



## Review

## Towards a framework of critical success factors for implementing supply chain information systems



Janne M. Denolf<sup>a,\*</sup>, Jacques H. Trienekens<sup>a</sup>, P.M. (Nel) Wognum<sup>a</sup>,  
Jack G.A.J. van der Vorst<sup>b</sup>, S.W.F. (Onno) Omta<sup>a</sup>

<sup>a</sup> Wageningen University, Social Sciences Department, Management Studies, Hollandseweg 1, 6706 KN Wageningen, The Netherlands

<sup>b</sup> Wageningen University, Social Sciences Department, Logistics, Decision & Information Sciences, Hollandseweg 1, 6706 KN Wageningen, The Netherlands

## ARTICLE INFO

## Article history:

Received 9 May 2014

Received in revised form 25 July 2014

Accepted 23 December 2014

Available online 23 January 2015

## Keywords:

Critical success factors

Supply chain management

Supply chain information system

Framework

Implementation

## ABSTRACT

Supply chain information systems (SCISs) have emerged as the core of successful management in supply chains. However, the difficulties of SCIS implementations have been widely cited in the literature. Research on the critical success factors (CSFs) for SCIS implementation is rather scarce and fragmented. Therefore, the objective of this paper is to compile a framework of CSFs for implementing SCISs. Based on 10 key articles focusing on ERP implementations, we have built a list of critical success factors as a starting point for the SCIS literature search. Thereafter, based on 21 SCIS articles, CSFs for supply chain information system implementation have been defined. The analysis showed that some CSFs have been ignored and important supply chain characteristics have been overlooked. Moreover, it is not always easy for project managers to know how to implement and apply CSFs in practice.

© 2015 Elsevier B.V. All rights reserved.

## Contents

1. Introduction	17
2. Research methods	17
2.1. ERP literature	17
2.2. SCIS literature	17
3. CSFs based on ERP literature	18
4. Supply chain context	18
5. CSFs for implementing supply chain information systems	19
5.1. Communicate effectively	20
5.2. Manage relationships	20
5.3. Compose project team	20
5.4. Take top-management responsibility	20
5.5. Align vision and build plans	20
5.6. Share costs, benefits, and risks	21
5.7. Assess business & IT legacy system	21
5.8. Select standards, vendor and software package	21
5.9. Reengineer processes	21
5.10. Manage project	21
5.11. Manage data exchanged	21
5.12. Manage change and train users	21
5.13. Monitor and evaluate performance	22
6. Framework of critical success factors	22

\* Corresponding author. Tel.: +31 619798011.

E-mail addresses: [denolfjanne@gmail.com](mailto:denolfjanne@gmail.com) (J.M. Denolf), [jacques.trienekens@wur.nl](mailto:jacques.trienekens@wur.nl) (J.H. Trienekens), [nel.wognum@wur.nl](mailto:nel.wognum@wur.nl) (P.M. (Nel) Wognum), [jack.vandervorst@wur.nl](mailto:jack.vandervorst@wur.nl) (Jack G.A.J. van der Vorst), [onno.omta@wur.nl](mailto:onno.omta@wur.nl) (S.W.F. (Onno) Omta).

7.	Discussion .....	23
7.1.	Comparison with ERP literature.....	23
7.2.	Impact of supply chain characteristics.....	23
7.3.	Applying critical success factors.....	24
8.	Concluding remarks.....	24
	Acknowledgements .....	25
	References .....	25

**1. Introduction**

In an increasingly competitive business environment, the success of a single enterprise depends on its ability to cooperate and integrate with other businesses as companies are no longer competing firm versus firm, but supply chain versus supply chain [1]. For improved cooperation and integration, supply chains need, more than ever, to adopt and implement information systems. These supply chain information systems (SCISs) support information exchange and storage by automatically providing relevant information to the chain partners [2]. Exchanged information can vary, for instance, from information about production processes to general customer or marketing information [3,4]. By providing relevant information, the supply chain and its actors are able to increase coordination and monitoring of its operations resulting in more efficient and effective value-adding activities [2]. Implementing a SCIS is, however, a catalyst of complex technical and organizational changes that need to be managed carefully. Unfortunately, such changes have often led to implementation failures. In response, researchers have identified critical success factors (CSFs) that can help managers to proactively tackle failures and implement a SCIS. CSFs are the factors that must go right during an implementation and must, therefore, be given special and continual attention to successfully implement an information system [5]. The literature addressing CSFs to implement SCISs is still novel.

The main objective of the present paper is to build a framework of CSFs for implementing SCISs. So far, CSFs for implementing SCISs have only been investigated to a limited extent and in a fragmentary fashion. A limited number of supply chain researchers, such as Koh et al. [6], Ngai et al. [7], and Lu et al. [8], identified a non-exhaustive set of critical success factors. The literature focusing on ERP (Enterprise Resource Planning) systems forms a starting point for this study since this literature delivers explicit and elaborate lists of base-line CSFs that may play a role in SCIS implementations. Implementing an ERP system, which is a complex intra-organizational management system covering a wide array of functions, requires integrating multiple departments and branches, sometimes located in different places around the world. Each individual department or branch usually has its own culture, method of operation, and information system. Similar integration issues arise when implementing a supply chain information system: supply chain organizations have different IT legacy systems and, often, incompatible organizational structures and cultures. Therefore, we believe that CSFs for ERP implementations are as such a good starting point for describing and analysing CSFs for SCIS implementations. In addition, we expect that specific supply chain characteristics will play a role in SCIS implementations. The resulting framework is of interest for both practitioners and academicians as it forms a basis for project management and further CSF research in the field of supply chain information systems.

The remainder of the paper is organized as follows. Section 2 outlines our methodology and in Section 3, CSF definitions are presented. In Section 4, supply chain complexities are identified while in Section 5, a compilation of CSFs for implementing SCISs is provided. A framework for CSF classification is presented in Section

6. After the discussion in Section 7, concluding remarks finalize this paper.

**2. Research methods**

A comprehensive search of ERP and SCIS (supply chain information systems) literature was conducted to build a CSF (critical success factor) framework for implementing SCISs.

*2.1. ERP literature*

To start, a literature review of critical success factors for ERP implementations was conducted. To avoid repetition, we selected a set of key articles, which were found through the Scopus online database, based on the following criteria:

- contain “critical success factors”, and
- contain either the keyword “ERP” or “Enterprise Resource Planning”.

These search criteria resulted in more than 200 articles. To select the key articles, first, in accordance with recommendations from other information-system researchers, such as Finney and Corbett [9] and Nord and Nord [10], only journals were considered as a source. Second, starting from the most-cited one, articles were selected that contained an elaborate list of CSFs for implementing ERP systems. From the moment redundancy of critical success factors appeared, article selection was stopped. Selection resulted in a final list of 10 key articles investigating CSFs for implementing ERP systems.

Thereafter, the articles were reviewed and categorized to define CSFs. Categorizing was performed, in the first instance, on the basis of the CSF list of Nah et al. [11], which was the most comprehensive of the selected articles. Based on a literature review, Nah et al. [11] grouped related sub-factors into a list of 11 CSFs. Through our categorizing, related sub-factors from other articles were grouped under these CSFs as well. CSFs or sub-factors that could not be classified into one of the 11 CSFs were categorized as a new critical success factor. The categorizing resulted in a final list of 13 CSFs, which was used to further investigate the literature dealing with CSFs for implementing supply chain information systems.

*2.2. SCIS literature*

Articles dealing with CSFs for implementing supply chain information systems (SCIS) were found in the Scopus online database. Due to the scarcity of SCIS articles, multiple search terms were used to identify articles investigating CSFs:

- contain the keyword “(critical) success factors”, “factors”, “barriers”, “obstacles”, “challenges”, or “issues”, and
- contain terms related to “systems”, “technology”, “ERP”, and “EDI”, “information sharing” or “supply chain management”, and
- contain the term “supply chain” or “inter-organizational”.

These search terms indicate that the articles found did not always refer to the word “success” as such; other search terms

Download English Version:

<https://daneshyari.com/en/article/508781>

Download Persian Version:

<https://daneshyari.com/article/508781>

[Daneshyari.com](https://daneshyari.com)