



Environmental sustainability in the service industry of transportation and logistics service providers: Systematic literature review and research directions



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ABSTRACT

This paper provides a systematic review on the subject of environmental sustainability in the service industry of logistics service providers (LSPs) to analyse the advances of the literature on the topic and pick out appropriate research questions to investigate. The literature review has been performed using two academic databases and spans the years 1960–2014. The paper shows that despite the increasing number of papers on the subject, several areas of research are still being neglected. In particular, the paper highlights six main literature gaps concerning the classification of green initiatives, the impact of green initiatives on LSP performance, the evaluation of sustainability performance, the factors influencing the adoption of environmental sustainability initiatives, the customer perspective in the sustainable supply chain, and the information and communication technologies supporting green initiatives. Starting from these six gaps, eight research questions have been identified. These research questions represent possible emerging areas of investigation on the topic.

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1. Introduction

In the last decade, supply systems appeared to be affected by the debate on sustainability (Carter and Easton, 2011; Fahimnia et al., 2015). Due to more stringent requirements affecting manufacturing production, increasing attention was given to developing environmental management strategies for the supply systems (Seuring and Müller, 2008; Vachon and Klassen, 2008). The literature on supply chain was influenced by the debate on the circular economy, first defined by Pearce and Turner (1989), and more recently by Su et al. (2013) as an industrial economy developing with a built-in tendency to recycle in order to meet no-waste and pollution targets. Many authors stressed that green supply systems based on the circular economy offered new opportunities and represented a new view for sustainable manufacturing (Zhu, 2006; Dhakal et al., 2016; Zhu et al., 2011).

Despite the ample literature focusing on environmental sustainability in the manufacturing industry, showing how it has become a very crucial issue for the supply system, little attention has been dedicated to the service industry (Foster et al., 2000), and least of all to the logistics industry (Lin and Ho, 2011; Davarzani et al., 2016). Although the service industries are considered to play a less significant role than manufacturing industries in reducing environmental impact, from the point of

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view of the transportation and logistics industries, the adoption of green initiatives by logistics service providers (LSPs) is taking on a pivotal role in supporting manufacturers and customers working for environmental sustainability strategies (Zailani et al., 2011; Maas et al., 2012; Sutton, 2004). For this reason, the topic of green initiatives adopted by logistics service providers has been gaining greater prominence in the literature (McKinnon, 2005; Liu et al., 2010), where this issue has been analysed from different perspectives.

Much research highlights that the critical role of environmental initiatives adopted by firms operating in the logistics service industry is related to the following aspects (Lammgård, 2012; van Hoek and Johnson, 2010):

- In the logistics service industry, environmental issues are becoming increasingly fundamental due to the increasing demand for the mobility of goods
- Environmental sustainability is becoming an important selection criterion for firms operating in the logistics service industry
- In the logistics service industry, environmental sustainability is becoming a critical success factor in cost reduction (e.g. access to financial incentives, energy efficiency, tax relief), and increased sales (e.g. customer demand for green products/services, improvement of customer relations, participation in sustainability programmes).

In addition to these aspects that seem to highlight the factors influencing the adoption of environmental sustainability initiatives by firms operating in the logistics service industry, consideration should also be given to the role of Information and Communication Technologies (ICTs) providing new low-cost and easy-to-use information tools (Antonelli et al., 2000; Centobelli et al., 2016; Esposito and Mastroianni, 2001; Garrigos-Simon et al., 2012) that may be able to support their environmental practices better.

These issues are also highlighted by Marchet et al. (2014), who reviews 72 papers published between 1994 and 2011 on the issue of green initiatives in both logistics and freight transportation industry. The authors highlight an emergent interest in decision-making processes for the adoption of green strategies in logistics and freight transportation industry but also underline that the topic of environmental sustainability among logistics service providers (LSPs) is still being neglected in the current literature. Therefore, it emerges the opportunity to conduct a literature review that offers a complementary perspective to the study of Marchet et al. (2014), in that it is more in-depth focused on logistics service providers as a unit of analysis. With these premises, it offers the opportunity to integrate their findings and draw a more comprehensive framework on the areas to be analysed in order to improve the body of knowledge in the field of investigation.

Given this background, the paper aims to provide a comprehensive and updated overview on the topic of environmental sustainability in logistics service providers. The objective is to highlight possible gaps in the literature and identify feasible research questions that could represent areas of investigation to be addressed by future research on the topic.

The paper is organised into six sections. In the next section, method and data are illustrated. This section shows that the proposed systematic literature review is divided into two main phases: the first phase concerns the selection of papers, and the second phase is dedicated to describing and analysing the contents of the papers selected. The third section presents the process of papers selection. In the fourth section, the descriptive analysis provides a summary overview of the selected papers. In the fifth section, the content analysis of papers makes it possible to identify six search gaps in the literature as well as to define eight consequent research questions. The paper closes with a conclusion and some research implications deriving from the study in the sixth section.

2. Method and data

In this paper, a systematic review approach adapted by Easterby-Smith et al. (2012), Petticrew and Roberts (2006) and Pittaway et al. (2004) is proposed.

Summarising these three contributions, we propose organising the systematic review into two main phases that in turn are divided into two steps:

1. Papers selection:
 - 1.1. Comprehensive material research. This step includes identifying keywords, constructing search strings, selecting the databases to be examined (Scopus, Web of Science, etc.), and using search strings to review selected databases.
 - 1.2. Selecting papers for detailed analysis. This step includes defining criteria for inclusion/exclusion and the selection process on the basis of the inclusion/exclusion criteria.
2. Describing the selected papers and content analysis:
 - 2.1. Descriptive analysis. The papers are aggregated according to different perspectives to give an overall mapping of the selected papers.
 - 2.2. Content analysis. Papers are reviewed and studied in depth. Analysing papers highlights the strengths and weaknesses in the literature, highlights research gaps, and identifies appropriate research questions to be investigated.

Fig. 1 reports the steps of the methodology and each phase is examined in depth in the subsequent sections. According to Tranfield et al. (2003), our systematic review approach is based on manual filtering over other survey or review approaches

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