



# Developing green management standards for restaurants: An application of green supply chain management

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## ABSTRACT

Hospitality businesses influence the sustainability of their natural environment by consuming significant amounts of natural resources. However, research on applying green supply chain management (GrSCM) with process of food production to construct green management indicators for restaurants is lacking. This study thus establishes a green management standard with GrSCM that green restaurants can implement. This study combines GrSCM and food and beverage management to develop green restaurant standards, and primarily adopts the Delphi Technique to develop green standards of restaurant management. A total of 23 experts from government, industry, and academia were invited to participate. The results show that green restaurant management standards comprise three facets (green foods; green environment and equipment; and green management and social responsibility), nine sub-facets, and 81 indicators: besides five indicators for the new established restaurant, the remaining 76 were standards for existing restaurants in Taiwan. In addition to its practical implications, an important contribution of this study is its application of GrSCM to establish a green management standard for restaurants.

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## 1. Introduction

Since the 2005 announcement of the Kyoto Protocol, intended to fight global warming, sustainable development has been highlighted worldwide as an important principle for establishing and managing organizational policies. While the service industry, particular the hospitality sector, continues to grow in importance, it finds it cannot escape from its responsibility for contributing to environmental degradation and climate change (Chou et al., 2012; Kasim, 2009). According to Pacific Gas & Electric's Food Service Technology Center (FSTC), "restaurants are the retail world's largest energy user. They use almost five times more energy per square foot than any other type of commercial building. . . using the latest EPA carbon equivalents, that amounts to 490 tons of carbon dioxide produced per year per restaurant" (Horovitz, 2008). And Hu et al. (2010) also indicate the food and beverage industry is increasingly recognizing its ability to make an environmental contribution through reducing its consumption of solid waste, energy, and so on; the growing concern for environmental and social considerations within the food-service field is evidenced by the growth and development of green restaurants. Therefore, when comparing

its economic benefits to its contribution to greenhouse gas emissions, the restaurant industry is seen as one of the least sustainable economic sectors in the world.

Srivastara (2007) indicated that in early environmental management frameworks, certain organizational units were responsible for ensuring environmental excellence in product development, process design, operations, logistics, marketing, regulatory compliance and waste management. Particularly, dietary guidelines, which target a key facet of everyday life, can be a powerful way to combat global warming if everyone can be persuaded to modify their behavior according to common "green" concepts. Notably, green supply chain management (GrSCM) has emerged as an important organizational philosophy to achieve corporate profit and market share objectives by reducing environmental risks and impacts while improving ecological efficiency of these organizations and their partners (Li, 2011; Sarkis, 1995; Beamon, 1999; van Hoek, 1999). GrSCM was defined as integrating environmental concerns into the inter-organizational practices of supply chain management including reverse logistics (Sarkis et al., 2011). The scope of GrSCM ranges from reactive monitoring of general environmental management programmes to more proactive practices implemented via various Rs (Reduce, Re-use, Rework, Refurbish, Reclaim, Recycle, Remanufacture, Reverse logistics, etc.) (Srivastara, 2007). Previous studies noted GrSCM constructs have significant effects on competitive advantage, and that green manufacturing and green logistics have significant effects on firm performance (Chan et al., 2012; Sarkis et al., 2011; Seuring and Müller, 2008; Zhu et al., 2008).

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Hence, organizations could integrate GrSCM activities and practices implementation to achieve a sustainable competitive advantage.

The Green Restaurant Association (GRA) was founded in 1990 in the United States, with the mission of creating an environmentally sustainable restaurant industry. The green restaurant concept is less popular in Taiwan than elsewhere. While internationally some small businesses, organizations and governments encourage consumers to provide their own shopping bags and tableware, promote smoke-free restaurants, and enact environmental protection laws and regulations, in Taiwan the food and beverage industry generally only implements green actions when pressured via laws or government policies. Lack of a certified standard thus may be one reason why Taiwanese food and beverage businesses are not aggressive in taking voluntary action (Chou et al., 2012; Tan and Hu, 2011). Much of the literature on green standards for restaurants has focused on western countries, such as the Green Restaurant Association (2008, 2009), Green Seal (2009), Green Table Network (2007), and Weinstein (1994). Few equivalent studies have been conducted for Asia although some examples do exist (e.g. Japan Environment Association, 2007; Lai and Hu, 2008; Hsu, 2008; Hu et al., 2010). Teng et al. (2012) emphasized developing energy conservation and carbon reduction indicators for the hotel industry. Few studies have examined the psychological attributes of managers and consumers and their willingness to charge for green practices (Choi and Parsa, 2006; Hu et al., 2010; Jang et al., 2011; Schubert et al., 2010). As global green momentum grows, green initiatives could be an opportunity for restaurants to create a competitive advantage, despite direct links between sustainability and profitability being somewhat tenuous.

Consequently, GrSCM is attracting increasing interest among researchers and practitioners of operations and supply chain management. In Zhu et al. (2008), organizations should strive to improve on multiple dimensions of GrSCM practices implementation (e.g. internal environmental management, green purchasing, cooperation with customers including environmental requirements, eco design, and investment recovery), to arrive at the full realization of benefits which may include improved environmental image and thus, possibly, economic benefits. Li (2011) indicated GrSCM was strongly complementary to other advanced management practices, and contributed to improving environmental performance. Meanwhile, GrSCM practices (e.g. internal and external environmental orientation, green purchase, customer cooperation, investment recovery) significantly and positively enhances organizational performance (Chan et al., 2012; Green et al., 2012). Sarkis et al. (2011) categorize and review GrSCM literatures under nine broad organizational theories and found researchers in GrSCM have started to apply a number of organizational theories in explicit way to help to further understand and strengthen some of these theories. On the other hand, under stakeholder pressures and regulations, firms need to enhance GrSCM practice, which are influenced by practices such as green purchasing, green design, product recovery, and collaboration with customers and suppliers. As proactive firms adopt GrSCM, their economic performance and environmental performance will be improved. Therefore, Lin (2013) used fuzzy DEMATEL to examine the influential factors among eight criteria (e.g. green purchasing, supplier/customer collaboration, recovery and reuse of used products, regulation belongs to cause group, environmental performance, economic performance, green design, and stakeholders' pressures) of three main GrSCM practices, namely practices, performances, and external pressures. Seman et al. (2012) also noted the role of GrSCM practices in improving organization's skill successfully carry out new product development with green innovation to comply the requirement of environmental regulations. Summary, GrSCM could be one of the corporate environmental management that had been recognized and applied by among restaurant industry.

According to GrSCM related literatures, GrSCM as the interconnected series of greening activities concerned with the planning and controlling of raw materials, components and finished products from suppliers to the final consumer, and also focus on how to protect the environment by each other's cooperation in the future between upstream suppliers and downstream customers. GrSCM process included some greening concepts, for example, green marketing, green purchasing, green design, and green production. These concepts and frameworks could appropriately apply to the restaurant green management (e.g. green food procurement, green menu planning and cooking); even include corporation social responsibility (e.g. green customer education, green training, and social care). Until now, research is lacking on applying GrSCM together with food production processes to construct green management indicators for restaurant. Jackson (2010) presented future studies could focus on explore barriers to implementation of green practices and manage the green supply chain in the hospitality industries. Azilah and Anida (2012) also emphasized implementation of environmentally friendly practices is weak in the restaurant sector; especially, restaurateurs had to concern and change some barriers that including weakly enforced environmental laws and regulations, scarce and intermittent green supply chain, non-existent trade pressure and poor customer and community demand for restaurant business to implement green practices. Based on the theoretical contributions and restaurant management needs, this study uses GrSCM approach to explore and establish a framework and standards for green restaurants, and also focused on integrating green concepts into marketing programs, reducing waste via foodservices, conserving energy and food materials when cooking, and avoiding wildlife protected as food materials.

## 2. Literature review

### 2.1. Green restaurant

"Green" is not simply a color; the concept of "green" represents: eco-friendly, social justice and economic development, and healthy. While "environmental protection" stresses reduced waste and pollution, the concept of "green" is broader. Green industry is sustainable industry. Green industry considers recycling, low pollution, and energy conservation throughout the production, usage and disposal cycle, including material purchasing, production, processing, packaging, transportation, marketing, usage, and waste management. This study reviews the related-literature to develop the dimensions of the green restaurant concept, and to construct green indicators based on those dimensions.

The Green Restaurant Association (2007) outlined three main areas in which restaurants can implement green practices: green action (energy and water efficiency, recycling, green construction and so on), green foods (organic and local) and green giving (donating to green projects). In 2009, Green Restaurant Association drew on ISO 14001 to develop a comprehensive method for enabling existing restaurants and foodservice operations, as well as new industry entrants, and events to obtain green certification based on the following seven environmental categories identified by the Green Restaurant Association:

1. Promoting energy and water efficiency and conservation in food service facilities.
2. Encouraging foodservice facilities to become carbon-neutral and use only sustainable sources of energy.
3. Encouraging foodservice facilities to achieve zero-waste through reducing waste output, reusing, and recycling and composting what is left.
4. Purchasing food via sustainable, organic and local channels.

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