

## The Study of the Effect of Green Marketing on Supply Chain Management

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### Abstract

In recent decades, green marketing and green supply chain have attracted the attention of many researchers and scholars. However, there is no comprehensive framework about the way of creating green industrial trademarks and brands for industrial companies. The subject, whether it is possible to integrate sustainable green supply chain with green industrial marketing for creating greener industrial trademarks and organizations or not, has remained unclear. Furthermore, a few important factors related to developing a new green industrial product or the way of accepting new green industrialized products have been identified by organizations. In addition, we have limited information on whether green supply chain can result in the development of a new green industrial product or not. If so, how? The objective of this research is to reflect recent improvements in green industrial marketing, sustainable/green supply chain and its reaction in making green industrial brands and for future researches. The researcher hopes to offer an insight on the effects of sustainable green supply chain on marketing theory and industrial markets and B2B.

**Keywords:** Sustainability, Green Marketing, Green Supply Chain, Industrial Marketing

### Introduction

Green brand-making and its sustainability capacity have received much attention from researchers and scholars carrying out research in many fields including marketing, supply chain management and information management. Besides the growing importance of being greener and more adaptable (for example, climate change and environment laws), there is no comprehensive framework for creating green industrial trademarks and green company brands. Not only does making strong green industrial brands need green marketing, but it also needs green operation and green supply chain management. In addition to globalization and exerting international pressure, there are a lot of challenges in designing and performing a really sustainable green supply chain from international point of view. Whether it is possible to integrate sustainable/green supply chain with green industrial marketing in order to create greener industrial brands and organizations has remained unclear. For example, how can industrial organizations create a competition capacity in market and along with supply chain network using green industrial marketing and supply chain that is properly formulated? For example, on the side of operation and supply chain, redundant materials (like productivity operation, delivery and distribution of goods) which are in the center of the operation can be considered as a form of sustainability capacity. Also, development in information technology can help decrease redundant materials (for example paper and energy). Other devices like life cycle evaluation and product development from the beginning are also available. However, they are not usually related to industrial marketing. It is not surprising because of the above-mentioned devices and lack of information on internal techniques in outside of the organization. For example, although marketing has paid attention to consumers and green consumption, a few factors of them in the field of green marketing of trade between companies (B2B) and green organizational purchase behavior have been identified. An understanding of how and why organizations choose

green suppliers is of prime importance for the trade between companies. A green trademark can be considered an important industrial marketing effort in transferring sustainability capacity. However, we need more development in this area. Moreover, a green trademark requires the development of green industrial products. Just a few factors affecting the development of new green industrial products have been identified or there is little information on how new green goods are produced by organizations. Particularly, we have little information on how and why green supply chain can develop a new green industrial product. In this paper, the researcher investigates, for the first time, some of the key issues related to this subject like green marketing strategy, green supply chain management and the role of technology in green management. Then, the researcher introduces papers and articles related to this particular subject.

### **Green Marketing Strategy**

Green marketing management is a strategic issue (Sigal, 2009) not only for the reason that being green makes a company “good” but also for the advantages of being green. Furthermore, Embess and Lenoy (2008) and Rosso and Fotos (1997) believe that organizational pressure and environmental beneficiaries make marketing strategies support the environment. Integration of environmental issues has become a necessary process in strategic marketing instead of voluntary participation for achieving institutional legitimacy and competitive advantage (Kronin, Smith, Galim, Ramires & Martines, 2011; Sarkis, Gonzales & Edneso Dyaz, 2010). Green environmental marketing strategy has received considerable scientific attention in the last two decades (Hendelman & Arnold, 1999). Menon (1997, p:54) showed that an effective green marketing strategy should be confirmed by marketing principals which refers to “ a process for formulating and performing useful marketing strategies in terms of entrepreneurship and environment that leads to creating income and providing those exchanges that result in satisfaction of an enterprise or economic company and fulfillment of objectives related to social performance”. He maintains that innovation and technology can meet environmental needs, the need for entrepreneurship and for integration of social, environmental and economic activities. Companies are different in terms of adopting a marketing strategy which is in line with the environment. Banerji, Lier and Keship (2003) extended the first concept of Menon (1997) as an example of environmental orientation and environmental strategy. They developed the concept of compatibility with environment. Compatibility with environment in a company includes two elements: environmental orientation and environmental strategy. Environmental orientation refers to awareness and knowledge of the organization senior managers from the importance of environmental issues in organization; while environmental strategy refers to how much environmental issues are compatible with strategic programs of a company (Barnji & et al, 2003).

Based on the research carried out by Barnji and his colleagues (2003), environmental orientation has a positive influence on environmental strategies which in its own place, it has a positive effect on its performance in some situations. Mango and Ozan (2005) and recently, Chan (2010) investigated that the effect of environmental orientations on environmental strategies is positively balanced by the effects of beneficiary’s supervision. Menon (1997), at first, presented a conceptual framework for the input and results of marketing. He indicated that the marketing which is compatible with environment can affect the performance and fame of companies and such effects will be stronger if the industry of a company is considerably famous and popular. He argues that marketing of a company is in fact the foreign policy of that company (for example, careful management for compatibility with environment and the management of its sensitivity) and foreign policy (customer’s environment sensitivity and the severity of supervision and related regulations), internal structure (for example, the concentration of decision-making) and foreign economy (for

example, competition severity). However, these conceptual propositions have not been supported by empirical evidence. Measuring the marketing which is empirically compatible with environment, Baker and Sinkola (2005) found that this kind of marketing has a positive effect on companies capabilities like the success in developing a new product. Barnji and his colleagues (2003) identified a similar set of compatibility and support for environment in some large companies and tested them empirically. These records include: senior management commitment, public concerns, supervising forces and so on. They also found that industry sector (sectors which have high effects on environment versus sectors which have average effects on environment) has balanced the effects of compatibility record with environment in some of these companies. Both Menon (1997) and Barnji and his colleagues (2003) emphasized on the important role of senior management team. This shows the importance of leadership and management in adapting the strategies of green marketing. Indeed, Egree and Herman (2000) indicated that individual values of leaders (for example, compatibility with environment, accepting change and self-sublimity) and evolutionary style leadership have positive influence on the environmental strategy of a company.

### **Green Supply Chain Management**

Supply chain can be defined as a network of companies working together to achieve a certain goal in the general supply chain, for example, offering services to customers (Chan, 2010). Supply chain management is concerned with allocation of resources. As a result, we can find different kinds of optimizing techniques in the related literature to help decision-making process (Chan, 2011). However, we cannot pay attention to the relation between marketing and supply chain management (Lambert & Koper, 2000). For example, Joter, Christopher and Baker (2007) investigated the way of integrating marketing with the activities of supply chain from the point of view of demand chain. The goal of the paper was to present a new business model that can increase value along the supply chain. Also, green supply chain management (for example, Laming & Hampson, 1996) and green marketing (for example, Kronin and et al, 2011) can be assessed separately. However, the relation between the researchers conducted on green supply chain and green marketing is not quite obvious. This is particularly clear when the effort made for investigating green supply chain management only contains marginal benefits and results (for example, Kut, Lopez, March Prown & Right, 2008). In the following, a summary of related research areas has been presented to support this subject.

Most researchers conducted in the area of green supply chain management are accompanied with the performance of large companies so they try to achieve successful results and prove that green supply chain can influence company's profit and even their competitive advantages (for example, Zo & Sarkis, 2004). Boun, Kazyn, Laming, and Farogh (2001) argue that financial motivation is a kind of main stimulus for performing green supply chain. Rao and Hoult (2005) carried out a research on the relationship between management methods of green supply chain and competition among companies as well as their economic performance and confirmed that there is a positive relationship among them. Chio, Chan, Letic and Chang (2011) also obtained similar results, although their research only focused on Taiwan' market. Chen and Kelson (2007) also concluded that there is a relation between company's environmental performance and competitive advantage for them. The large number of researches in the review of literature related to the above-said issues shows the relation among the activities of green supply chain management, for example, green supply chain management (Bay & Sarkis, 2010), green purchase (for example, Green, Morton & New, 1998) and green marketing activities. But, it appears that green brand-making has not received enough attention.

### ***Product Development***

Green product development is also observed with company's performance in the conducted researches (for example Lov & Yam, 2010). Similarly, Chen, Lay and Van (2006) discovered that innovation process of green goods and products has a positive relation with company's competitive advantage. However, the results obtained from some of these researches are conservative (for example, Ragatz, Handfield & Peterson, 2002). Therefore, in order to develop this subject in the area of integration of green supply chain management and green marketing, it is important to understand the interaction and overlap between these two methods.

However, developing green product is not a simple analysis. Hence, some scientific instruments have been proposed to determine the quantity of such surveys from environmental point of view. For example, Young and his colleagues (2011) recommended a life cycle approach for analyzing green product development in manufacturing electronic products. However, maybe such an approach for collecting data is extremely difficult. Also, crating relationship among green marketing efforts and works in order to make its analysis easy for the costumers is difficult. Moreover, this approach has mainly been used in the product level among the levels of chain supply (Eshmit & Shelgar, 2008). In other words, it is not easy to make these efforts and researches tangible and concrete for the consumers.

### ***Scarcity***

Scarcity sometimes refers to be just-in-time. In a broader sense, it means optimizing processes by omitting redundancies (Bruce, Deli & Tavar, 2004; Chan, Yeen & Chan, 2010; Hayenz, Holuch & Rich, 2004). This concept has also been referred to in some other sections of employing traditional productions systems, such as health and treatment sectors (Mastapher & Pater, 2009). The main hypothesis of scarcity systems is that we should make sure that our resources are consumed in a regular and uninterrupted course. In other words, if scarcity systems philosophy is utilized, high uncertainty in green supply chain, or green marketing activities and relations among different units of the company is prevented.

### ***Converse Distribution and Logistics (Preparations)***

The role of distribution network among the relations of supply chain is evident. This creates major concerns for supply chain management over the costs and their course from raw materials point of view. Furthermore, this is the point that a company can encounter customers (particularly, for an industrial activity). Like the life cycle mentioned above, carbon effects are another available parameter for describing "being green" of a product or process. For example, Edwards, Mc Kinon & Kolinan (2010) used such indicators to calculate "measurement and scale" distribution network and they took some actions to compare its different states. Although, scientifically, its approach is an abstract and mental approach, its defects, similar to the evaluation of life cycle, are practical and operational.

For example, in contrast to product storage and delivery to customers, converse preparations are moving on the opposing side (Chan, 2007). Reuse, reproduction and recycling of products and goods is definitely useful for decreasing environmental effects of supply chain. Unfortunately, the above activities, particularly green product design, should be usually done based on the regulations (Maxool as cited in werst, 2003). However, it is impossible to underestimate the recycled products from environment (Blakbern, Guid, Soza, Van & Vasnahv, 2004). Therefore, we can not ignore the role of converse preparations in industrial marketing. This is of prime importance when packaging is vital for an industry. Returnable dishes are only an example of this case (Croun & Rigon, 1995).

### ***The Empowering Role of Technology and Innovation in Green Supply Chain***

From the beginning of two decades ago, the concept of "green" was generally made obligatory by the government. For example, federal trade commission of United States (FTC,2012),

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from the beginning of 1990s, initiated the process of auditing for commercial brand-making in green marketing. In the same period, Australian Trade Commission was replaced by Australian consumer and competition commission in 1995 (ACC, 2011). Also, a set of criteria was mentioned to control commercial marketing, two of them are related to green supply chain. They are:

- 1) When advertising a product, in comparison with other products with the same features, features related to the concept of “being green” shall be clearly defined and offered to the clients;
- 2) The details of those conditions that can create benefits for environment shall be described.

International Standard Organization (2004) developed some industrial standard following governmental initiatives like ISO14000 to create environment -based management systems. At the present time, not only do these standards show the “green” feature of a company, but it also shows the demands of main customers of a business (for example, TOYOTA and GENRAL MOTORS force their suppliers to achieve such standards). The above standards and their conditions, in fact, include the processes and products in different activities of supply chain. As it was discussed in the previous section, and figure 1it has also been shown, creating a supply chain based on green initiatives includes processes for converting inputs to those outputs that can benefit environment. Also, the related review of literature, considering the complex nature of supply chain management, has indicated different aspects of supply chain. Indeed, its processes may include resources of green materials (for example, Green, et al, 1996), designing production compatible with environment (for example, less energy or less pollution), assemblage, storing, distributing and retailing and they manufacture output goods by which converse preparation has the least losses for recycling, reusing and storing trash (for example, Masalbak & vatee, 1999, Narasimahan &Carter, 1998). In addition, industrial standards and governmental laws are two cases of empowering for facilitating the decision making in green supply chan. Therefore, performance measurement framework was developed as one of the main empowering tools (for example, Godfery, 1998; Hervan et al, 2005). This framework not only can be considered as a tool for designing and evaluating green supply chain performance, but it can assure to gain advantages concerned, including: reducing material storing, developing and making products from trash and garbage, systematically intercepting the manufactured dangerous material and less energy consumption.

It appears that the other empowering tools are innovation and technology application based on management aspects. In fact, performance control depends on information systems for integrating operational methods. Unlike performance measurement, there are limited number of researches that assess the main course from information systems point of view in the last 10 years (Maloyl, 2010). However, in industry technology and innovation are considered as the main stimulus of green supply chain. For example, Epson Company heavily invests on green product innovation. The company used techniques for many of its printers that saved 28000 tone color materials between 2007 and 2011. Similar cases can be seen in Panasonic that can identify its white products and register consumer’s behavior in making decision making for saving energy. These goods are produced and designed by their partners in supply chain. Moreover, using scholarly technology for standards and monitoring supply chain activities to make sure about green supply chain performance is necessary. Ford used a radio frequency chip to record logical movement of production line and stock for facilitating energy efficiency and decrease unnecessary transportation. These measures have the potential to reduce the production of CO<sub>2</sub> (Meloyl 2010, 2008).

In short, green supply chain is something more than a passive strategy and it can be implemented as a preventive strategy. Not only do companies start to use relevant concepts and frameworks to find market for their trademarks, but they have also gained benefits from the

advantages of their business partners in finding resources, product design, production and delivery in order to form a green supply chain. In this case, the goal of this particular subject is reflecting the recent development in green industrial marketing, green supply chain and company's exchanges in their green industrial trademark and discovering the future for research.

### **Empowerments and Green Supply Chain Activities**

This paper covers a wide spectrum of issues related to green management including performance and green supply chain management, innovation and greener product development and orientations compatible with environment and integration of marketing for green supply chain management. It deals with the relations among companies, companies and customers (B2C), green supply chain management and so on. These articles investigated public and private companies. They used test hypothesis in quantitative research, deductive assessment of qualitative research and developed frameworks for green activities (for example, developing products that have unlimited resources). In fact, this particular subject is an international subject. The data used in the above-mentioned articles was collected from countries like England, Iran, France, Singapore and so on.

Chang and Sho research (related to this subject) presents this outlook that how the positive effects of relation orientation in the quality of inter-organizational strategy is balanced by opportunity behaviors and result in conflicts and inefficient participation in supply chain management. This is in contrast with the previous studies that mainly focused on the quality of inter-organizational strategy. Furthermore, previous researches have played a role in integrating green supply chain theory from economic point of view. However, political relationship and its effects have not received attention in the previous studies. Finally, this paper has expanded the previous studied stressing on the role of economy-based relation and the relation of commercial partners.

Orozbal and Rico (related to this subject) studied the effect of the orientation compatible with environment on the agreements and purchase contracts among companies. Previous related review of literature in the area of commercial marketing has not investigated general methods of preparations and the purchase of companies. This research has endeavored to evaluate the results obtained from greener expectations in the relation between seller and buyer from public buyer's point of view. Qualitative researches show that environment new regulations require new laws in official institutions. Providing and preparing raw materials that support environment mean that new environmental conditions, decreasing supply of the supplier, the need for uninterrupted innovation, lawfulness of purchase performance and total cost are all a possessive approach. As a result, suppliers will change their expectations. Orozbal and Rico (related to the subject) maintained that public purchase compatible with environment focuses on a few number of main suppliers having "green" skills and they use indirect norms in providing raw materials that have direct effects on environment and creates value for final users and economic stability.

In the research carried out by Lyo, Kastorent and Moyzer (related to this subject), the main question is: how does green marketing integrate with stable supply chain management so that the needs of green customer are best fulfilled on both sides of supply and demand? Their paper offered a central model and investigated the integration from different perspectives, that is: product, promotion, planning, processes, people and projects (6ps).

In comparison with direct and dotted integration model of company chain together, 6 Ps integration model presents effective information about materials, people and financial resources in marketing and supply chain activities. 6Ps model has been empirically studied and carried out by industrial managers. Key roles of the paper include a number of managerial concepts that have been obtained through theoretical answers and empirical studies of 6Ps integration model. It also plays the role of a key stimulus for obstacles that have been identified for multi-dimensional integration of

green and stable marketing of supply chain management. This paper is inextricably linked with those cases that encourage particular key subjects, that is, interactions between green supply chain management and green marketing. In order to achieve the goals of discovering current methods in green supply chain of industrial marketing, Lee and Lam (related to the subject) adopted a case study approach to discover the subject that how a company overcomes problems related to after-the-sale services and preparations. Base on the tools and solutions adopted by companies, strategic frameworks for analyzing green market, green market development, green management operation and customer accessibility have been introduced.

Eight prepositions derived from the proposed framework were created and they were supported by the related review of literature. This paper has been offered to managers. It has some practical and applied instructions for those who intend to adopt a greener approach to their business. The paper is important because it tries to analyze green market and develop it so that it increases competitive advantage and financial performance. Product development from limited resources is an area of these researches as this kind of research innovation, at the present time, is being carried out in a number of countries but it has not been widely reported due to small area under study. Innovative researches have been mostly developed and carried out for products with limited resources in small scales and for particular areas. In the past five years, developing products with limited resources has become an interested area and big companies have started to use this process.

Therefore, the present researches on developing products with limited resources focus on these processes. Sharma shows that there are three advantages for developing products with limited resources. The first one is competitive advantage justified for those products that, in low price, create a set of relevant properties. The second advantage is that developing products with limited resources using a few numbers of resources considerably supports the environment. Finally, developing products with limited resources using a few available components results in efficient and green supply. This paper investigates the role of products with limited resources in increasing green marketing and supply chain output.

“Green supply chain management” (GSCM) that usually comes with large organizations and industries concentrating on consumer has been usually ignored in the area of industrial supply chain. Hojmuz and his colleagues have presented a comprehensive analysis of “green “supply chain management in England. They have directly studied the relationship between green supply chain management throughout the company, in companies with companies (B2B) and companies with customers (B2C) and compared them with each other. Hence, they are striving to increase green supply chain management level in both units of B2B and B2C. Similarly, they have been seeking to find conditions under which green supply chain management is raised among companies. To do so, they used a new method for collecting data to analyze green supply chain management by which they could minimize tendency rate of desirable social conditions and common source orientation. This study reveals the concept on which how much green supply chain management depends. Furthermore, they investigated the condition under which green supply chain management was likely to be performed successfully. Particularly, the paper shows the role that confidence and support of senior managers of organization is plying in forming green supply chain management in the supply chain of B2B and B2C. The results show that green supply management is more limited in the supply chain of B2B than B2C. At the same time, Hojmouz and his colleagues indicate that this issue builds confidence among supply chain partners. Also, being supported by senior management is a very important stimulus to create interaction among companies in green supply chain management in B2B sector, but it is lower in the sector related to B2C. These findings give considerable insight to managers and marketers of B2B supply chain who are interested in finding an answer to the growing environmental performance of supply chain. Carrying out an empirical

research, Chan and Vang investigate the relation among environmental orientations, the activities of green supply chain management and company's performance. Also, how can this relation balance the competition severity? The research was done based on the outlook to make companies use supply chain management approach for meeting the different environmental demands of company's distinguished stockholders. The research also shows the potential of using supply chain management to improve marketing performance (like product design and packaging, marketing communications, channel choice), as an important and on-time job for enriching marketing literature, that, traditionally, its attention is only limited to the outcomes of green supply chain management. Assessing the investments of foreign companies in Iran, this research reveals that companies compatible environment are more likely to use green supply chain management and its approaches. These activities include: strategic use of recycling, transferring and reselling in order to promote the value of materials and products and cooperating with suppliers and customers, input and output activities and green preparations. In addition, the research shows that green supply chain management affects big companies performance. Among other relevant researches, this research draws industrial marketer's attention to the importance of reinforcing cooperation with their costumers, so that they can get higher share of market and grow in today's highly competitive market.

### References

- Ambec, S., & Lanoie, P. (2008). Does It Pay to Be Green? A Systematic Overview. *Academy of Management Perspectives*, 22(4), 45–62.
- Australian Competition and Consumer Commission (2011). Green marketing and the Australian Consumer Law. Accessed on 13/2/2012: <http://www.accc.gov.au/content/index.phtml/itemId/815763>
- Bai, C., & Sarkis, J. (2010). Green supplier development: analytical evaluation using rough set theory. *Journal of Cleaner Production*, 18(12), 1200–1210
- .Baker, W. E., & Sinkula, J. M. (2005). Environmental Marketing Strategy and Firm Performance: Effects on New Product Performance and Market Share. *Journal of the Academy of Marketing Science*, 33(4), 461–475.
- Banerjee, S. B., Iyer, E. S., & Kashyap, R. K. (2003). Corporate Environmentalism: Antecedents and Influence of Industry Type. *Journal of Marketing*, 67(2), 106–122.
- Blackburn, J. D., Guide, V. D. R., Souza, G. C., & Van Wassenhove, L. N. (2004). Reverse Supply Chains for Commercial Returns. *California Management Review*, 46(2), 6–22.
- Bowen, F. E., Cousins, P. D., Lamming, R. C., & Faruk, A. C. (2001). The role of supply management capabilities in green supply. *Production and Operation Management*, 10(2), 174–189.
- Bruce, M., Daly, L., & Towers, N. (2004). Lean or agile: a solution for supply chain management in the textiles and clothing industry? *International Journal of Operations and Production Management*, 24(2), 151–170.
- Chan, H. K. (2007). A proactive and collaborative approach to reverse logistics – a case study. *Production Planning & Control*, 18(4), 350–360.
- Chan, R. Y. K. (2010). Corporate environmentalism pursuit by foreign firms competing in China. *Journal of World Business*, 45(1), 80–92.
- Chan, H. K. (2011). Supply Chain Systems – Recent Trend in Research and Applications. *IEEE Systems Journal*, 5(1), 2–5.
- Chan, H. K., & Chan, F. T. S. (2010). Comparative Study of Adaptability and Flexibility in Distributed Manufacturing Supply Chains. *Decision Support Systems*, 48(2), 331–341.
- Openly accessible at <http://www.european-science.com>



- Chan, R. Y. K., He, H., Chan, H. K., Wang, W. Y. C. (this issue). Environmental Orientation and Corporate Performance: The Mediation Mechanism of Green Supply Chain Management and Moderating Effect of Competitive Intensity. *Industrial Marketing Management*.
- Chan, H. K., Yin, S., & Chan, F. T. S. (2010). Implementing just-in-time philosophy to reverse logistics systems: a review. *International Journal of Production Research*, 48(21), 6293–6313.
- Chen, Y. -S., Lai, S. -B., & Wen, C. -T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics*, 67(4), 331–339.
- Cheng, J.-H., Sheu, J.-B. (this issue). Inter-organizational relationships and strategy quality in green supply chains — moderating by opportunistic behavior and dysfunctional conflict. *Industrial Marketing Management*.
- Chiou, T. -Y., Chan, H. K., Lettice, F., & Chung, S. H. (2011). Influence of Greening the Suppliers and Green Innovation on Environmental Performance and Competitive Advantage. *Transportation Research Part E: Logistics and Transportation Review*, 47(6), 822–836.
- Maxwell, D., & Van der Vorst, R. (2003). Developing sustainable products and services. *Journal of Cleaner Production*, 11(8), 883–895.
- Melville, N. P. (2010). Information Systems Innovation for Environmental Sustainability. *MIS Quarterly*, 34(1), 1–21.
- Menguc, B., & Ozanne, L. K. (2005). Challenges of the “green imperative”: a natural resource-based approach to the environmental orientation–business performance relationship. *Journal of Business Research*, 58(4), 430–438.