

# Green Management Practices and Firm Performance: A Research Agenda

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## Abstract

**This study aims to investigate the elements of green management practices (GMP) and its performance implications. The research model consists of the key elements of GMP and firm performance indicators are formulated to provide a foundation for the application of GMP. A proposed research agenda is discussed in this paper and corresponding research propositions are discussed through theoretical lens.**

## Keywords

**Green management practices, Research Agenda**

## 1. Introduction

The concept of a sustainable economy has been a significant area of concern to society and industry. A sustainable economy can be defined as ‘one that satisfies the needs and wants of the present generation without compromising the ability of future generations to meet their needs and aspirations’<sup>[1]</sup>. Studies on the rate of depletion of natural resources can be dated back to at least the 1970s. The report ‘*Limits to Growth*’ by Meadows et al.<sup>[2]</sup> concluded that ‘the economic growth would have to be carefully limited if catastrophe was to be avoided’. In recent years, the concept of sustainability is very different from that being proposed in the early seventies. ‘*Limits to Growth*’ will not be accepted by societies and industries in this day and age. Nowadays, the challenge to sustainability is to ensure that industries support economic growth whilst ensuring environmental protection.

The growing interest in sustainable development has led many firms to examine ways to deal with environmental issues<sup>[3]</sup>. Environmentally sustainable management, or the so-called ‘green management’, has emerged as an important managerial topic for firms to achieve profit and market share on the one hand, and commit to protecting the environment on the other hand<sup>[3]</sup>. The topics of firm performance and environmental performance cannot be neglected by firms. Integrating environmental concerns into management practices has become increasingly important for firms to gain competitive advantage. This study aims to develop a green management practice (GMP) model that consists of the elements of GMP and its performance outcome.

Given the academic and practical importance of developing a GMP in the container transport community, the objective of this study is to introduce a GMP model to demonstrate the adoption of GMP and its performance implications.

## 2. Review on GMP

GMP has emerged as an effective management tool for firms to improve their performance. This new paradigm of GMP is oriented towards both economic and environmental aspects by applying ecological criteria. The scope of GMP adoption ranges from green purchasing to life cycle management. Life cycle design can be seen as ‘the development of a holistic concept for the entire life cycle’<sup>[4]</sup>. In the context of container terminal operations, life cycle management includes the planning of possible operations for the handling, loading and unloading of containers, equipment and materials recycling methods, reducing waste, and cutting the use of energy.

The field of GMP is arguably in its early development phases both academically and practically. Academically, to empirically validate research models in the field of GMP, using literature in operations and environmental management to identify key elements of the GMP are need. Practically, firms can benefit from the identification of these elements for their self-assessment in GMP and evaluate its impact on firm performance <sup>[5]</sup>. From the literature reviews, three key elements of GMP (i.e., cooperation with supply chain partners, environmentally friendly operations, and internal management support) can be identified.

### **2.1 Cooperation with supply chain partners**

From the supply chain perspective, researchers developed a decision framework to evaluate alternatives to GMP adopted by firms that affects their external relationships with suppliers and customers. Furthermore, they used a modeling approach to optimize the operations of forward and reverse logistics in a green supply chain <sup>[6]</sup>. These models and frameworks emphasize the cooperation with supply chain partners and define a variety of characteristics and attributes for GMP. In addition to these researches, other researchers provided empirical evidence and identified several factors influencing GMP such as investment recovery, product design, and supply chain relationships. Increasingly, firms have established linkages of suppliers <sup>[7]</sup>. These linkages and growth in globalization can be an element for firms to improve environmental performance.

### **2.2 Internal management support**

There are a number of studies to examine the relationship between GMP and internal management support. The study identified six key factors related to GMP including top management support, middle management support, firm's mission, department goals, training for personnel to purchase environmentally friendly input, and evaluation of purchasing management on GMP <sup>[8]</sup>. The findings demonstrated that management support and department goals are factors affecting GMP. In addition, researchers identified commitment from senior managers, support from mid-level managers, and cross-functional cooperation from environmental improvements as factors affecting internal environmental management <sup>[11] [12]</sup>. In short, previous studies <sup>[9] [10]</sup> suggested that a number of benefits can be achieved by integrating environmental issues with corporate strategy.

### **2.3 Firm performance**

Environmental protection activities are embedded in business operations. Enhancing the business operations efficiently through GMP may bring some benefits to firms. Thus, economic performance may be one of the drivers for firms to implement GMP. Potential benefits gained through GMP include decreased cost of energy consumption, material purchasing, waste treatment, and waste discharge <sup>[12]</sup>. Proactive GMP can prepare an enterprise for superior performance through improvement of environmental risk and the development of capabilities for continuous environmental improvement <sup>[13]</sup>. In addition, there are a number of findings to support the view that GMP is positively related to firm performance <sup>[14] [15] [16]</sup>.

There has been a growing trend that firms are focused more on GMP. Building on previous studies and earlier exploratory research, several key elements of GMP are identified. These key elements of GMP include cooperation with supply chain partners, environmentally friendly operations, and internal management support. This study aims to use a case study to examine these key elements and the implications on firm performance.

## **3. Research methodology and model development**

This study used a case study approach to investigate issues related to GMP. A case study research method can be defined as 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context' <sup>[1]</sup>. Case study is an excellent research method to understand a complex issue and extend experience to what is already known through previous research. Case study analyzes a limited number of events and their relationships. It is a widely used qualitative research method to examine real-life situations and provide a foundation for the application of constructs.

It is a common practice in case study research to divide the factors of interest into parameters, i.e., dependent variable and independent variable <sup>[13]</sup>. A dependent variable is a variable that is to be explained, and an independent variable is a variable that is expected to influence the dependent variable <sup>[14]</sup>. It is the aim of this study to investigate GMP in container terminal operations. Case study attempts to monitor and selectively observe how the independent variables influence the dependent variables. More specifically, this study seeks to identify the factors (independent variables) that affect GMP (dependent variable) in container terminal operations and examine its performance implications.

The research model of GMP in this study consists of two general functions (F1 and F2). The first general function (F1) stipulates that GMP consists of several elements. Supply chain partners, environmentally friendly operation, and internal management support are the three key elements of GMP. The concept of set is used as a fundamental tool to construct relations between GMP and its elements. A set is simply a collection of distinct objects. The objects in a set are called the elements of the set. If GMP ( $g$ ) represents the set of three elements (i.e., supply chain partners, environmentally friendly operation, and internal management support), the set can be written as:

$$g = \{c, e, i\}$$

where

$g$  = green management practice

$c$  = cooperation with supply chain partners

$e$  = environmentally friendly operations

$i$  = internal management support

The second general function (F2) lays down the condition that GMP is related to firm performance. Hence, the second general function (F2) is:

$$g = r(f)$$

where

$g$  = green management practice

$r$  = coefficient that indicates the strength of the association between  $g$  and  $f$

$f$  = firm performance

From the perspective of container terminal operations, firm performance may consist of several elements including terminal throughput, profitability and efficiency, and cost-effective operation. If firm performance ( $f$ ) represents the set of three elements (i.e., terminal throughput, profitability, and efficient and cost-effective operation), the set can be written as:

$$f = \{t, p, o\}$$

where

$t$  = terminal throughput

$p$  = profitability

$o$  = efficient and cost-effective operation

when  $g = \{c, e, i\}$  and  $g = r(f)$

$$r(f) = \{c, e, i\}$$

After the development of the GMP model, i.e.,  $r(f) = \{c, e, i\}$ , case study is used as a research method to examine real-life situations and provide a foundation for the application of the research model. The case study approach is useful for indentifying the underlying variables that influence GMP. The ability to accurately identify the variables from a case study depends on how well the study correctly identifies the independent variables.

#### 4. Discussion and conclusion

This study develops a GMP model which consists of two general functions. According the first general function, i.e.,  $g = \{c, e, i\}$ , GMP consists of three elements including cooperation with supply chain partners (*c*), environmentally friendly operation (*e*), and internal management support (*i*). Hence, using a case study approach, elements of GMP are verified and its relationship with firm performance could be validated. The implications of these results are that GMP should be well rounded and include various elements. From a research perspective, the identification of GMP elements in this study could be used as a base to develop a comprehensive picture of organizational GMP adoption. Practically, firms should strive to improve on the multiple dimension of GMP implementation in order to arrive at the full realization of benefits which may include performance enhancement in terminal throughput (*t*), profitability (*p*), and efficient and cost-effective operation (*o*).

The findings suggest that GMP consists of a number of elements. Cooperation with supply chain partners (*c*) has been identified as one of the elements of GMP. The success of GMP requires internal cross-functional cooperation and external cooperation with other partners in the whole supply chain. Experiences of GMP to improve environmental performance can be shared across the networks of suppliers<sup>[13]</sup>. Adoption of GMP by a dominant firm may also influence the supplier-selection criterion which provides pressure to suppliers in the supply chain to self-regulate and adopt GMP<sup>[15]</sup>. The second GMP element is environmentally friendly operation (*e*). For instance, GMP may result in cost saving in terms of a decrease of cost for energy consumption, and fees for waste treatment and discharge. Environmentally friendly operation (*e*) is an emerging tool to improve environmental performance by addressing product functionality while simultaneously minimizing environmental impacts. Over its life cycle, a high proportion of operational cost and quality of product is determined in the operation design. Design of container terminal operations has been used as a cost minimization and quality control tool. With the adoption of GMP, container terminal operations should be more environmentally focused. Besides, the pressure from regulatory requirements may be one of the reasons for firms to adopt an environmentally friendly operation. Internal management support (*o*) has been identified as the third element of GMP. A firm's top management is in charge of maximizing shareholder benefits through their strategic leadership and determining the direction of the firm. Hence, commitment from top management is one of the most important components of GMP as these are not only green initiatives but also due to technological and commercial reasons.

Due to stricter regulations and increased concerns from the community, firms need to effectively adopt GMP into their business operations. The examination of the second function (F2) of this study illustrates that the relationship between GMP and firm performance is promising. Findings of this study indicate a positive relationship exists between the adoption of GMP and firm performance. The adoption of GMP does not have a negative impact on firm performance and demonstrates that opportunities do exist in the container terminal industry to enhance the adoption GMP, and these evidences play a role in lessening the barrier to GMP adoption. GMP can emerge as an important prototype for firms to achieve the objectives of profit and market share on the one hand, and to enhance a sustainable economy on the other hand. Hence, firms should strive to adopt GMP in order to arrive at the full realization of benefits including enhancement in terminal throughput (*t*), profitability (*p*), and efficient and cost-effective operation (*o*). Firms should also incorporate performance measurement systems, continuous improvement and benchmarking of GMP in their business operations to provide a good overview of how the adoption of GMP affects its firm performance.

Overall, this study provided an insight into an emerging field of the relationships between environmental and operational practices and firm performance. In summary the following GMP issues and lessons are leaned from this study: (1) adoption of GMP seems to have win-win relationships in terms of economic and environmental and performance; (2) cooperation with supply chain partners and environmentally friendly operations quality management are key elements of

GMP; (3) internal management support is important for firms to adopt GMP. Although the findings arrive at these overall results, there are several limitations of this study. First, the sample is based on a leading global container terminal operator. The firm only recently adopted many of the elements of GMP and may have very different characteristics compared to firms in other countries. The issue of whether firms in other forms of operations having similar results needs to be further investigated. Second, due to difficult empirical data collection, we used secondary data to examine the second function (F2). An advantage of the convenience sample is that it avoids data collection problems and it provides a basis for comparison. However, reliability and validity is a concern when using secondary data. Third, the study generally examines relationships between GMP and performance. Further analyses for other company characteristics will be needed to generalize the industrial practices. Fourth, this study examines the firm performance influenced by GMP. Other aspects such as strategic financial and organizational performance should also be investigated. In the container terminal operations, these strategic measures may include ownership in the forms of state, multinational, and joint venture operations.

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