

# Adopting Environment Management Practices for Environment Sustainability: A Proposed Model for Logistics Companies

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## Abstract

This study pursues to investigate the awareness and attitudes influences towards environmental management practices in the Malaysia logistics industry. This factor is being introduced in the logistic industries because of the complexity of the attributes. It also explores the logistics companies' willingness to adopt these practices. Based on an ongoing study, this paper insinuates a research model that defines the inter-relationships between the factors.

**Keywords:** technological, organizational, environmental, environment management practices

## 1. Introduction

This research focusing on determining the factors influencing the environment management practices adoption in Malaysia logistics industry. Researchers need to identify the determinant factors of environment management practices for practitioners to implement and several researchers have suggested various explanations (Gadenne, Kennedy, & McKeiver, 2009; González-Torre, Álvarez, Sarkis, & Adenso-Díaz, 2010; Ho & Lin, 2012).

Variables of technological factors, organizational factors, environmental factors, and environmental awareness and attitudes factors are frequently appeared in the environment management practices study (González-Benito & González-Benito, 2010; Ho & Lin, 2012). The four factors have not been considered in the research of environmental management in the logistics industry (Lin & Ho, 2011) although it has been considered into justification to numerous studies on environment management practices matters.

### 1.1 Technological Factors

Technological factors are frequently found in the literature of technology improvement and innovation. Environment management practices are one of the practices that considered as a technology innovation (Lin, Ho, & Chiang, 2009; Tornatzky & Fleischer, 1990). However, the influences of technological factors towards environment management practices adoption are hardly analyzed (Ho & Lin, 2012). Three variables of technological factors are consistently been found to be influencing on technology innovation that are relative advantage, compatibility, and complexity (Ho & Lin, 2012).

### 1.2 Organizational Factors

Organizational factors are usually studied in the research on technology innovation and environmental management. Constructs such as the organizational sizes, the quality of human resources, the leadership skills of the top management's, the organizational culture, environmental strategy, and the organizational support, have been discussed on their influences on technology innovation (Tornatzky, Fleischer, & Chakrabarti, 2008) and (González-Benito & González-Benito, 2010). This research centers primarily on the quality of human resources, organizational support, and the size of the company because they are organizational related construct commonly explored in research on technology innovation and environmental management.

### 1.3 Environmental Factors

The environmental factors indicate to the external environment in which a company handlings their daily operations. The environmental variables that are regularly considered as major environmental factors are governmental support, stakeholder pressure, and environmental uncertainty (Etzion, 2007; Frambach & Schillewaert, 2002).

#### *1.4 Environmental Awareness and Attitudes*

Environmental awareness is distributed into two classifications. The first classification is general environmental awareness and the second classification is cost-benefit environmental awareness. The prior classifications was stately describing to their firm's environmental initiatives, impact towards environment, policies on environment, and the business operations legislations effect (Gadenne et al., 2009). The recent classifications was measured concerning to the effect of improving environmental routine on significant cost benefits and improved production productivity (Gadenne et al., 2009). Environmental attitudes were determined through responses describing to individuals environmental attitudes revised from Schaper (2002). Thus, this study believes that environmental awareness and attitudes will positively play the role in adoption of environment management practices for Malaysia logistics companies.

### **2. Conceptual Framework**

While adopting environment practices comprises applying new technology innovation, systems, and methods to lower the intake of energy and pollution emissions, the implementation behavior can be considered as a technological activity. In this research, the environment management practices will be analyzed in the dimension of technological factors, organizational factors, environmental factors and environmental awareness and attitudes factors simultaneously.

Figure 1 explains the framework of the research. The technological factors comprises the construct of complexity, relative advantage, and compatibility of environment management practices; the organizational factors comprises the factors of quality of human resources, organizational support, and the size of a company; environmental factors incorporate the factors of pressure from the customer, pressure of the regulatory, support from the government, and support from environment and lastly the environmental awareness and attitudes incorporates the factors of general awareness, cost benefit awareness attitudes towards environment.

#### *2.1 Theoretical Perspective*

The underpinning theory of several prior new technology and innovation adoption model was constructed on the theoretical frameworks derived from Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA); Ajzen's (1985) Theory of Planned Behaviors (TPB); Davis (1989) Technology of Acceptance Model (TAM); Rogers's (1983,1995) Diffusion of Innovation (DOI) theory; Gadenne's (2009) Model of External Influences on Environmental Awareness and Practices (MEAP) and Tornatzky and Fleischer's (1990) Technological-Organizational-Environmental (TOE) model. These theories are proficient to describe the organization level of innovation adoption and able to focus on the individual acceptance of new technology.

#### *2.2 Background*

##### *2.2.1 Technology-Organization-Environment (T-O-E)*

Tornatzky and Fleischer (1990) Technology-Organization-Environment (TOE) framework commences as a generic set of factors to forecast the probability of innovations adoption. The framework suggests that innovations adoption is influenced by technology expansion (Kauffman & Walden, 2001), business, organizational settings and organizational reorganization (Chatterjee, Grewal, & Sambamurthy, 2002), and industrial environmental program (Kowtha & Choon, 2001). Technological context describes that adoption relies on the group of the firm's technologies as well as the application's noticed relative advantage, compatibility, and complexity. Organizational context captures firm's quality of human resources and the organizational support (Jeyaraj, Rottman, & Lacity, 2006; Tornatzky & Fleischer, 1990). While environmental context suggests adoptions depends of customer pressure, regulatory pressures, governmental support and environmental uncertainty (Al-Qirim, 2007; Jeyaraj et al., 2006; Scupola, 2003a, 2003b; Zhu & Kramer, 2005). The main problem of the T-O-E framework is that the framework seems to lack of the influences of behavioral, attitudes, awareness and benefits construct on technological and innovation adoption decision (Awa, Emecheta, & Ojiabo, 2012). Yet, by integrating the T-O-E framework with other models such as the MEAP model, with each theory offering larger number of constructs than the original, the integration model will offers finer theoretical explanations to the understanding of technological and innovation adoption behavior.

##### *2.2.2 Model of External Influences on Environmental Awareness and Practices (Meap)*

Gadenne's (2009) and Bansal's (2000) believes that an external stimulus for environmental responsiveness is individual apprehension towards the environment. Company managers and decision makers may choose to adopt environment management practices and systems nevertheless of whether they are required by law, or whether believing that the company will gain benefits from the implementation. Regularly persons who are aware and apprehensive towards the environment impact of their business will be more tending to act to lower the impact of

their business activities. Persons who concern on environmental management as an ethical issue tends to encourage environmental activity. Various companies involved in environmental activities such as energy conservation, recycling, or waste management without engaging in formal certification processes (Hillary, 1999) because of moral concerns and because they see the economic benefits of such activity.

Numerous articles have described that business managers are make alarmed on their business environmental impact (e.g. Groundwork, 1995; Roberts et al., 2006; Tilley, 1999). Articles by Naffziger et al. (2003) and Gadenne et al. (2009) stated that concerned managers for the environment apply more time and resources on environmental initiatives.

According to Gadenne (2009), the mediating factor of the research design is to explore the outcome of awareness toward environment and environmental practices attitudes. These performs are categorized as persons relating to environmental systems, preservation, and maintenance. The mediating factor will shows that the greater level of environmental awareness or cost benefits awareness in environmental management practices for an individual, the more prone they adopt or implement the EMP (Gadenne et al., 2009). For the business owner or a manager that have high level of concerned towards environmental attitudes, they are more likely support any initiatives towards environmental activities.

### 2.2.3 Proposed Model of Environmental Management Practices Adoption

In this research, a modified version of the Technology-Organizational-Environmental Framework (TOE) (Tornatzky & Fleischer, 1990) and the Model of External Influences on Environmental Awareness and Practices (MEAP) (Gadenne et al., 2009) have been developed for researching the adoption of environment management practices. Based on the TOE framework, it covers the aspects of an company's context that influence the process to adopt and implement any technological innovation or new technology system (Tornatzky & Fleischer, 1990). While in MAEP, any planning or intention to use a system is explained by the factors of attitudes toward the general awareness of an environment management, the awareness of cost benefits implement environment management and the environment attitudes towards environment management (Ajzen, 1985). Both TOE or MAEP models have been widely recognizes among researchers and it founded to be very beneficial in explaining consumers' attitudes and intentions toward a given behavior (Awa et al., 2012; Min, 2008; Oliveira & Martins, 2010; Pavlou & Chai, 2002; Yoon, 2011). MAEP model is a generic theory of human awareness and behavior towards environment while TOE is focused towards innovation adoption.

This article adjusts TOE frameworks by integrating the construct from MAEP model. Therefore, this research will investigate the influences of technological, organizational, and environmental factors and the mediating factors of environment and awareness attitudes on the adoption of environment management practices in Malaysia logistics industry.

### 2.3 Target Group

Sample randomly drawn from the list of Federation of Malaysian Freight Forwarders consists of 1,135 members.

### 2.4 Filling the Gap

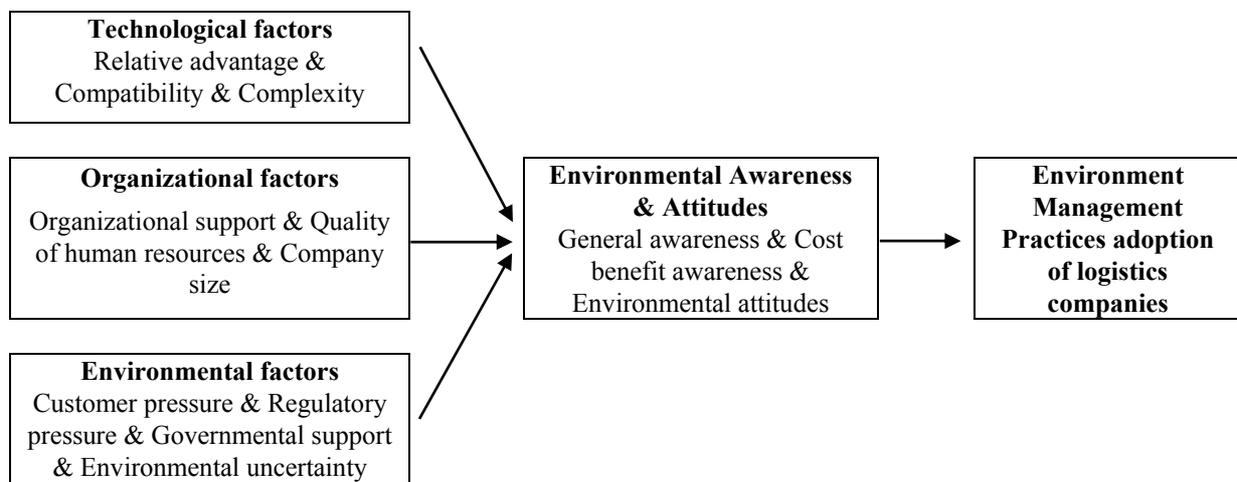


Figure 1.

To fill in the gap, this goal of this research is to report the influences of technological, organizational, environmental and environmental awareness and attitudes factors on the adoption of environment management practices for the logistics companies in Malaysia.

### 3. Discussion and Conclusion

This research emphasis on rising matters in environmental issues in the logistics industry. Implementing environment management practices are one of the important issues that have been emphasized. Several researches reported significant findings. (Rondinelli & Vastag, 2000) highlight the importance of environmental issues in the logistics industry; (Murphy & Poist, 2003; Wu & Dunn, 2011) explored the environmental management practices adopted by the logistics industry; and Gadenne et al. (2009) presented certain potential factors that may influence the adoption of environmental management practices focused on the logistics companies.

This research emphasizes the necessary actions for future researchers to attempt to nurture the quality of research in environmental issues in the logistics industry. This will benefits the upcoming logistics research such as the field experiments to show interconnection and causes, and relying on actual behavior rather than intended behavior (Lin, 2011).

The environmental management practice offers an important framework for a researcher to understand environmental changes and an opportunity to solve a country's ecological difficulties. The environmental management practices are a evolving, dynamic and interactive process with many enigmas, and involves many perspectives in environment issues and should be considered from a technical, managerial and social perspective. Lin (2011) examined the influences of technological, organizational and environmental factors on the adoption of environmental practices in Chinese logistics industry and it might be have different outcome if the EMP to implemented in Malaysia. Though, there is will be an various perspectives and explanations as to why manufacturing companies should embarks in environmental activities, including the pressure from the stakeholder, regulation on the environment, the size of a company, managers unique characteristics, the quality of human resources, the structure of an organization, corporation daily operation and activity, and geographical location (Etzion, 2007; J. González-Benito & O. González-Benito, 2010).

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