Chapter 9

Critical Success Factors in the Integration of Information Technologies in the Supply Chain: An Approach From Meta-Analysis

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ABSTRACT

This chapter presents a meta-analysis to determine the Critical Success Factors (CSF) involved in the integration of Information and Communication Technologies (ICT) in Supply Chains (SC), which are relevant to increase the probability of success if organizations implement ICT in their production processes within their SC. A literature search on databases such as Emerald, Elsevier, SpringerLink, EBSCO, and Google Scholar found 26 CSF, of which 12 were considered the most reported in the 42 articles reviewed.

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INTRODUCTION

Currently, the SC takes a strong boom as a source of competitive advantage, which has been studied extensively by researchers in recent decades according to (Chan & Qi, 2003; Huo, Wang, Li, & Lin, 2010; C. Lee & Wilhelm, 2010). In recent years, the integration of technology has had greater affluence by global competition, which is forcing companies to consider how they can take advantage of Information Technology (IT) to improve their supply chain. Therefore, a good integration of ICT in supply chain activities has resulted positively in different aspects, improving the efficiency and effectiveness of SC management processes, according to the authors. (Christopher, 2005; Gunasekaran & Ngai, 2004; Kauremaa & Tanskanen, 2016; Lancioni, Schau, & Smith, 2003).

According to the above, companies need techniques and methods to enable integration of its functions. As mentioned by (Shaik & Abdul-Kader, 2013), the integration of ICT to these activities can help companies to be efficient, improve their productivity, and respond quickly to customer needs; similarly, Marinagi, Trivellas, & Sakas, 2014) point out that the SC is an information system for logistics management, transport management, strategic planning, storage, inventory, manufacturing, and supplier and customer management.

In this context (Cerchione & Esposito, 2016) point out in their research that the literature dictates that the SC has undergone sufficient changes, one of which indicates that it is considered a multiple objective system (economic, productive, strategic, environmental, social, among others) which through go a wide range of flows (financial, material, information, technology, etc.). Currently, companies of different sectors and sizes are relying on so-called ICTs to transform the way of doing business, integrate processes, improve productivity and relations with collaborating companies according to (Correa Espinal & Gomez Montoya, 2009). In other words, manage the creation of information networks that we use to understand better the work environment and make the right decisions to the different eventualities of the market, where (Christopher, 1999) and (Nguyen, Newby, & Macaulay, 2015) point out that the competition will no longer be among companies, now it will focus among supply chains.

Therefore, companies compete for the progress of their management in the SC in order to deal technically in the global market of the 21st century. According to (Tsanos & Zografos, 2016), he mentions in his work that increasing interconnectedness of global trade and the constant demand for the efficiency of the SC and effectiveness to achieve customer satisfaction are more dynamic and competitive, i.e. it is each time faster time, therefore, collaboration among partners who are part of a SC, it is today a prerequisite for success. In this context, one of the concerns of managers is to seek appropriate instruments to carry out the activities of production processes in the best way. In this sense, technological advances, especially in the development of ICT, have flourished at the beginning of this century in various instruments, in which integrated information systems, databases, data exploration, and intelligent systems are included. (Corrales Prieto & García Alcaraz, 2012, Correa Espinal & Gomez Montoya, 2009) mention that ICT have become a means of business development and a source of competitive advantage. Likewise, the adoption of ICT in the organization is the stage in which important decisions are made about the integration of technology, in particular, on hardware and software, which implies multiple activities within the institution according to (Nguyen et al., 2015).

The information systems have evolved according to the complexity of the SC of the products and/or services offered by the different companies in the market as explained by (Macau, 2004; Nguyen et al., 2015; Sin Tan, Choy Chong, Lin, & Cyril Eze, 2009). According to (Heredia, 2014), this mentions that
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