Chapter 1
An Interdisciplinary Inquiry Into Sustainable Supply Chain Management

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ABSTRACT

Research in the last two decades has broadened venues from optimizing operations for a specific organization to critically examining the entire supply chain from the perspective of sustainability. The term sustainability has been used in varying meanings in different disciplines. With this chapter, the authors propose to bring together an interdisciplinary framework for sustainable supply chain management (SSCM). SSCM will be studied through literature surveys on the axes of both natural sciences, and social sciences, with an overarching goal of policy implications. Unlike quantitatively oriented natural sciences, integrating perspectives from the social sciences into a firm's overall sustainability strategy is still seen as a large undertaking by firms and can impede its sustainability. More practical and scholarly research needs to be conducted in this area, especially in terms of assessment and evaluation mechanisms.

INTRODUCTION

Stakeholders have become more interested in Sustainable Supply Chain Management (SSCM) due to the potential impacts of regulatory compliance and external pressure on their operations and financial performance (Golicic & Smith, 2013). Organizations are beginning to exhaust typical sustainable initiatives, like recycled packaging or installing solar panels on their property, and need to begin to commit to more long-term and farther reaching initiatives (Carter & Rogers, 2008). Sustainable initiatives will not be successful unless they are developed with an interdisciplinary approach; considering the natural sciences, the social sciences, and feedback from relevant stakeholders along the supply chain and within the firm. Firms and institutions are still unsure about how to exactly go about achieving the holistic, in-

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terdisciplinary aspects of SSCM, but these holistic aspects are pivotal to having a fully integrated supply chain system (Ashby, Leat, & Hudson-Smith, 2012). Environmental or Green Supply Chain Management (GSCM) is a vital component of SSCM, as it addresses environmental concern throughout the supply chain by serving as a mechanism for managing the flow of materials while protecting the environment (Kim & Chai, 2017). However, a sustainable supply chain (SSC) goes beyond the scope of a green supply chain (GSC), as it considers other factors beyond the natural environment.

BACKGROUND

The 1987 World Commission on Environment and Development Report, commonly referred to as the *Brundtland Report*, defines sustainability as "ensuring that the needs of the present are met without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 8). From a more business or organizational perspective, sustainability has also been defined as "meeting the needs of a firm's direct and indirect stakeholders without compromising its ability to meet the needs of future stakeholders" (Schrettle et al. 2014, as cited in Dyllick & Hockerts, 2002). This definition isn't specific to the environmental or the social facets of sustainability, and this is important, as sustainability is inherently interdisciplinary; the natural sciences and social sciences serve as a foundation for sustainable development. Interdisciplinarity is the "dialogue or interaction between two or more disciplines" (Moran, 2001, p. 15). The *Brundtland Report's* sections have names such as "The Interlocking Crisis" and scholarly articles about sustainability have differentiated themselves with language such as "*environmental* sustainability" versus "*social* sustainability". However, this definition of sustainability is quite vast and can be overwhelming to individuals, who have difficulty determining their role in how to achieve sustainability within their organization (Carter & Rogers, 2008).

The term "Supply Chain" has been used to describe organizational and strategic issues and organization-supplier relations (Croom, Romano, & Giannakis, 2000, p. 69). Three meanings are at the forefront of discussions; the supply chain from the perspective of an individual firm (a focal company), the supply chain as related to a product, and its use as a synonym for purchasing, distribution, or materials management (New, 1997). For the purposes of this paper, a supply chain is defined as "…activities associated with the flow and transformation of goods from raw materials stage (extraction), through to the end user, as well as the associated information flows" (Seuring & Müller, 2008, p. 1700). Members of the supply chain are associated with both the upstream and downstream flows of products, services, finances, information, or whatever else the flows through the supply chain (Mentzer, et al., 2001).

Within the supply chain, there exists three degrees of supply chain complexity- "direct", "extended", and "ultimate" supply chains. Direct supply chains are the simplest form of supply chains, consisting of the supplier, organization, and the buyer. Extended supply chains include "supplier's supplier" and the "customer's customer", and ultimate supply chains go further to include "ultimate" suppliers and buyers, and other parties involved in both the upstream and downstream information and product flows of the supply chain (Mentzer et al., 2001). Harland (1996) also identifies degrees of the supply chain: Internal supply chains consist of the material and infromation flow from the inbound to outbound ends of the organization; dyadic relationships with immediate suppliers in the supply chain; management of a chain of businesses, and finally, a network of interconnected organizations within the supply chain.

It is important to note the distinction between a supply chain and supply chain management. Supply chains simply exist, and supply chain management requires "overt management efforts" from the