



## A hub-and-spoke model for multi-dimensional integration of green marketing and sustainable supply chain management

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### ABSTRACT

Since the concept of sustainability was transformed into business mainstream, both sustainable supply chain management and green marketing have become key topics of academic research and managerial practices. Great advances have been made in the two areas in parallel. It has been recognized that green marketing and sustainable supply chain management should be seamlessly integrated so that green customer's needs can be better met by the supply chain capabilities. Existing research has explored point-to-point integration approach. This paper proposes a new hub-and-spoke integration model to integrate green marketing and sustainable supply chain management from six dimensions: product, promotion, planning, process, people and project (called the 6Ps). Empirical study has been undertaken with industries to test the 6Ps integration model. Results from the empirical study on integration dimensions, integration strategies, and drivers and obstacles for multi-dimensional integration are presented together with managerial implications. The new integration model allows the flows of resources such as information, materials and funds between green marketing and sustainable supply chain management through multiple direct pathways. It has the potential to achieve better overall business performance against the triple bottom line objectives.

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### 1. Introduction

Since the definition of sustainability, or sustainable development, was published by the World Commission on Environment and Development in late 1980s (WCED, 1987), it has been recognized as one of the greatest challenges facing the world (Bateman, 2005; Espinosa, Harnden, & Walker, 2008; Ulhoi, 1995; Wilkinson, Hill, & Gollan, 2001). Along with the proliferation of globalization over past two decades, sustainability has been transformed from a technical concept into the political and subsequently business mainstream (Liu, Leat, & Smith, 2011). According to the markets and competition theory, there are three important decisive factors which determine business environment and subsequently company strategies: demand (e.g. customers and interest groups), supply (all parties in the supply chains), and the general environment (e.g. regulations, society and natural resources) (Svensson, 2007). Sustainable supply chain management has emerged to address the triple bottom line (i.e. people, planet and profit) issues from the supply perspective of business (Carter & Rogers, 2008; Mollenkopf, Stolze, Tate, & Ueltschy, 2010), and green marketing has emerged to identify and target socially-

and environmentally-conscious consumers, i.e. the demand side of business (Sharma, Lyer, Mehrotra, & Krishnan, 2010; Smirnova, Henneberg, Ashnai, Naude, & Mouzas, 2011). In parallel, debates on environmentally-friendly and socially-responsible business have been widely undertaken from both demand and supply perspectives. Less attention has been given to green marketing's role in Sustainable Supply Chain Management (SSCM) and the impact of SSCM to green marketing strategies. From the integrated management perspective, there is an urgent need to study the interface between green marketing and SSCM, so that company initiatives and practices with regard to sustainable development can be coordinated and synchronized, subsequently the supply side can better meet the demand side to maximize the overall business performance (Ozanne & LeCren, 2011).

Existing research has discussed the interface between traditional marketing and supply chain management. In the past, when companies used to take a "make-and-sell" operations strategy, marketing was interpreted as "so basic that it cannot be considered a separate function. It is the whole business seen from the point of view of its final result, that is, from the customer's point of view" (Kotler, 2000). The definition implies that marketing should become an integral part of the supply chains and the integration can be implemented at the end of the supply chains. Nowadays, companies take a new "sense-and-response" strategy, and marketing has evolved to include more functions, such as helping design the product and service, selling, forecasting and communication (Cronin, Smith, Gleim, Ramirez, & Martinez, 2011; Siegel, Shim, Walker, et al., 2003). Therefore, integration of marketing into supply chain management should take a

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multi-perspective approach, i.e. multiple integration dimensions should be investigated to achieve seamless integration.

This paper builds on existing work on the integration of traditional marketing and supply chain management, but extends existing work to the context of sustainable development, and focuses on green marketing and SSCM. Both theoretical and empirical studies have been undertaken to explore the tight integration of green marketing with SSCM through multiple interfaces, specifically through an extended green marketing mix including product, promotion, planning, process, people and project. Based on the results of empirical study, some managerial recommendations are given. The following sections review literature in related area. [Section 3](#) describes the theoretical 6Ps integration model. [Section 4](#) presents the empirical study of the multi-dimensional integration model. Managerial implications are given in [Section 5](#) before conclusions are drawn in [Section 6](#).

## 2. Literature review

New business environment resulting from the concept of sustainability not only has significantly influenced the activities companies conduct, but also has caused the shift of the basic values and attitudes of societies towards business. This section reviews related work addressing how business has changed their operations to satisfy the society renewed values and attitudes and how the environment has presented new opportunities to business. Particularly, the review will be focused on three sub-topic areas: green marketing, SSCM, and B2B integration.

### 2.1. Green Marketing

Green marketing has been defined by different scholars in different ways. There seem to be three main views on its definitions. The first view is linking green marketing to identifying and satisfying green customers, and promoting environmentally-friendly products. For example, Banyte et al. define it as “determining the need to know the new, so called green, consumer and to adapt marketing decisions to the focus on ascertaining the expectations and satisfying the needs of such a consumer” (Banyte, Brazioniene, & Gadeikiene, 2010). Along the line of green customers, some researchers investigated the importance of using branding techniques to introduce green products to green markets (Muntean & Stremtan, 2010). It was found that most customers cannot easily identify greener products (other than clean products) although they would be in favor of greener products, and that most existing marketing strategies are not particularly relevant or engaging (Tureac et al., 2010). A second view is built upon the classic marketing mix (i.e. the traditional 4Ps, standing for product, price, promotion and place) and brings together the triple bottom line objectives (Needle, 2010). For example, the Green Strategy Mix proposed by Violeta and Gheorghe (2009) suggested six dimensions, including 5Ps + EE, standing for planning, process, product, promotion, people and eco-efficiency. A third view argues that green marketing is beyond the role of linking to green customers and marketing mix, and should expand to include other aspects of corporate demand management, such as predicting demand for environmentally-friendly products, positioning and demand stimulation for recycled and remanufactured products, generating demand for build-to-order products, and building competitive advantages from a focus on environmental priorities (Sharma et al., 2010). This third view shows clear indication of the integration of green marketing with other business processes in the forward and reverse supply chains (recycle and remanufacturing). Because of the multi-facets of the green marketing concept (Crane, 2000), many alternative terms have been used to represent more or less the same meaning, such as environmental marketing (Sheth & Parvatiyar, 1995), environmental marketing management (Peattie, 1995), environmental product differentiation (Reinhardt, 1999) and sustainability labeling schemes (De Boer, 2003).

Along with the fast growing interests and practices in recent years, green marketing has also experienced some problems. A major problem is that people in some countries become increasingly skeptical about the credibility, validity and usefulness of green marketing (Leonidou & Hultman, 2011). The reasons behind the problems are attributed to a number of factors, including the growing number of companies promoting their environmental and social credentials, the increasing buyer complaints to various watchdog organizations about misleading claims after suffered from fake green products, and consumer concerns about the way some green-themed advertisements are made and presented (Yang, 2010). It has been voiced that government should take a leading role in setting up regulations for fair green marketing to increase consumer's confidence and to control free riders. It has been suggested that government's role in green marketing can be enhanced from two sides, on the one hand, by providing institutional incentives to firms such as subsidies, tax credits and investments in R&D on green products (Smirnova et al., 2011); on the other hand, by educating consumers, such as helping consumers understand the essence of green products, improve consumer's knowledge on environmental protection and society responsibilities, and to guide consumers to establish the concept of green consumption (Deng & Huang, 2009).

### 2.2. Sustainable supply chain management (SSCM)

SSCM is defined as “the strategic, transparent integration and achievement of an organization's environmental, social and economic goals in the systematic co-ordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its chains” (Carter & Rogers, 2008). Traditionally, there are restricted point of origin and point of consumption of products or services in the description of supply chains in literature (Svensson, 2007). The definition from Carter and Rogers implies that a broadened approach is required for SSCM, not only in emphasizing economic, ecological and social aspects of business practices and theories, but also in extending the scope beyond the restricted point of origin and end boundaries.

SSCM is sometimes referred to as closed-loop supply chain management or green supply chain management. Closed-loop supply chains are those supply chains where care is taken of items once they are no longer desired or can no longer be used. A closed-loop supply chain consists of a forward chain and a reverse chain (Chan, Yin, & Chan, 2010; Yuan & Gao, 2010). In the forward chain, raw materials are transformed into new products, distributed to and used by customers. In the reverse chain, used products are recycled, reused, repaired or remanufactured (Hoek, 1999; Simpson, Power, & Samson, 2007). Increasing legislation in the field of producer responsibility, take-back obligations and setting up collection and recycling systems has led to a strong focus on closed-loop supply chain management. The primary objective of closed-loop supply chains is to improve the maximum economic benefit from the end-of-use products, while SSCM requires the co-ordination of the social, environmental and economic dimensions. However, closed-loop supply chains are regarded as environmentally-friendly by mitigating the undesirable environmental footprint of supply chains. Therefore closed-loop supply chains are assumed to be sustainable almost by definition (Neto, Walther, Bloemhof, van Nunen, & Spengler, 2010). Some scholars argue that there should be clear distinction between SSCM and green supply chain management because sustainable supply chains are not restricted to the so-called “green” supply chains (Zhu, Sarkis, & Geng, 2005). In order to be truly sustainable, supply chains must operate within a realistic financial structure, as well as contribute to environment and our society. Supply chains are not sustainable unless they are realistically funded and valued (Centikaya et al., 2011). For scholars from this perspective, SSCM is a more accomplished concept which can better highlight the importance of achieving the triple bottom line objectives simultaneously than the other two terms, i.e.

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