Chapter 6
Advocating Information System, Information Integration, and Information Sharing in Global Supply Chain

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ABSTRACT

This chapter explains the overview of information system (IS) in global supply chain, the interorganizational information system (IOS) integration in global supply chain, the overview of information integration in global supply chain, and the overview of information sharing in global supply chain. Successful SCM can provide the high level of business planning and decision support concerning supply chain-related activities that involve the coordination of organization-wide distribution processes, the sharing of information, and the integration of information. Information sharing and information integration through effective IS can significantly improve the way supply chains and their supply chain partners do business, especially in the perspectives of globalization and outsourcing, toward continuing to have an accomplished effect on supply chain operations. The chapter argues that advocating IS, information integration, and information sharing has the potential to increase supply chain performance and gain sustainable competitive advantage in global supply chain.

INTRODUCTION

Supply chains are critical to global operations (Olson & Swenseth, 2014). New technologies, global competition, and increased customer demands are forcing organizations to reconsider how they can take advantage of information technology (IT) capabilities to better manage their supply chains (Marinagi, Trivellas, & Sakas, 2014). IT provides information flow which makes the supply chain more robust and resilient without undermining its efficiency (Tseng, Wu, & Nguyen, 2011). Most companies are increasingly applying IT systems in practice in supply chain management (SCM) to improve their performance

in the global competitive markets (Bayraktar, Demirbag, Koh, Tatoglu, & Zam, 2009). The collaborative investment in IT among supply chain stakeholders has become an influential strategy to achieve more transparency in global chain (Zhou, 2009).

Supply chain is a system of suppliers, manufacturers, distributors, retailers, and customers where the flows of raw material, finance and information significantly connect participants in both upstream and downstream directions (Costantino, Di Gravio, Shaban, & Tronci, 2015). The globalized business requires supply chain information integration, both inside and outside the organizational boundary, for responsive managerial decisions, such as forecasting and inventory replenishment, to satisfy the rapidly changing requirements of international production and marketing activities (Wong, Lai, & Bernroider, 2015). The scope of supply chain information integration for the coordination of supply chain activities with trading partners span from product development to delivery scheduling (Smith & McKeen, 2011).

Information is an essential corporate asset for firms to gain the cost and service advantages in SCM (Lai, Wong, & Cheng, 2008). Sharing local and global information improves forecasting and inventory control processes in order to gain inventory stability, assuming that all the supply chain partners have a real-time access on information (Cho & Lee, 2013). Information sharing is the critical factor for the success of SCM implementation (Ye & Wang, 2013). Information sharing is at the core of the supply chain-based business models (Cannella, Barbosa-Povoa, Framinan, & Relvas, 2013). The concept of information sharing is used in terms of access to information about the physical location of goods conveyed from supplier to customer at a particular moment (Jonsson & Mattsson, 2013).

This chapter aims to bridge the gap in the literature on the thorough literature consolidation of IS, information integration, and information sharing. The extensive literature of IS, information integration and information sharing provides a contribution to practitioners and researchers toward maximizing the business impact of IS, information integration, and information sharing in global supply chain.

BACKGROUND

As competition becomes increasingly global in nature, the importance of global SCM grows (Connelly, Ketchen, & Hult, 2013). In recent years, firms in the high-technology supply chains have established the Internet-based electronic linkages with their trading partners (Sodero, Rabinovich, & Sinha, 2013). IT has emerged as an essential tool in managing the business-to-business relationships (Pereira, 2009). IT alignment refers to the similarity, connectivity and compatibility of IT infrastructure between supply chain partners (Sanders, 2005). SCM aims to support the organizations, thus providing the method to align the technology with the capabilities of organizations among supply chain partners (Shaik & Abdul-Kader, 2013). IT alignment should be achieved among supply chain partners (Wu, Yeniyurt, Kim, & Cavusgil, 2006). The relationships among IT competency, interfirm collaboration and supply chain responsiveness have significant market performance implications (Kim & Lee, 2010).

Denolf et al. (2015) stated that supply chain information system (SCIS) has emerged as the core of successful management in supply chains. SCIS supports information exchange and storage automatically providing the relevant information to the supply chain partners (Lau & Lee, 2000). Exchanged information can vary from production information to marketing information (Li & Lin, 2006). The synergy of IT infrastructure along with the supply chain can be a source of competitive advantage (Bharadwaj, 2000).

The impact of IT on supply chain is a measure of the influence of IT applications across many supply chain activities, the interactions of organizations and some with external entities, such as customers

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