

# Chapter 13

## Sustainable Business Transformation in Supply Chains

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### ABSTRACT

*Cloud computing is a usage model that is characterised by five key characteristics, four deployment models and three service models. The drivers and disadvantages of the adoption and implementation of cloud computing are discussed. The topic is further discussed in relation to the impact of cloud computing on supply chains. The cloud technology has become an important invention in modern society. This chapter examines the benefits and risks brought by the cloud system. The chapter explores the possible changes during transformation that might result in the implementation of cloud systems in firms. The business models presented due to the implementation of cloud system are also illustrated in this chapter.*

### INTRODUCTION

The ongoing increase in economic globalisation and competition among businesses has prompted supply chain management needs to search for ways to reduce cost and increase in productivity. Design, planning, execution, control, and monitoring of supply chain activities are potential areas for constant reviewing with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally. (Tiwari & Jain, 2013)

Traditional supply chains may consist of material suppliers, manufacturers, distributors and consumers. In order to increase efficiency supply chains must integrate all the data and information available to them into one comprehensive system. In this regards Cloud Computing have emerged as promising tools that could assist with data management as well as communication between various supply chain activities. The collaboration between various suppliers, customers and the supply chain firm could assist in utilising supply chain resources more efficiently. For example customers' requirements could be assessed against the supply chain resources through the CRM function. Similarly electronic transactions especially between the firm and its supplier could be achieved more promptly through e-commerce activities. For the last decade, supply chains have focused on improving their use of information. Most

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supply chains have tried some combination of total quality management, just-in-time, enterprise resource planning, supply chain management, data warehousing and electronic communications. Still, competitive pressures demand more and more product flexibility, throughput and quality, along with lower costs and shorter Lead-times. Traditionally, ERP has been focused on a single enterprise. But with the availability of cloud systems a supply chain would be competing against other competitor's supply chain.

The adoption of cloud computing allows organisations to place all their data on the cloud with minimum in-house infrastructure requirements, this leads to issues with data management in relation to scalability of data, storage of data and data migration (Kalapatapu & Sarkar 2012, p. 18). Effective data management is critical because there is confidential information stored but also the transmission of data across the network must always be secured, usually through encryption (Cervone 2011, p. 32; Kalapatapu & Sarkar 2012, p. 18). Due to the dynamic nature of cloud computing, confusion exists as to where exactly data resides at any given point in time and this causes delays when data retrieval is required (Department of Finance and Deregulation 2011).

The use of a traditional on premise ERP system within the supply chain has limitations in handling certain activities such as inventory visibility, traceability and syncing material information with order information due to the organisation requiring manually updating this information and constantly checking the status of materials (Grumann 2011, p. 13). In addition, organisations must also bear the expense of upgrades, patches and modifications to handle frequent change (Grumann 2011, p. 13). The alternative to the on premise ERP system is a web-based SaaS cloud model, where the organisation's applications and data reside on remote servers accessible via the Internet (Grumann 2011, p. 13). With this model the organisation no longer needs to worry about upgrades, patches or modifications as the service provider regularly upgrades the system (Grumann 2011, p. 14).

According to Gumley (2014), cloud system could help the business to realize its target by saving cost and time, improving working efficiency, managing high volumes of data and sustain the security of the system. Cloud system enables the supply chain firms to operate beyond their current scale and conduct marketing activities more promptly (Berman et. al., 2012). Cloud systems are considered as the most cost saving option for the business to use and upgrade its software without paying high licensing fees (Viswanathan, 2014). Moreover, it optimizes the ERP system by integrating and fully utilizing all available business resources. It has been demonstrated that cloud-based ERP systems could be more rapidly implemented compared with traditional ERP system (Duan et. al., 2013). In addition, cloud systems provide the business with unlimited storage capacity (Viswanathan, 2014).

The work by Cegielski, et al. (2012) utilised Galbraith's organisational information processing theory to provide an alternative rationale to adopting cloud systems in supply chain. Similarly Shacklett (2010) described cloud systems as "could remove the internal cost of running information technology (IT) infrastructure within an organisation, and the increased visibility across the organisation and supply chain if cloud computing is implemented".

According to Cervone (2011) "Cloud computing is an information technology architecture that is based on resources that are provided from a variety of sources, most of which are not necessarily located within the physical premises of the organisation" but rather online or web-based.

Cloud systems are being widely adopted in modern industrial nations. One of the significant changes would occur in supply chain firms is when firm introduces a new business models. By implementing cloud systems firms, could save cost and maximize their profits. In fact, cloud system could create more values for supply chain firms. Analysis of advantages and disadvantages of cloud systems, it becomes clear that exploring the possibilities of implementing new business models in firms is necessary.

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