

## Chapter 12

# Study of Technology– Based Innovations in Supply Chain Management Function of Indian Firms: Strategic Imperatives

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### ABSTRACT

*Supply Chain Management (SCM) has gained importance in recent years. Innovation and technological interventions in SCM would be required to remove inefficiencies. It has become imperative for firms to undertake new innovations in SCM to remain competitive. This chapter focuses on physical and digital innovation in Indian market context in the context of SCM. The authors explore the strategic imperative of technology-based SCM innovation by performing detailed literature review regarding new automated technological innovations in SCM to understand the new set of business gains to be incurred from SCM. The authors then carried out, through a semi-structured questionnaire, in-depth personal interviews of the 24 SCM experts in the study. Thematic content analysis was done. The main finding of the study was that physical innovation in SCM has occurred at a slower pace as compared to digital innovation. Digital innovation was perceived to be helping firms more than physical innovation in SCM. The major challenge has been the integration of the new system with the existing SCM system.*

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## **INTRODUCTION**

Supply Chain Management (SCM) has become a critical business function (Jain et al., 2010). The concept of SCM encompassed the upstream and downstream flow of products, services, finances, information and other customers (Felea & Albastroiu, 2013). This has also been true for the reverse flow as well (Govindan, Soleimani, & Kannan, 2015). Recent developments like globalisation and its increasing competitive pressures brought a great change in the mindsets of top management team of organizations towards organizational SCM function (Hervani et al., 2005). This was done by mainly focussing upon increasing the efficiency and profitability of SCM functions through sourcing and increased just in time logistics (Li, 2014). To enhance the effectiveness of SCM functions, upgradation and introduction of new technologies would be the need of the hour (Ivanov & Sokolov, 2010). These would provide a competitive edge to bring about a transformation in the management of SCM (Reddy, 2005). Proper management of SCM function would ensure an increased focus on quality, quantity, and timely delivery (Fish, 2011). The main aim of SCM function has been to increase the SCM surplus, both towards value creation and addition (Kim, Jeong, & Jung, 2014). This has been enabled through integration of technology in SCM function (Jain et al., 2010). Combination of SCM functions and technologies have become essential to remain competitive (New, 2010). There has been a clear inclination towards greater application of SCM technologies (Russel & Taylor, 2008). With the advancement achieved in technologies like in automation, firms could adopt and implement SCM technologies to protect market share and improve market penetration by spotting new trends ahead of competitors (Christensen, 2013). In the present-day context, consumers required varieties of products in a shorter time frame (Vonderembse et al., 2006). For firms this would reduce the product life cycle and the time to market so as to provide higher levels of customer service (Lee, 2002). As a result, various SCM firms have entered competitive marketplace to provide SCM-related technological and business solutions (Li et al., 2006).

Application of technology has helped the simplification of SCM function (Chou, Tan, & Yen, 2004). This enabled business firms to operate more efficiently, provide transparency in process, control firm level inventory and help to reduce logistical operational costs (Gupta & Kohli, 2006). Additionally, through a more stable and efficient SCM, firms could greatly enhance customer satisfaction and customer retention (Kim, 2006). Application of information technology in SCM has been viewed as a means to enhance business competitiveness and performance (Trkman et al., 2010). In developed countries, many new SCM technologies have been used, whereas in India the rate of adoption of new technologies in SCM has been slow (Govindan et al., 2014). By the late 2010s, adoption of technology had gained momentum as the competitive pressure has been building up after prolonged globalisation (Chopra & Meindl, 2016). 'SCM innovation' could be simply defined as any new idea, device, method or such initiatives which changed the existing ways of doing work and made work more efficient and simpler (Devila, Epstein, & Shelton, 2012; Kumar, 2012; Chopra & Meindl, 2016). SCM innovations reduced the consumption of resources such as time, money and such other transactional efforts (Davenport, 1993; Chopra & Meindl, 2016). In present day business environment innovation of organizational process and product has been a big challenge and has been viewed as crucial for firm level success (Teece, 2010). According to Dittmann (2017) innovation in SCM was classified into two broad categories namely 'Physical innovation' which involved technologies that were in physical form like '3-D printing', 'Drones', 'Robots', and 'Wearable technologies.' Whereas, the second classification was 'Digital/analytical innovation'. It involved technologies that were in digital form which included 'Big Data', 'Cloud Computing', 'Internet of Things (IOT)' and such others. Insights would be drawn from the data stored on SCM for better decision making

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