

Proposed Model For Industrial Waste Management Practices and Its Impact on Organisational Performance

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Abstract

Due to environment protection issue, waste management becomes one of important factors in maintaining organization sustainability. In developed country, a growing number of companies began to integrate the pro environment practices, such as waste management practices, into their business strategy. In contrast, the implementation of waste management practices by business organizations in developing country, like Indonesia, is still rare. Waste generated by industries is greater than the capacity to manage this volume of waste. This poses a problem that leads to improper disposal of waste and pollution. This study aims to design a research model which investigates the relation of institutional environment including cognitive, regulatory, and normative element; manager environmental attitudes, worker environmental attitudes, environmental policy, strategic waste management practices, and financial performance.

Keywords: *Awareness, compliance, organizational commitment, waste management*

Introduction

Waste has been seen as an unavoidable by-product of the activities of industries. Recently, increasing of human population and advancement in technology causes the amount and kind of waste matter has multiplied, and then resulting in the contamination of environment (Lee & Min, 2014). Inadequate waste management is a serious problem because it can cause negative effects on human health and the environment. Managing and treating waste materials will create a clean, healthy and safe environment (Kainth, 2009). Attention on waste management must not be paid to only correcting the bad effects, but also should focus on adopting and employing the experiences of the devel-

oped countries, as rationally and as efficiently as possible (Gabrscek & Isljamovk, 2011).

Developed and developing countries have a different waste management practices (Ghiban *et al.*, 2012). In developed country, a growing number of companies began to integrate the environment into their business strategies to achieve their environmental and business performance simultaneously. These companies are motivated to increase profit, productivity, and performance by reducing waste and emissions (Florida & Davison, 2001). Many developed country are trying to change their waste management practice into the zero waste practice (Zaman & Lehmann, 2011).

In contrast, implementations of waste management practices in developing country, like Indonesia, are still rare. In developing countries, waste management mostly is the responsibility of the government. Whereas the amount of budget for waste management is limited because these countries are confronted with growing problems of corruption (Chalmin & Gaillochet, 2009). Waste generated by industries is greater than the capacity to manage this volume of waste. This poses a problem that leads to improper disposal of waste and pollution. Another problem due to the poor quality of data available on waste because of untrained personnel, reluctance of manufacturers to release information, and poor assessment of hazardous waste lead (Aloysius & Daihani, 2010). Whereas, organizations that make strategic decisions, with the incorporation of environmental issues like waste management, are almost certain to gain significant competitive advantages in the market (Dorion *et al.*, 2012). Therefore it is interesting to understand what factors drive companies in developing country, such as Indonesia to implement waste management practice and how the practice will affect its financial performance.

Previous studies show that there are various factors that encourage companies to conduct a strategic waste management practices. Teo & Loosemore (2001) develop a theory of waste behaviour. People's wasteful behavior can make a significant contribution to reduce waste within the construction industry for environmental and economic reasons. Other research in line with these studies indicate that environmental awareness (Aloysius & Daihani, 2010; Gadenne *et al.*, 2009; Yuan, 2013), management commitment (Aloysius & Daihani, 2010; Banerjee *et al.*, 2003), manager attitudes (Sharma, 2000; Cordano & Frieze, 2000), institutional environment (Roxas & Coetzer, 2012), and regulatory forces (Banerjee *et al.*, 2003), influence the waste management practices. Their research addresses the factors driving an environmental sustainability partially. This study aims to design a research model which investigates the role of institutional environment, manager and worker attitudes, and corporate environmental policy towards strategic waste management practices. Further, this research model aims to find the effect of waste management practices on financial performance of companies.

Previous study describe that institutional environment are strongly linked to positive managerial attitudes toward environmental sustainability, and then positively influences the firm's environmental sustainability orientation (Roxas & Coetzer, 2012).

This paper offers a perspective that not only evaluates the manager attitudes, but also the worker attitudes because worker plays an important role in the implementation of strategic waste management practices. This study also depicts how institutional environment and manager attitudes create an environmental climate that encourage worker to exercise waste management. This is consistent with Teo & Loosemore's research (2001), who say that a positive attitude of people towards waste will encourage them to manage waste properly.

A pilot in-depth personal interview and site visit were conducted at eight Indonesia and Australia companies. The result of this study defines the research model that describes that institutional environment (consist of three dimensions: regulatory, normative, and cognitive) will influence manager's environmental attitude. Then, manager's environmental attitude will influence worker's attitude toward environmental. Moreover manager attitudes towards the environment also will affect his behavior in compiling company policy that is environmentally friendly. Worker's positive attitude towards environmental together with an environmentally friendly company policy will encourage the implementation of strategic waste management practices and organisational performance. This model is also in line with Ambec and Lanoie's study (2008) which define that improving a company's environmental performance can lead to better economic or financial performance, and not necessarily to an increase in cost.

Literature Review

Institutional Environment and Manager Environmental Attitudes

Ajzen (2005) defines attitudes as "a summary evaluation of a psychological object captured in the dimension attribute such as good-bad, harmful-beneficial, pleasant-unpleasant, and likable-dislikable". Attitudes represent a readiness for action or behavior (Siegel & Marconi, 1989). Manager Environmental Attitudes discussed in this study are environmental awareness attitudes and environmental commitment attitudes of manager. Awareness means having knowledge of or being conscious of a person, situation or thing (Kainth, 2009). Whereas commitment is a signal that someone cares about a certain thing. Someone who has a commitment of pro-environment will behave consistent with his/her commitment that is friendly to the environment (Baca-Motes *et al.*, 2013).

Firm's institutional environment has three dimensions including regulatory, normative, and cognitive. Previous study stated that institutional environment can influence the managerial attitudes toward environmental sustainability, and then influences the firm's environmental sustainability orientation (Roxas & Coetzer, 2012). The regulatory dimension of the institutional environment refers to the demands of governments and regulatory bodies for corporate to comply with environmental laws and regulations and to participate in environmental management programs (Grewal & Dharwadkar, 2002; Roxas & Coetzer, 2012). The regulatory dimension including the formally codified, enacted and enforced structure of laws. Regulatory dimension refers to regulatory pressure that represents the extent to which regulators threaten to or actually impede a company's operations based on their environmental performance (Delmas & Toffel, 2004).

Environmental legislation is the most important incentive for developing environmental sustainability strategy, including waste management. Industry which became the subject of strict environmental legislation is usually more successful in implementing environmentally sustainable practices (Banerjee *et al.*, 2003). Aloysius & Daihani (2010) showed that compliance to internal firm policies and government policies on waste management can encourage firms to manage their waste by 3R (Reuse, Recycle and Recovery). Sanctions imposed on companies that violate the environmental regulation can shape the awareness and commitment attitudes of managers toward the natural environment (Roxas & Coetzer, 2012). Therefore it is argued that regulatory dimension of environmental sustainability associated with managers' attitude toward the environment.

Normative dimension refers to the manager's willingness to accept the norms, values, beliefs and assumptions of environmental sustainability that in accordance with the reference stakeholders such as customer, supplier, government, worker (Roxas & Coetzer, 2012; Ajzen, 2005). Environmental enforcement, environmental risk and demands from stakeholders can improve corporate sustainability (Sá de Abreu, 2009). In developing country, firms participating in global economy comply better with environmental regulation because of their customer pressure on environmental performance (Christmann & Taylor, 2001). If concern for the natural environment is the norms or the values strongly held by the stakeholders, managers are likely to gain legitimacy and support if their attitudes conform to these norms. Hence it is argued that normative dimension of environmental sustainability associated with managers' attitude toward the environment.

The cognitive dimension refers to the mental representations individuals use to interpret and make sense of their world (Delmas & Toffel, 2004). Cognitive dimension related to the belief of manager about expected standards of behavior (Roxas & Coetzer, 2012). Cognitive perception is derived from the knowledge manager based on personal experience or based on information from the outside (Eberhardt-Toth & Wasieleski, 2013; Roxas & Coetzer, 2012). Knowledge about consequences of waste, ways to reduce waste, responsibilities for waste, and belief that waste is inevitable, can drive towards positive wasteful attitudes (Teo & Loosemore, 2001). Managers, who believe that environmental issues are important for suppliers and can affect their buying decisions, are more likely to have positive environmental attitudes (Gadenne *et al.*, 2009). Knowledge of environmental problems can be obtained by education within family, media (e.g. radio, television, newspaper and magazines), education at work, seminars, and legal regulation (Akca *et al.*, 2014). It is argued that cognitive dimension of environmental sustainability associated with managers' attitude toward the environment.

Manager Environmental Attitude and Corporate Environmental Policy

Management aspects such as environmental policies is frequently considered as part of environmental performance (Sá de Abreu, 2009). Corporate environmental policy represents an essential tool that helps companies both systematically manage their en-

environmental obligations and risks, and promote these objectives throughout the entire organization (Roy *et al.*, 2001). Previous study states that positive managerial interpretations of environmental issues influence an organization's environmental strategy (Sharma, 2000). Therefore manager's pro-environmental attitude is expected to affect his/her behavior in formulating environmental policy of the organization.

Naffziger *et al.*, (2003) reported that managers with a high level of concern for the environment expend more time and resources on environmental initiatives than those with a low level of concern. These managers search for effective solutions, trying to manage according to current legislation, more specifically with regard to environmental management practices and support from existing legislation, in order to reduce waste and lead with waste toxicity and danger (Dorion *et al.*, 2012). However, another study found no relationship between positive personal environmental attitudes and positive environmental performance (Schaper, 2002).

The environmental attitude serves as a powerful influence on their sustainability intention, which in turn affects behavior. Pro-environmental attitudes are crucial to induce people to apply environmental sustainability practices such as preparing corporate environmental policy (Rands & Starik, 2009). Manager who has pro-environmental attitudes will develop environmentally friendly policies. Such policies make environmental values of the company more clearly. When the policies are well documented and shared with all employees, they will get a clear vision of the objectives of a company's goals, thus enabling them to participate in this vision (Roy *et al.*, 2001). Although having positive attitudes towards waste management was not directly associated with taking action to improve the waste management practices, but it was related to a readiness for support the implementation of waste management practices (Gadenne *et al.*, 2009). Therefore, it is argued that manager who has a positive environmental attitude will develop a friendly environmental policy.

Manager Environmental Attitudes and Worker Environmental Attitude

Manager's positive attitude toward natural environment issues and concerns can lead to a positive and proactive orientation of their firms toward environmental sustainability (Roxas & Coetzer, 2012). The environmental awareness of manager can support the firms' environmental practices. Also, manager environmental attitudes are positively associated with their contributions (in money and kind) to environmental organizations and environmental activities (Gadenne *et al.*, 2009). Another study shows that the environmental awareness of managers can be a determining factor in encouraging others to participate in pro-environmental activity to achieve sustainable development (González-Benito & González-Benito, 2006).

Managers who care for the natural environment can be a source of inspiration for their subordinates to shape values about the importance of preserving the environment (Ramus, 2001). The strength of the signal from managers regarding protection of the natural environment had a direct impact on the willingness of employees to create environmental initiatives. Management behaviors and corporate vision of sustainable

activities as presented in a clear environmental policy will encourage employees to implement environmental practices (Ramus & Steger, 2000). Environmental management actions such as strategic waste management can occur as a result of concerns expressed by employees, through observation of the benefits achieved by others through their environmental programmers, or because of the personal preferences of the owner/manager of the firm (Gadenne *et al.*, 2009).

Therefore, it is argued that managers who have a positive attitude towards environment will encourage their worker to have a positive attitude to implement the strategic waste management.

Worker Environmental Attitude, Corporate Environmental Policy, and Strategic Waste Management

The waste management practices including collection, transport, processing, recycling, storage, disposal and monitoring of waste by considering the environmental, economic, technical, legislation and institutional issues (Belien *et al.*, 2011). Waste should be managed in an environmentally sound manner (Kainth, 2009). Organizations can reduce the generation of wastes by using environmental strategies for reuse, recycling/composting and efficient management of waste. The principle of Reduce, Reuse and Recycle (3R) should be the basis for good waste management practices (Kainth, 2009). Fischer *et al.*, (2011) state that organizations can reduce the generation of wastes by using environmental strategies for reuse, recycling/composting and efficient management of waste. They introduce three types of strategic waste management options, namely; (1) waste prevention and reuse options, (2) recycling and composting options, and (3) residual waste treatment options. The strategic waste management practices in this study refer to waste management hierarchy pyramid that consist of five steps to achieve a strategic waste management. The five steps as follows: (1) reduce (lowering the amount of waste produced), (2) reuse (using materials repeatedly), (3) recycle (using materials to make new products), (4) recovery (recovering energy from waste), and (5) landfill (safe disposal of waste to landfill) (Lucia-Monica, 2013; Vasiljevic-Shikaleska, 2014).

Workers play an important role in the strategic waste management of the company because they implement the changes in behaviors and routines that are required to reach the targeted improvements in the environmental performance of the company (Perron *et al.*, 2006). Previous study shows that managers who care about protecting the natural environment can communicate their commitment by making a written environmental policy. Workers are more likely to do pro-environmental activity when they know an environmental policy exists and their supervisor is supported their action (Ramus, 2001). Another study reported that the presence of firms' environmental policy represents the corner stone of an environmental management system (EMS) that helps companies manage their environmental obligations and risks, and promote these objectives throughout the entire organization (Roy *et al.*, 2001). Employees' environmental initiatives can improve company's environmental performance by reducing the environmental problems in the company through recycling, reducing the hazardous

waste or eliminate chemicals harmful to human health (Ramus & Steger, 2000). Therefore, it is expected that corporate environmental policy and worker environmental attitude influence the strategic waste management practices.

Strategic Waste Management Practices and Corporate Financial Performance

Some previous studies show that company's environmental performance such as waste management practices have a positive influence on its financial performance. Improving a company's environmental performance can lead to better economic or financial performance (Ambec & Lanoie, 2008). Proactive corporate social responsibility adopted by company can be an effective strategic tool for improving financial performance and competitive advantage in SMEs (Torugsa *et al.*, 2012). Firm's environmental performance relative to its industry is associated with higher financial performance (King & Lenox, 2001). Based on a study of five years' financial data from approximately 300 listed firms listed on Nikkei Environmental Management Survey, is concluded that firm's environmental performance has a positive impact on its financial performance and vice versa (Nakao *et al.*, 2007). The management practices to improve their environmental performance was found is significantly related to financial performance (Delmas *et al.*, 2013). Good environmental performance that was measured by a non financial ratio based on the relative quantity of hazardous waste recycled is positively associated with good economic performance (Al-Tuwaijri *et al.*, 2004). Another study shows a different result, company which has more environmental friendly was found not to be significantly related to firm financial performance (Blazovich *et al.*, 2013).

Better environmental practices can lead to a potential revenue increase in three ways, (a) better access to certain markets; (b) differentiating products; and (c) selling pollution control technology (Ambec & Lanoie, 2008). For example, optimization of reusable distribution materials can lead to waste reduction and financial savings (Lucia-Monica, 2013). The company's financial performance can also be increased because customers prefer companies that they perceive as more sustainable than competitors. Investors and lenders may perceive a lower risk profile for sustainable enterprise so as to reduce borrowing and capital costs (Peloza *et al.*, 2012). The other side, better environmental performance can lead to reductions in cost in four categories: (a) risk management and relations with external stakeholders; (b) cost of material, energy, and services; (c) cost of capital; and (d) cost of labor (Ambec & Lanoie, 2008). It is argued that implement strategic waste management practices will influence the financial performance.

Research Model

This study describes a model that links institutional environment, manager environmental attitude, worker environmental attitudes, and corporate environmental policy towards strategic waste management practices. Further, this research model also describes the effect of waste management practices on financial performance. Figure 1

illustrates our model. This figure shows that institutional environment is predicted will influence awareness and compliance attitudes of manager toward environmental. Manager environmental attitudes will affect worker environmental attitudes and environmental policy. Worker environmental attitudes and environmental policy will affect strategic waste management practices. Then strategic waste management practices will influence corporate financial performance.

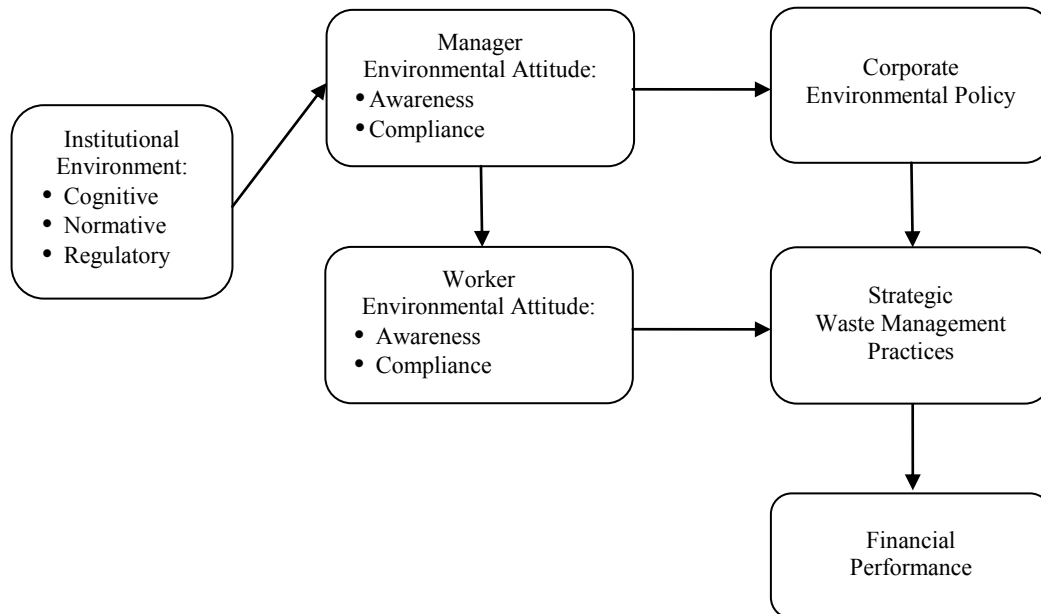


Figure 1. Research Model

Conclusion

This paper provides a model that describes how institutional environment including cognitive, regulatory, and normative element, will influence manager environmental attitudes. Manager who has a positive attitude towards the environment will tend to develop an environmental friendly corporate policy that will encourage the exercise of strategic waste management practices. The manager attitudes will also create a friendly environmental leadership style that will encourage employees to have a positive environmental attitude. A positive environmental attitude of worker, and the corporate's policy of pro environment will encourage to exercises strategic waste management practices. This study also contributes to the research on investigating the role of strategic waste management practices on corporate financial performance. This paper only provides a research model, therefore testing our model in Indonesia as a developing country and in Australia as a developed country will present an opportunity for future research.

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