources without considering the ecosystem. Given that natural resources are limited and non-recyclable, such usage should be as economical as possible.

As companies move toward achieving the status of eco-friendliness, they are expected to process their waste. They are also expected to meet the community's demand for efficient production processes from the stage of collecting raw material to the disposal of the consumed product. Such a requirement is strengthened by the introduction of the International Organization for Standardization (ISO) that contains the environmental criteria for good production standard. In addition, ISO 14000 that focuses on the environmental quality management system has also been introduced. Therefore, companies should be concerned with the environment, particularly companies in the manufacturing industry because this industry exerts a major effect on environmental production. This situation calls for a study to evaluate and address environmental accounting and sustainability development associated with companies. Such a study should determine the effect of EMA on the performance of companies, including the disclosure of economic activities and environmental interaction.

The current study aims to evaluate and address environmental accounting and sustainability development among companies from the perspective of Indonesia. It evaluates the use of EMA by industrial companies to maintain their business process and achieve the goal of staying ahead in sustainability development. The following section provides the theories surrounding environmental accounting and sustainability development. Section 3 explains environmental accounting, and Section 4

presents sustainability development. Section 5 presents a review of previous studies, and the final section provides the conclusions.

ENVIRONMENTAL THEORIES

Legitimacy Theory

The norm of a company often changes following a change in development to gain legitimacy. This scenario is consistent with legitimacy theory (Deegan, 2000; Patten, 1992), which explains that a company's operations should be in accordance with limits and the community's values. The achievement of legitimacy is related to the social contract created between companies and the community. A company's performance is measured based on the profit generated and other performance measures associated with the community. Companies are motivated to perform social activities expected by the community to gain legitimacy. Failure to meet such expectations would lead to legitimacy loss and subsequently affect the community's support to the company.

Legitimacy theory can be utilised to establish the application of legitimacy tactics and the effect of annual report disclosure on the community's perception (Gray, Owen & Adams, 1996). Therefore, the extent of tactical application or legitimacy action can assist companies in overcoming problems encountered in the changing environment. Annual report disclosure is an effort by companies to communicate their environmental activities and thus gain legitimacy from the community according to the principle of going concern. Sethi (1978) revealed that a legitimacy problem arises when a gap exists between the social expectations on a company's behaviour and the community's perception of the company's existing behaviour. The legitimacy gap is caused by the evolution of the community's expectations. Therefore, suitable strategies are required to reduce the legitimacy gap in terms of non-changing performance and attempting to change the society's expectations on business performance.

Stakeholder Theory

Stakeholder theory considers the expectation of various stakeholders in the community and the effects of this expectation on a company's strategy (Clarkson, 1995; Mitchell, Agle & Wood, 1997). This theory implies that managers often deal with stakeholder expectation by providing disclosure, and this disclosure includes environmental activity reporting.

Stakeholder theory explains and guides the structure and operations of a company and can be applied in different ways to various stakeholders. Provision of disclosure signals the company's obligation to provide improved performance to stakeholders. This can be done by encouraging stakeholders to participate in determining the company's direction or future goals given that managers interact with employees, owners, suppliers, customers and communities. The stakeholders' interpretation of the agency theory and the company as a contract theory provides a special assessment in different positions. In addition, Freeman (1993) asserted that managers have safeguarding duties in the corporate-entity welfare and the stakeholders. They also have a duty to resolve conflicting claims in achieving the goals and meeting the interests of the stakeholders.

ENVIRONMENTAL ACCOUNTING

Evolution of Management Accounting

Industrial revolution has led to a rapid increase in the development of companies. This progress is indicated by the application of latest technologies to improve the productivity of manufacturing companies. The utilisation of human and natural resources has also increased. Companies have implemented various measures, such as the use of modern technology in production, acquisition, reduced-cost resource utilisation and cost reduction, to improve productivity, efficiency and overall performance and to meet the expectations of stakeholders. However, increasing the productivity and efficiency of companies often leads to environmental destruction, such as water and air pollution and deforestation. As companies strive to meet and prioritize the interests of their stakeholders and investors, they often ignore the interests of other stakeholders, such as employees and communities.

The interest of the community and the environment require attention from companies, particularly in their operations. Apart from benefitting the community, companies also have to consider environmental protection.

The first among the financial reporting objectives in the Statement of Financial Accounting Concept (SFAC) is accountability for resource utilisation. However, in relation to social and environmental accountability reports, a similar regulation has yet to be implemented in Indonesia and other Asian nations (Basyit, 2005). Corporate social reporting (CSR) and sustainability reporting (SR) have received much attention from companies. CSR is consistent with legitimacy theory, which states that companies strive to meet various stakeholder expectations to gain the support and trust of stakeholders. SR is related to sustainable development that aims to fulfil the needs of the stakeholders without ignoring the future generation's ability to fulfil their needs. SR is associated with environmental protection needs (Gaffikin, 2008). However, SR does not simply report the ways of environmental protection, waste disposal and social impact of the company operations; it also includes the companies' programs for and performance in community development, especially in the operation area.

In 2000, as a part of the environmental program of the United Nations, the Global Reporting Initiative (GRI) set out SR guidelines that include three elements, namely, economic, environmental, and social. These guidelines were revised in 2002 (Satyo, 2005). The GRI disclosure guidelines provide a highly comprehensive reporting framework of a company's performance. The SR GRI is different from typical financial statements that merely report on economic performance and ignores environmental performance. Studies have reported that environment information reports are beneficial for companies. For example, Bewley and Magnes (2008) found that companies that provide environmental disclosure perform better than companies that do not. These studies suggested that disclosure serves as an indicator of the future financial performance of companies. Mahoney, LaGore and Scazzero (2008) found that CSR reporting positively influences the return on assets (ROA) of companies.

Environmental Management Accounting

Environmental accounting is not limited to financial accounting because it includes management accounting. Environmental management accounting (EMA) is utilised to monitor and evaluate resource utilisation efficiency and reduce the environmental impact of company operations. EMA provides improved and comprehensive approaches. The information from EMA is used in internal organisational calculations and decision making. EMA is an internal decision procedure that includes physical material and energy consumption, flows and final disposal, costs, savings and revenues related to the potential environmental effects.

EMA extends the role of management accounting to incorporate environmental performance management. Environmental performance management measures and reports financial information and seeks the possibility to enhance the environmental accountability of a company. EMA provides financial information to support environment external reporting (Horngren, Flat & Foster, 2003 cited by Chang, 2007). Ikhsan (2009) stated that EMA emphasises two parallel evolutions, namely, eco-efficiency and strategic position. These parallel evolutions comprise the entire management accounting category, namely, information and planning preliminaries and management control as well as effective use of resources. The other advantages of EMA include the following:

1. The effect of environmental issues on production costs is often unexpected. EMA reduces business expenses by identifying and analysing hidden costs. EMA improves economic performance and the business environment and provides a win–win solution. The business or activity is expected to demonstrate improved performance on the economic and environmental side.

2. EMA satisfies all concerned parties, such as customers and investors, and promotes good relations between the local government and the surrounding community. It also complies with regulations.

Environmental cost information can be used to support decision making and measure results and improvements related to the established environmental goals and objectives. This measurement is an important

factor in determining the successful elements of environmental management systems. Hence, EMA is a flexible tool applicable to different scales and levels. From the standpoint of environmental management, the absolute value of information is important for resource and material consumption wastes and emissions. Therefore, EMA can identify and minimise the effect on the environment. Environmental impact is defined as the effect of company activities on the physical environment; it includes environmental effects on land, water and air quality as well as biodiversity. The environmental impact caused by company operations should be minimised, and the costs associated with the environment need to be managed properly.

EMA can also be utilised to support management decisions in minimising environmental costs (Chang, 2007). Many companies fail to consider the environmental costs required for decision making. Given that most decisions are often made without considering environmental costs, the community worries about the environmental agreement. Adams (2002) showed that generally, companies that report environmental information develop improved internal control systems to assist in decision making, achieve cost savings and improve environmental performance. External environmental reporting has gained much attention and has become a major concern (Adams, 2004; Deegan, 2002; & O'Donovan, 2002). However, only a few studies have examined accountability through internal management.

Aims of EMA

In an ideal business world, companies describe the environmental aspects of accounting processes through the identification of costs, products, processes and services. Although the conventional accounting system plays an important role in global business development, it is insufficient and inapplicable to environmental costs. As a result, companies can only show accounts for indirect general costs. EMA was developed to overcome the limitations of traditional accounting. These limitations include the following:

1. Increase in the interest rate of 'fees related to the environment'. Along with increased environmental awareness, environmental regulations have become increasingly stringent. Thus, companies are forced to spend much to accommodate these interests.

2. Lack of communication between accounting and environmental departments that requires additional costs to improve environmental performance. Eco-efficiency could be a bridge between these interests.

3. Hiding environmental costs in the general cost centre (overhead) that leads to 'bloated' overhead costs.

4. Inaccurate allocation of environmental costs as fixed costs.

5. Inaccurate calculation of the volume and cost of wasted raw materials. EMA calculates the cost of waste as a processing cost plus the purchasing cost of raw materials. Thus, the actual cost of waste is larger than the calculated value.

6. Uncounted relevant environmental costs in accounting records.

The costs associated with environmental management should be calculated properly to avoid decision errors. Costs generally include waste management, material and energy, material and energy purchasing and processing costs. Even though EMA supports internal decision making, it does not guarantee a certain level of financial or environmental performance. EMA provides information to achieve eco-efficient environmental costs and minimise environmental effects, such as the following:

1. Accurate ability to examine and regulate the use of energy and materials, including pollution/residual volume and other species

2. Accurate ability to identify, estimate, allocate, regulate or reduce costs, especially environment-related costs

3. Accurate and comprehensive information supporting the establishment of and participation in voluntary programs and cost savings to improve environmental performance

4. Accurate and comprehensive information to measure and report environment performance, such as improving the image of a company to stakeholders, customers, local communities, employees, government and finance providers

SUSTAINABILITY DEVELOPMENT

Sustainability is derived from the expectation of the society to allow future generations to benefit from similar natural resources as they have benefitted in their generation. Increasing continuing efforts would provide sufficient resources for future generations. Thus, the real problem is determining the amount of natural resources to be consumed and match it with the quantity of natural resources to be produced.

Nugroho (2006) proposed three operational rules to define sustainability. The first operational rule is that renewable natural resources, such as fish, soil and water, should be managed properly. The second operational rule is that the non-renewable natural resources, such as fossil fuel and minerals, should be used economically. The third operational rule is that pollution or contamination should be overcome by recycling or destroying waste.

PREVIOUS STUDIES

Research on environmental accounting has evolved dramatically because of the global change in the industry and stakeholder expectations. However, most studies, particularly those in Indonesia, focused on environmental disclosure and not on the application of management accounting. Several studies have examined the issue in environmental accounting. Ferreira and Otley (2009), which is the main reference of this study, examined the effect of EMA application and strategy on company innovation. The quantitative method was used. The variables used included EMA, strategy, product innovation and process innovation. The study suggested that no significant relationship exists between EMA and strategy. However, EMA implementation has a positive relationship with process innovation but not with product innovation.

Adam (2006) conducted a study on the trends of management change practices applied in organisations by collaborating with managers to improve the accountability and sustainability performance of a company. The method used in the study was action research in the form of observation and interview. The researchers' success in helping renew the annual report

led to the introduction of the subject company's procedures. Ja'far and Arifah (2006) examined listed companies in the Indonesia Stock Exchange and found that managements implement proactive actions to conduct environmental management. Moreover, their environmental performance average was rather high. The study also revealed that managers perceive environmental management support from external parties at a moderate level. Among the 53 companies selected for analysis, 20 publish environmental disclosure in their annual report.

Ejoh, Orok and Sackey (2014) conducted a study on manufacturing companies and environmental reporting in Nigeria. They investigated the development of accounting practices and environmental disclosure among manufacturing companies. They found that manufacturing companies do not independently charge environmental expenditure from other expenses. In addition, the cost level of environmental awareness is low among manufacturing companies in Nigeria. In other words, the environmental expenditure cost should be charged separately from other expenses to ease justification or accountability on the effect of the environment on the companies.

Chang (2007) conducted a study on EMA in universities. He aimed to understand the practices of EMA and explored the factors that potentially affect the decision of adopting EMA in the college sector. His case study on universities revealed the lack of EMA utilisation because of the lack of appreciation of the environmental cost by key personnel. Although the environment is promoted as an important issue from the environmental management perspective, environmental accountability is still lacking. Disclosure of environmental activity remains rare. Satyo (2005) provided three constraints of SR reporting: (1) lack of political support from the top-level management, (2) absence of SR reporting standards; and (3) absence of SR performance measurement. The effect of corporate activity should be reported as a manifestation of corporate responsibility to stakeholders. The low awareness on environmental impact is caused by several reporting constraints. Given the importance of environmental accounting known as SR, efforts should be exerted to improve its application.

The existence of basic and mandatory standards for SR enhances SR reporting among companies whose activities affect communities and the

environment. Aras and Crowther (2008) stated that the standard requirement in analysing and measuring sustainability and providing complete model instructions regarding distribution leads to the development of an operational model. The Indonesian Accountants Association Management Accountant Compartment organise the Indonesia Sustainability Reporting Award (ISRA) to present awards to companies that implement SR well. This appreciation is expected to enhance the reputation and consciousness of companies with regard to environmental reporting. By reviewing literature, this study reveals that environmental cost information could be utilised to support decision making. The information can be used to measure performance results and improvements related to the established environmental goals or objectives. Performance measurement and environmental progress reporting are key factors in the success of an environmental management system. If environmental damage is caused by a company's activities, the company should disclose the approach or tactic used to change the community's perception. From the standpoint of environmental management, information value is physically important to determine the amounts of consumed resources and waste generated. The information could also be used to identify and minimise the environmental effect on company performance. EMA is useful for decision making and performance measurement because of the environmental cost information provided by managers, most of which could be accounted or accountable for management and performance.

Companies that report environmental information develop improved internal control systems and facilitate decision making to achieve cost savings and enhanced environmental performance. The application of EMA allows companies to provide internal and external reports of their environmental performance. Accountability requires information that benefits internal and external stakeholders because stakeholders require more information on environmental management and performance when they know that their companies are facing environmental problems. Hence, external environment reporting is increasingly important to communities as a tool to provide necessary information related to environment performance.

CONCLUSION

Environmental problems emerge from the interaction between economic activities and environment. A high intensity level of the interaction between economic activities and the environment exerts a huge impact on environmental degradation. In addition, the increase in global environmental problems causes consumers to select eco-friendly products. This effect has caused companies to focus on providing products that are based on natural resources, are recyclable and involve less waste processing. If companies produce waste, then they need to adopt waste management for participants to have a unique opportunity to interact with peers from various agencies and bodies and meet the consumers' change of behaviour.

EMA development is a part of environmental accounting that introduces two types of information. The two types of information are financial and physical and include a scheme of a highly comprehensive environmental cost category. However, environmental accounting application is still lacking because of application constraints. Environmental management is becoming increasingly important for a company given its direct impact on performance. EMA could be used to support environmental management in the presence of mutual financial and non-financial benefits for environmental companies. EMA has been applied in industrial companies that focus on generating waste or emissions, and their interest is quite high. Service companies, however, are not interested in EMA application because they do not produce waste nor damage the environment, although in reality they do have to manage solid waste (e.g. paper).

In sum, accountants need to establish means to improve the application of EMA, such as creating standard SR reports, basic standards and requirements of special application for environment-affected companies. This study is expected to provide information on the always-changing environment. Thus, companies can never be separated from the environment. Effective communication is thus necessary between companies and environmentalists, and the government should set rules to achieve balance between companies and the environment.

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