



Information Technology and Quantitative Management (ITQM 2015)

Processes and benefits of the application of information technology in supply chain management: an analysis of the literature

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Abstract

The growth in the use and application of information technology (IT) in supply chain management (SCM) can be attributed to the performance improvements and value creation in organizations. In this sense, there has been a considerable evolution of scientific investigations into this integration over the past few years. This paper seeks to review, in a comprehensive and updated manner, the available scientific literature on business processes benefiting from the application of IT in SCM between the years of 2009 and 2014. The study identifies and analyzes the benefiting processes, and the benefits obtained in SCM. The paper concludes that there is a window of opportunity for advances in processes related to the production and development of products or services.

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Peer-review under responsibility of the Organizing Committee of ITQM 2015

Keywords: Supply Chain Management; Information Technology; Literature Review; Business Processes; Benefits.

1. Introduction

The growth in the use and application of information technology and systems (IT) in supply chain management (SCM) can be attributed to performance improvements and value creation in organizations.

Bandeira & Maçada (2008) emphasize that as a result of globalization, companies have started to concern themselves with information technology and the supply chain in order to obtain planned cost reductions. IT now supports the operations of companies, unites distant links of the supply chain and increasingly interconnects companies with its customers (CARR, 2003).

This study can be considered as comprehensive and up-to-date, since it takes into consideration and analyzes scientific articles published in the last five years to portray the most recent moment and the pursuit of

organizations to keep their technology parks constantly up to date within the framework of supply chain management.

This article identifies and analyzes the application of IT in SCM, gathering trends and gaps for future research. In this sense, the authors seek to answer the following questions: (i) which business processes benefit most from the adoption of IT?; and (ii) what are the main benefits obtained by these applications?

2. Theoretical Foundations

According to the Council of Supply Chain Management Professionals (CSCMP, 2013), SCM encompasses the planning and management of all activities involved in the supply, acquisition, conversion, management and logistics, within and between companies, with the function of integrating the main business functions and processes through a cohesive and high-performance business model.

For the Global Supply Chain Forum (GSCF), SCM means the integration of key business processes from the point of consumption until the point of origin, processes that are derived from products, services and information that add value for consumers and other stakeholders.

According to Ballou (2004), the target of SCM is to develop processes that will lead the organization to achieve its overall results through the development of activities that result in the maximum possible return in the shortest period.

In practice, the integration of multiple organizations can become a complex process that is difficult to manage. To support this process, IT can provide a number of tools to facilitate, streamline and increase the reliability of communications and the exchange of information between organizations.

This paper employs the main concepts and characteristics of two business models applied to SCM. One developed by the GSCF, and the other called Supply Chain Operations Reference-Model (SCOR). These models are used in this article to identify the processes that benefit most from the adoption of technologies in the SCM macro process.

The GSCF model was conceived by Douglas Lambert in 2001 and is based on the integration of key business processes through their supply chains. It includes 8 processes, namely: (i) customer relationship management, (ii) customer service management, (iii) demand management, (iv) order fulfillment, (v) production flow management (manufacturing or production), (vi) supplier relationship management, (vii) product development and marketing; and (viii) returns management (reverse logistics).

The Supply Chain Operations Reference-Model (SCOR) is a process model of reference developed by the Supply Chain Council (SCC) in 1996. SCOR is a tool that enables the focusing, improvement and communication of SCM practices. The SCOR model was developed to describe the business activities associated with all stages that influence consumer satisfaction and demand, and is based on five process management categories, with on the first level: Planning, Sourcing, Making, Delivering and Returning, which are described as follows:

- Planning: covers the entire planning and management process of the entire chain. In this step, resources and demand are defined, in addition to the planning of inventories, distribution, production and capacity.
- Sourcing, refers to the process of supplying the chain by acquiring and receiving raw material, maintaining relationships with suppliers and negotiating contracts with vendors.

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