Is it Feasible to Implement Green Logistics in Emerging Markets?

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ABSTRACT

Smog in industrial zones, the depletion of the ozone layer, and global warming demonstrate exemplarily the harmful impact of business activities on environmental systems and the societies that act within them. Therefore, customers and many governments around the world are developing a more conscious and respectful attitude toward the environment, turning environmental concerns into a central element of many companies’ competitive strategies. As a result of these developments, the implementation of green logistics systems is gaining increasing importance worldwide. Green logistics practices, once considered proactive measures (Wu & Dunn 1995), are now integral part of many supply chains, and in many markets, their presence has become a requirement for doing business. Despite this, little is known about the current state of global practices in green logistics and obstacles of implementing them in an emerging market context. Led by the question “Is it feasible to implement green logistics in emerging markets?”, the main objectives of this article are to provide a summary of green logistics practices within a structured framework and to give an overview about the obstacles of implementing green logistics systems in emerging markets.

Keywords: Emerging Markets, Environmental Systems, Green Logistics, Sustainable Development

1. INTRODUCTION

The negative impact of economic growth on environmental systems (e.g. global warming and smog) gave rise to the design of various approaches in business and politics for achieving sustainable methods of development. The Brundtland Commission defined sustainable development as “a type of development that satisfies the current needs without reducing the availability and quality of resources to allow future generations of people to satisfy their needs (WCED 1987)”. In broad terms, the objective of sustainable development is to address environmental responsibility while simultaneously responding to socio-economic imperatives.

Companies around the world are feeling pressure to apply green practices in their value-creating systems. This pressure derives from growing environmental customer awareness, as well as increasing prices for raw materials and energy, environmental legislation, and influence exerted by dominant actors in the supply chain.
(Fleischmann et al., 1997; Carter & Ellram, 1998; Stock, 2001; Ferguson & Browne, 2001; Voigt & Thiell, 2004; Kumar & Malegeant, 2006; Seuring, & Müller, 2008).

Solutions that have been proposed and implemented to respond to these tendencies cover entire supply chains, from the reduction of raw material consumption and industrial contamination to the reintegration of domestic and industrial residuals as well as end-of-life of products into new value-creating processes. On the one hand, logistics activities are part of these processes due to the cross-functional and cross-organizational character of logistics management within supply chains (Wu & Dunn, 1995). On the other hand, logistics systems significantly affect the environment, producing the desired service and an unavoidable harmful ecological impact at the same time. For example, transportation is a logistics operation that has substantial negative impact on the environment. CO2 emissions from vehicles, aircraft and vessels generate atmospheric contamination, considered one of the main causes of the global warming effect (Berntsen & Fuglestvedt, 2008). Thus, the greening of logistics systems becomes a key component in achieving sustainable management.

2. BACKGROUND: CONCEPT AND CONTRIBUTION TO VALUE CREATION

Green logistics consists of all activities related to the eco-effective and eco-efficient management of the forward and reverse flows of products and information between the point of origin and the point of consumption to meet or exceed customer expectations. Given this definition, green logistics is not “new” in terms of re-inventing logistics, but it highlights the integration of ecological goals into the target systems of organizations in order to provide a balanced set of total value to customers (Carter & Rogers, 2008).

Put forward in the mid-80s (Beaman, 1999), green logistics is a concept to characterize logistics systems that employ advanced processes, materials, technology and equipment to minimize environmental impact during operations and to increase the utilization of resources within the systems (Rogers & Tibben-Lembke, 1998; Yanbo & Songxian, 2008). Transferring these general characteristics into activities, the scope of green logistics includes the following activity groups:

- **Transportation**: clean vehicles, reuse of pallets and containers, freight consolidation and freight optimization, standardization of truck sizes, reduction of CO2 emissions, and sustainable carrier selection;
- **Warehousing**: clean material handling equipment, reconditioning and reuse of pallets and containers, process optimization, automation of warehousing systems, inventory optimization, facility design, and on-site recycling;
- **Value added services**: pallet and container pooling, tracking and tracing, and green packaging.

In addition to “green logistics,” two other concepts exist that address ecological issues in the context of the management of flows of material and information within and between organizations: reverse logistics and closed-loop supply chain management:

- **Reverse logistics**: While traditional logistics seeks to optimize forward flows (distribution) within a supply chain, environmental considerations have created new markets for reverse logistics, encompassing “(logistics) activities all the way from used products no longer required by the user to products again usable in a market (Fleischmann et al., 1997)”. Given this definition, reverse logistics not only covers transportation, warehousing, and
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