Journal of Cleaner Production 187 (2018) 318–337

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

Review

From a literature review to a multi-perspective framework for reverse logistics barriers and drivers

Kannan Govindan [a, *], Marina Bouzon [b]

[a] Center for Sustainable Supply Chain Engineering, Department of Technology and Innovation, University of Southern Denmark, Denmark
[b] Department of Production and Systems Engineering, Federal University of Santa Catarina, Caixa Postal 476, Brazil

ARTICLE INFO

Article history:
Received 17 May 2016
Received in revised form
21 February 2018
Accepted 4 March 2018
Available online 7 March 2018

Handling Editor: Cecilia Maria Villas Bôas de Almeida

Keywords:
Reverse logistics
Barriers
Drivers
Systematic literature review

ABSTRACT

The emergence of stricter environmental regulations and the growing environmental consciousness of customers have forced industries to start thinking about environmental operations management with the help of reverse logistics application. In this process, influential factors such as drivers and barriers have to be examined, and stakeholders' different perspectives on RL implementation and development should also be considered. This paper presents a multi-perspective framework for reverse logistics implementation using the lens of stakeholder theory. The multiple stakeholders' perspective framework was developed based upon a structured literature review process. Fifty-four papers concerning these topical areas were thoroughly assessed and classified according to their structural dimensions and analytical categories. Two extensive lists of 37 drivers and 36 barriers, categorized and analyzed against the dimensions and categories, served as a basis for the development of the referred framework. Thereby, the overall contribution of this work proposes an understanding of the factors required for employing reverse logistics from multiple perspectives, including those of the company, society, government, and customer. Additionally, each perspective is discussed separately with the aid of previous works developed in the field. Most of the encountered barriers are placed in the firm's perspective; however, these barriers may be an effect from outside impediments. On the drivers' side, the factors must be acknowledged so managers can prepare for changes by exploring these positive influential factors. A consideration of the influential factors from multiple perspectives is critical for creating a comprehensive industry strategy to successfully implement product return.

Contents

* Corresponding author.
E-mail address: kgov@iti.sdu.dk (K. Govindan).

https://doi.org/10.1016/j.jclepro.2018.03.040
0959-6526/

1. Introduction

Technological development, mass consumption, and a decrease in product life span have augmented production all over the world. As a consequence, more raw materials are extracted and more waste is created (Wassenhove and Besiou, 2013). In order to solve this increasing problem, the interest in closed-loop supply chains and reverse logistics has attracted not only the attention of companies and professionals but also the researchers (Flapper et al., 2012; Govindan et al., 2015; Nikolaou et al., 2013). Reverse logistics (RL) is the practice of moving products from their usual final destination with the purpose of recapturing value or correct disposal (Rogers and Tibben-Lembke, 2001). For that, reverse logistics includes all of the actions involved in managing, reducing, processing, and disposing of waste (hazardous or nonhazardous) from several stages in a product lifecycle, for instance: production and packaging, use phase, and processes of reverse distribution (Govindan et al., 2013; Rogers and Tibben-Lembke, 2001).

Important research has been done so far on RL topics, such as theory development (Dowlatshahi, 2000), network design (Srivastava, 2008; Pishvaee et al., 2010), and decision making (Ravi et al., 2005). Although RL is strategically valued (Alvarez-Gil et al., 2007) and the RL approach is achieving popularity in practice, the accessible body of literature on the strategic field is limited (Govindan et al., 2015; Narayana et al., 2014; Subramoniam et al., 2009, 2013).

In the body of knowledge, several drivers – namely legislation, economic interest, social accountability, stakeholder pressures, and ethics – have been presented as influential or motivational factors that compel firms to employ green activities (Andiç et al., 2012) such as RL. Internal pressures arise from employees (feel-good factors related to environmental practices), from the firm's strategy to reduce cost risks, or from the objective of guaranteeing the intellectual property of end of life (EOL) products. At the same time, external pressures from non-governmental organizations (NGOs), government, community, clients, and even the media emerge in order to make industries cope with environmental policies.

However, RL is not a symmetric representation of forward supply chain (Fleischmann et al., 1997; Srivastava, 2008). Companies face internal and external RL implementation impediments from many stakeholders (Abdulrahman et al., 2014). Most industries still struggle to employ RL strategies as a result of a lack of interest of their supply chain (SC) partners (Bernon et al., 2013). In addition, some firms consider RL an underestimated part of the SC for a plurality of motives, such as its uncertain profitability, its lack of people technical skills, and its difficulties with SC partners (Abdulrahman et al., 2014).

Given these impediments, it is still imprecise how internal and external factors interactively stimulate green initiatives (Sarkis et al., 2011), and how diverse are the many stakeholder perspectives engaged in the implementation process regarding these drivers and barriers. In this manner, research on the drivers and barriers that promote or hinder RL implementation, as well as on the stakeholders' influence, becomes essential. Failing to deal with the interests of many stakeholders may damage company performance (Avkiran and Morita, 2010).

With the aforementioned in mind, this paper aims to offer further insight into the domain of multiple stakeholders' perspectives for RL drivers and barriers. To accomplish this task, this research attempts to answer the question “what are the drivers and barriers according to each key stakeholder perspective?” Accordingly, this paper intends to:

- identify the most relevant papers related to RL, its barriers, drivers, and stakeholders;
- classify these articles in terms of methods, industry sector, country specific, stakeholders, drivers, and barriers addressed in the paper;
- present a summary of each previous paper's contribution relative to stakeholder and RL issues;
- provide a multiple stakeholders' perspective analysis for RL drivers and barriers and a research agenda based on the research gaps found during this study.

This research differs from previous works in the following aspects. Firstly, the paper focuses on the field of RL and stakeholders' influence where attention has quickly flourished but in which few papers have been published. Secondly, the chosen approach combines stakeholder theory with the concepts of barriers and drivers, and provides a concrete theoretical framework for the development of future research. Third, the originality of this research relies on the fact that no previous work was found in the field of multiple stakeholders' perspective for drivers and barriers for RL. To the best of the authors' knowledge, formal research dealing with barriers and drivers for RL implementation from a multiple stakeholder perspective is not exhaustive. Some previous studies have tried to identify either drivers (Ho et al., 2012; Kannan et al., 2014) or barriers (González-Torre et al., 2010; Ravi and Shankar, 2005; Shaharudin et al., 2014; Sharma et al., 2011) or both factors (Kapetanopoulou and Tagaras, 2011; Rahimifard et al., 2009) for RL by, mostly, one stakeholder perspective. This work attempts to bridge this gap by considering multiple stakeholders' perspectives,

as the same RL drivers and barriers can be interpreted differently.

The remainder of this paper unfolds as follows. In the following Section, a brief overview of the theoretical lens used in this work is presented. Section 3 provides the research methods, whereas Section 4 presents the descriptive analysis of the literature survey. The paper then shifts focus to the content analysis and the multi-perspective framework in Section 5. Section 6 discusses the results by relating them to previous publications and uncovering the opportunities available in the area. Finally, building on the subjects analyzed in previous sections, Section 7 provides some concluding remarks and emergent topics in this area that are fertile areas for further investigation.

2. Theoretical background

RL implementation and management is commonly dependent: (i) on the support and participation of the key stakeholders; (ii) on the shared responsibility through the reverse SC to bring back EOL products; and (iii) on the resources committed to RL operations. For these reasons, this work is primarily grounded in the stakeholder theory. This theory is the core background for this research, used to understand and cluster factors, focusing on the relationship with parties and the development of the perspectives for RL framework. The use of this theory is well-established in previous literature, since it is the most cited and used theory in Sustainable Supply Chain Management (SSCM) areas (Touboulic and Walker, 2015). This section proceeds by detailing the theoretical rationale of this work.

2.1. Theoretical foundation

The stakeholder theory is a main theoretical foundation of this research. This theory has been widely used in environmental research (Shaharudin et al., 2014). The company's stakeholders play a relevant role in favoring, and occasionally hindering, sustainability in supply chain management (Meixell and Luoma, 2015). The stakeholder theory indicates that "companies produce externalities that affect many parties (stakeholders) which are both internal and external to the firm" (Sarkis et al., 2011).

There are a plurality of definitions of stakeholders (Mitchell et al., 1997), but most of them share their essence in the definition presented by Freeman (1984): "any group or individual who can affect or is affected by the achievement of the organization's objectives." Groups, persons, organizations, societies, institutions, and the natural environment may be interpreted as current or potential stakeholders (Mitchell et al., 1997). "Stakeholder theory is concerned with who has input in decision making as well as with who benefits from the outcomes of such decisions" (Crane and Ruebottom, 2011; Phillips et al., 2003).

Mitchell et al. (1997) developed a classification that groups stakeholders based on three attributes: (i) the *power* of the stakeholder to influence the company, (ii) the *legitimacy* or legality of the stakeholder's connection with the company, and (iii) the *urgency* or criticality of the stakeholder's request on the company. The authors combined these attributes, creating a stakeholder typology which includes: latent, expectant, and definitive stakeholders (Kim and Lee, 2012). Latent stakeholders hold only one of these three attributes (power, legitimacy, and urgency). Expectant stakeholders possess two attributes, and definitive stakeholders, in turn, are those who hold three attributes. Given this classification, this research considers mostly the influence of expectant and definitive stakeholders, as "corporate managers must pay attention to the interests of these two last stakeholders" (Kim and Lee, 2012).

Stakeholder pressure is a relevant motivational element for green initiatives (Andiç et al., 2012). The claims of different stakeholders are seen as provokers of RL deployment. That is, stakeholders have many requirements which the company may satisfy through RL initiatives (Alvarez-Gil et al., 2007). Because most firms perceive the dynamic and multi-dimensional nature of doing business, uncovering the viewpoints of several stakeholders can enlighten managerial decision-making in an effort of peer benchmarking (Avkiran and Morita, 2010). Furthermore, recently, companies are increasingly accountable not only to their typical stakeholders such as shareholders, or state regulatory authorities, but also to new ones such as NGOs for their social and environmental profiles and to consumers (for example, through social media communications) (Wassenhove and Besiou, 2013).

Nevertheless, different stakeholders may exhibit contrasting perspectives on the aspiration of characteristics (Avkiran and Morita, 2010; Wassenhove and Besiou, 2013). The conflicting objectives of the stakeholders are many. Shareholders focus mostly on the company's profitability. Employees support their own interests and oppose, for example, a factory closure, even if this step would increase a company's profitability (Wassenhove and Besiou, 2013). Government and regulators intensify legislation, which usually raises the cost of products or services. NGOs might criticize and publicly expose companies for not being environmentally friendly. The media can publish negative news about companies, harming company's sales. In summary, companies must deal with the various perspectives and incompatible interests of their influential groups, which may require them to advance in specific capabilities to manage these pressures (Sarkis et al., 2010). These examples confirm the appropriateness of stakeholder theory for understanding how external factors influence RL (Alvarez-Gil et al., 2007).

In order to better draw the research gap, Table 1 lists previous research relating RL to stakeholder theory and/or stakeholder analysis. These papers were gathered from the main databases (e.g. Springer, Emerald, Wiley, Taylor & Francis, Science Direct, and Google Scholar) using the search terms "reverse logistics" and "stakeholder theory" as keywords, title, and abstract search fields.

As Table 1 shows, RL and stakeholder theory are subjects concurrently used in recent research; however, few works have dealt with RL issues using the lens of this theory. Some papers recognize the importance of analyzing the relationship between stakeholders' pressures and RL implementation (Abdullah et al., 2012; Abraham, 2011; Alvarez-Gil et al., 2007; González-Benito and González-Benito, 2006). Still, to the best of the authors' knowledge, no paper has yet researched multiple perspectives of stakeholders for the analysis of drivers and barriers for RL implementation. This argument is better solidified in Sections 3–5, where the research process is explained, and descriptive and content analysis is presented.

Fig. 1 summarizes the use of stakeholder theory in this research. This theory was used in many phases of the research process, helping the authors to obtain and interpret data. It was used in an inductive approach: (i) to provide the list of stakeholders, (ii) to trim this list to the most relevant stakeholders, (iii) to classify the influential factors according to the perspectives from parties, and finally, (iv) to analyze the data by comparing to previous work. Details on the research process *per se* are presented in the sequence.

In order to better understand and interpret the present research outcomes, a second theoretical lens is used: organizational change management. RL is considered as an environmental initiative, as its implementation may close the loop of the supply chain. With this in mind, drivers to change for sustainability and barriers to change for sustainability must be considered. While drivers promote change, their efficacy is hindered by barriers to change (Lozano, 2012). In this matter, corporate sustainability (CS) description relates to

Table 1
Previous papers on RL and stakeholders' issues.

Source	Paper objective	Main contribution
(González-Benito and González-Benito, 2006)	The article identifies the elements determining the implementation of environmental logistics initiatives by studying 2 variables: the values and beliefs of the firm's managers and the environmental pressure of the stakeholders.	Two dimensions of influences can be discriminated (governmental and non-governmental). Only the governmental pressure is capable of explaining the implementation of green practices in logistics.
(Kovács et al., 2006)	The paper suggests a framework for the evaluation of reverse SCs and shows how stakeholder theory can be employed from a SC perspective.	The way the stakeholders of glass recycling SC in Finland reply to legislation changes is analyzed and described in different scenarios.
(Alvarez-Gil et al., 2007)	The paper creates a model with internal, external, and individual factors affecting RL implementation.	The study points out that employees, the government, and customers' salience have a relevant influence on the final decision for implementing RL programs. On the other hand, shareholder pressure negatively impacts the decision.
(Abraham, 2011)	The paper aims to map RL systems in the garment aftermarket in India and to identify the collaboration between stakeholders.	More predictable business, increased market knowledge and better margins are the benefits augmented by collaboration in the RL chain.
(Kim and Lee, 2012)	The article investigates the function of green culture in the relationship between stakeholder demands and the implementation of environmental logistics initiatives.	There are significant relationships between stakeholder pressure and green logistics practices. Corporate eco-oriented culture fully mediates the relationship between perceived stakeholder pressure and the adoption of environmental logistics practices.
(Abdullah et al., 2012)	The research aims to perceive the ongoing level of RL adoption among manufacturing industries in Malaysia and to uncover the influence of regulatory pressure, customer/stakeholder pressure, corporate citizenship pressure, and financial pressure on RL adoption.	Regulatory pressure has a considerably strong influence on the level of RL implementation, while customer/stakeholder force has a moderate influence.
(Yusuf and Raouf, 2013)	The paper proposes a framework for optimizing economic, social, and environmental gains from RL for the stakeholders.	The research offers a gain model to optimize the benefits of stakeholders. It also emphasizes the diversity of waste and its method for operation in Pakistani industry.

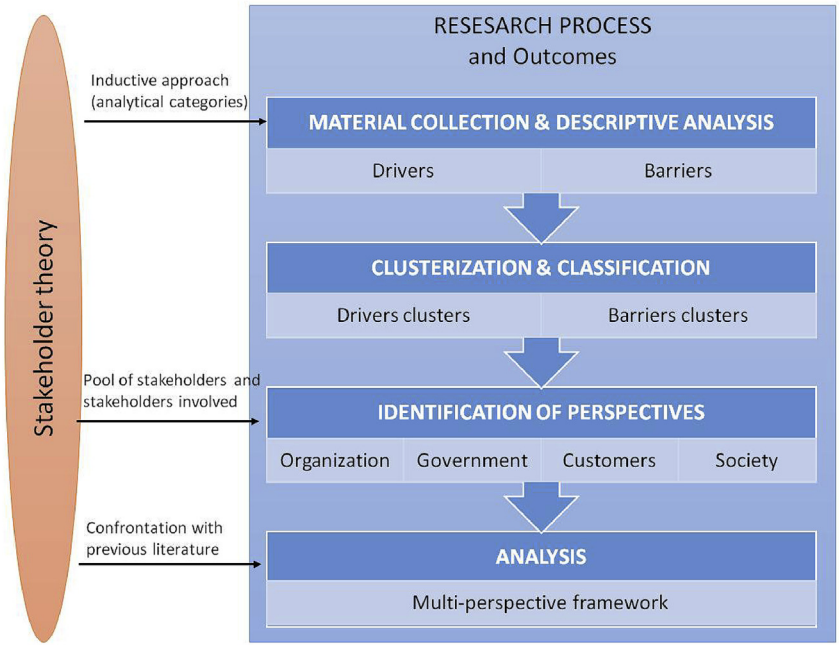

Fig. 1. The use of stakeholder theory.

stakeholder theory as its definition states that CS means "meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc.), without compromising its ability to meet the needs of future stakeholders as well" (Dyllick and Hockerts, 2002, p. 131). Accordingly, Freeman (1984) postulates that a company is changed by both external stakeholders and internal stakeholders (Lozano et al., 2016).

RL implementation requires adaptations in procedures, utilization of human resources, leadership priorities and values. Thus, organizational changes that menace the status quo, such as RL endeavors, naturally encounter resistance at the many organizational levels (Gill, 2003; Lozano et al., 2015).

2.2. Previous literature reviews

In order to assure the originality of this work, this section presents relevant previous papers that have performed a literature review on RL domain. Table 2 compiles the most prominent review papers.

Clearly, to the best of the authors' knowledge, no previous work has dealt with the problem pursued in the current study. No earlier work has dealt with a multiple stakeholders' perspective for RL, considering drivers and barriers for its implementation. In addition, Agrawal et al. (2015) confirm that "research in the field of RL is in evolving phase and issues pertaining to adoption and implementation" have not been reviewed extensively.

Table 2
Previous literature reviews on RL.

Authors	Literature review scope
Fleischmann et al. (1997)	Review on quantitative models for reverse logistics, dividing the subject in three main areas: distribution planning, inventory control, and production planning.
Carter and Ellram (1998)	General review on RL and framework for future investigation.
De Brito et al., 2005	Review and content analysis of more than sixty case studies on RL.
Chanintrakul et al. (2009)	Comprehensive review of the literature on RL network design from 2000 to 2008.
Pokharel and Mutha (2009)	It presents an investigation on the current development in research and practice in RL through content analysis.
Chan et al. (2010)	Review on the implementation of just-in-time philosophy to RL.
Mahaboob Sheriff et al. (2012)	Review on the strategic perspective of RL network design.
Agrawal et al. (2015)	Review of 242 articles on reverse logistics issues, such as: adoption and implementation, forecasting product returns, outsourcing, RL networks from secondary market perspective, and disposition decisions.
Govindan et al. (2015)	General review including 382 papers from 2007 to 2013 in reverse logistic and closed-loop supply chain domains.
Wang et al. (2017)	Extensive bibliometric analysis of 912 published academic articles on reverse logistics from 1992 to 2015.
Campos et al. (2017)	systematic literature review (SLR) of 39 papers aimed at identifying RL concepts and practices applied to the end-of-life (EOL) and end-of-use (EOU) of pharmaceuticals.

The next topic presents the methods employed to gather from literature these influential factors for RL implementation.

3. Research methods

Literature reviews are characterized as mainly qualitative synthesis (Seuring and Gold, 2012). Fink (2013) defines literature review as "a systematic, explicit, comprehensive, and reproducible method for identifying, evaluating, and interpreting the existing body of original work produced by researchers and scholars." In this sense, literature reviews are the spine of almost every academic manuscript (Seuring and Gold, 2012).

In order to minimize and control threats of validity, this paper followed a systematic approach based on a structured process, ensuring the objectivity of the research. To assure rationality, the following aspects were taken into account. Databases and peer-reviewed journals were considered; a search strategy was used, and the body of the literature retrieved was evaluated in order to determine its quality and relevance.

The review procedure is based on a work process from Govindan et al. (2013), Lage Junior and Godinho Filho (2010), Seuring and Gold (2012), Brandenburg et al. (2014), and Govindan et al. (2015) with some adaptations. The main steps adopted in this literature review are illustrated in Fig. 2. Each of the steps presented in Fig. 2 is detailed in the sequence.

In which, peer reviewed articles obtained in leading databases were considered; a search strategy was used, and the body of the literature retrieved was evaluated in order to determine its quality and relevance. However the selection criteria were as follows:

- ✓ Only those articles that had been published in reverse logistics with various focus including concepts, applications, strategies and stakeholder perspectives were selected.
- ✓ Only those articles which clearly analyzed, categorized, and explored the drivers and barriers of reverse logistics were selected.
- ✓ Conference papers, masters and doctoral dissertations, textbooks and unpublished working papers were excluded from this review to increased the reliability of the study.

3.1. Material collection

In this phase, two major decisions to make are the material

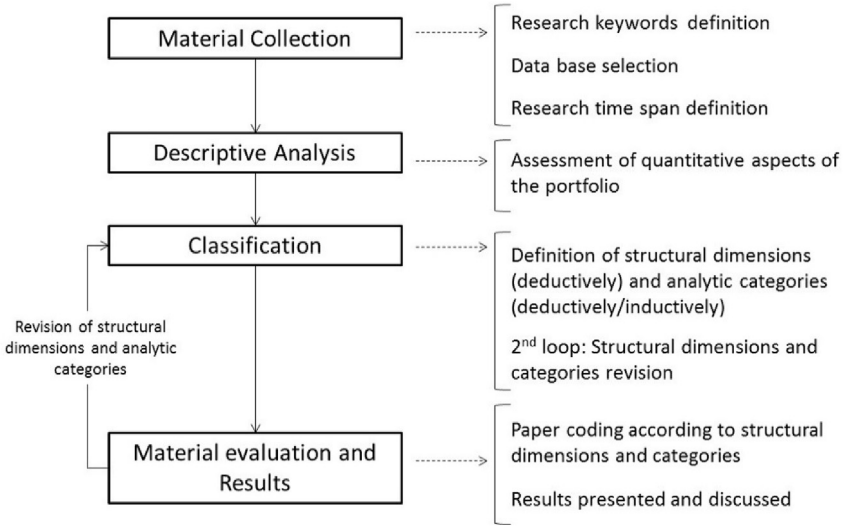

Fig. 2. Research process.
Source: Research process outlined by the authors based on Seuring and Gold (2012), Brandenburg et al. (2014), and (Govindan et al., 2015; Govindan and Jepsen, 2016).

delimitation and the characterization of the unit of analysis (Seuring and Gold, 2012). Therefore, the selection process uses the following filtering criteria:

(i) The literature review focuses upon previous works published in English from the last 11 years (from January 2004 to August 2015).
(ii) The scientific-technical bibliographic databases used to search for articles were: Springer, Emerald, Wiley, Taylor & Francis, Science Direct, ISI Web of Science, Inderscience, Google Scholar, and Scopus.
(iii) The keywords contained in the title and abstract used for selecting the articles during the material collection phase are 'reverse logistics,' 'closed-loop supply chain,' or 'reverse supply chain,' and 'drivers' or 'barriers' or 'stakeholders.' Terms such as 'reuse,' 'remanufacturing,' and 'recycling' were also accepted during the publication gathering process.
(iv) Papers focusing on sustainable supply chain management (SCM) or green SCM were not considered directly, because the focus of this work is on RL, not on the broad areas in which it is commonly inserted. However, some papers from these topical areas were used in this research to reinforce the analysis, although they were not included in the literature review portfolio.

This search resulted in more than 160 articles from more than 50 journals. After eliminating duplicate papers with the aid of the software EndNote®, a sorting process was performed in which titles and abstracts were analyzed to guarantee that their main topic was suitable for this our research scope. This narrowing resulted in a set of 58 papers. Then, a backward search was performed in the references (a cross-referencing), and that process added one more relevant paper to our portfolio. Hence, careful research procedures were followed, resulting in a final set of 59 articles from 35 different journals.

Literature related to green purchasing, business environmental behavior, green logistics, and industrial ecology was not considered, unless the article explicitly deals with RL issues. Following the boundaries suggested in the field of green/environmental supply chain (Sarkis, 2012), this literature survey limits the search scope to product return issues related to end of use and end of life (EOL) products and packaging.

3.2. Descriptive analysis

A quantitative content analysis was used to examine the literature from different bodies of studies. In this step, information about the distribution of the papers across various journals is assessed, as well as the distribution across the years. In addition, the descriptive analysis offers information on the country specifically focused on in the paper, the industrial sector analyzed, and the method used. These results are presented in Section 4.

3.3. Classification

Structural dimensions constitute the main subjects of analysis, which are formed by analytic categories. These categories and the corresponding structural dimensions are categorized in Table 3. Structural dimensions were established in a deductive way, i.e., they were appraised before the material was analyzed, based on existing theory (Seuring and Gold, 2012). For the analytical categories, some were derived deductively while others were determined inductively. The latter means that "categories are derived from the material under examination itself, employing an iterative process of category building, testing and revising by constantly comparing categories and data" (Seuring and Gold, 2012). This means that all articles in the research portfolio were thoroughly examined in full, when drivers, barriers, and stakeholders cited in the manuscript were organized using a spreadsheet. Duplicated data were removed and clusters emerged based on functional aspects of RL. This process was iterative since the categories and clusters were revised by the authors twice. The information on inductive and/or deductive approach is given in the right-hand column of Table 3.

Structural dimensions were established according to the objectives of this review. In addition, other structural dimensions used included 'method used,' 'industry sector,' and 'country specific,' as based on previous literature reviews (Brandenburg et al., 2014; Govindan et al., 2015). This approach allowed us to find not only the main streams of publications in the topic but also the research gaps.

3.4. Material evaluation and results

Content analysis is a useful means to assess the symbolic content of published articles in a systematic manner to unearth research opportunities drawn from the diverse literature base (Shaharudin et al., 2014). After the article selection process and the definition of the major topics of analysis and its categories, a classification was performed to sort the articles by their main focus. In other words, the portfolio of collected papers on RL related issues has been analyzed using the structural dimensions and analytic categories detailed previously in this paper (based on Stakeholder theory). For that, a spreadsheet software was used to minimize errors and to evaluate different aspects of the analyses (Govindan et al., 2015). Three researchers were involved into content analysis and paper coding, ensuring inter-coder reliability (Brandenburg et al., 2014). This categorization scheme based on theory with previously defined categories and precise definitions improves consistency of the coding and internal validity of the findings (Seuring and Gold, 2012). Lastly, an analysis of the review is performed to provide insights into the researched topic, pointing out research gaps for future works in the RL area.

4. Descriptive analysis

From the 59 studied pieces of work, 54 are from journal articles, 4 from conference proceedings, and one book chapter. As the research is focused on double-blind peer-review papers, the final portfolio is comprised of 54 papers. Although single blind review is good enough, but to improve the quality and reliability of the paper this study only considers the double peer reviews where author and reviewer identity was maintained as anonymous. According to Blank (1991) there is a consistent of referee bias in single blind reviewing, also in that study, various advantages of double blind review were exposed.

An overview of the journals used can be seen in Table A1 in the Appendix. *Journal of Cleaner Production* has the largest number of publications, followed by the *Int J of Production Economics* and *The Int J of Advanced Manufacturing Technology*. It is important to mention that the first eight journals represent more than 45% of the journal references identified.

The distribution of all papers along the years is presented in Fig. 3. As can be seen, 2005 was the first year of publication of the subject related to the topics 'influential factors' and 'stakeholders.' The number of publications was found to rise starting from 2011/2012. This increase shows a growing interest in RL related to topics such as influential factors and stakeholder analysis.

The economic activities addressed in the articles were also investigated. To determine this distribution, the classification of the

Table 3
Structural dimensions, analytic categories and definitions.

Structural Dimensions (deductive)	Definition	Analytical categories	Inductive/ Deductive
Method used	Reported tools/procedure for identifying, gathering, and analyzing the data for attaining the paper's objective.	Survey, Case Study, Mathematical modelling, Focus Group, Literature Review, and Theoretical (theoretical papers which are not literature reviews).	Deductive/ Inductive
Industry sector	Describes the specific industry sector in which the research was performed.	North American Industry Classification System (NAICS) industrial sector classification was used.[a]	Deductive
Country specific	Describes the specific country in which the research was developed.	Worldwide countries.	Deductive
Stakeholders	Stakeholders' perspectives used in the manuscript.	Stakeholders were taken from previous literature and defined in Section 5.1.	Inductive
Drivers	Influential factors cited in the paper.	Drivers were taken from the studied literature and defined in Section 5.2.	Inductive
Barriers	Impediments cited in the paper.	Barriers were taken from the studied literature and defined in Section 5.3.	Inductive

[a] NAICS was used in this paper due to its broad international use, which was considered for the revision process of other important international classifications such as the International Standard Industrial Classification of All Economic Activities.

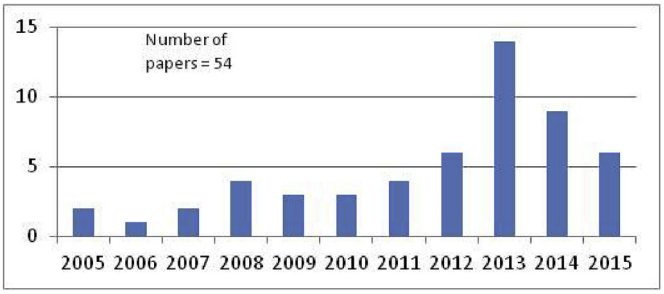

Fig. 3. Distribution of publications through the years.

North American Industry Classification System (NAICS) was used. The majority of papers address the 'transportation equipment manufacturing' and the 'electrical equipment, appliance, and component manufacturing' industry sectors. This result is hardly surprising, because RL practice in these sectors is strongly driven by legislation issues and direct economic benefits, such as the revalorization of products. The complete list is presented in Table A2 in the Appendix.

Regarding the specific country addressed in the papers, the majority of publications analyzed refer to India, followed by China and the United Kingdom. Some authors (Abdulrahman et al., 2014) have stated that most of prior research on RL issues is focused on developed nations, but this scenario seems to be changing. As can be noted in Table A3 in the Appendix, studies focused on the BRIC countries are emerging in the body of knowledge.

Concerning the methods used in the papers, case-based research and surveys are the most common methods applied by papers from our portfolio. The category "others" includes mainly articles that employ multi-criteria decision making (MCDM) tools, such as interpretive structural modelling (ISM) and analytic hierarchical process (AHP). No literature review deals with influential factors and multiple perspectives from stakeholders for RL implementation. The complete list can be viewed in the Appendix (Table A4).

5. Content analysis and framework development

Content analysis provides a methodological frame to conduct systematic, rigorous, and reproducible literature reviews (Seuring and Gold, 2012). It is defined as any kind of methodological assessment applied to text for social science goals (Shapiro and Markoff, 1997).

In the process of content analysis, the first stage analyzes the manifest content of documents and texts by statistical methods (Seuring and Gold, 2012). This step is provided in Sections 5.1, 5.2, and 5.3. Some quantitative analyses are also given. On a second stage, a latent content of the manuscript is extracted, which requires an elucidation of the underlying meaning of arguments and terms (Seuring and Gold, 2012). This step is also present in some classifications in sub-Sections 5.1, 5.2, And 5.3, but it is mainly attained in sub-Section 5.4 with the purpose of developing the multi-perspective framework.

5.1. Identification of stakeholders

Given the classification offered by Mitchell et al. (1997) and discussed in Section 2.2, it is a business reality that a company never satisfies every stakeholder's claim. Hence, managers should focus on the more significant stakeholders (expectant or definitive stakeholders) (Kim and Lee, 2012). Thereby, before determining the drivers and barriers for RL, this topic intends to define the stakeholders for RL. The encountered stakeholders are presented in Table 4.

Besides the stakeholders gathered from the portfolio's analyzed papers, some additional papers were included in this analysis in order to guarantee that this work comprises all relevant stakeholders for RL. Considering that RL is seen as part of green logistics practice (González-Benito and González-Benito, 2006) and part of green SC initiatives (Diabat and Govindan, 2011; Govindan et al., 2013; Muduli et al., 2013; Srivastava, 2007), previous works on stakeholders for environmental logistics were also considered, namely studies by Avkiran and Morita (2010), Kim and Lee (2012), and Wassenhove and Besiou (2013).

By means of an inductive analysis, eight types of stakeholders were identified as exerting influence on RL activities: Government, Customers, Society/Community, Market/Competitors, Suppliers, Organization (focal company/shareholders), Employees, and Media. These encountered stakeholders, shown in Table 4, serve as analytical categories for classifying each of the drivers and barriers, to be described in the following topics.

5.2. RL drivers

Identifying and understanding the motivational factors, namely drivers, for RL implementation is a major step to gain competitiveness. Drivers are considered motivational factors that lead companies to employ some sort of activity. The key drivers of RL initiatives are not well known yet (Akdoğan and Coşkun, 2012). In the literature, many drivers have been proposed to understand the motivational aspects that lead firms to perform RL, as shown in Table 5. By means of the thorough literature review procedure adopted and the papers classified in the spreadsheet already

Table 4
List of stakeholders by reference.

Stakeholder	Description	Sources
Government	Government, legislation agencies.	(Abdullah et al., 2012; Aitken and Harrison, 2013; Alvarez-Gil et al., 2007; Avkiran and Morita, 2010; Crane and Ruebottom, 2011; González-Torre et al., 2010; Hsu et al., 2013; Kannan et al., 2014; Kim and Lee, 2012; Mathiyazhagan and Haq, 2013; Narayana et al., 2014; Sarkis et al., 2010; Shaik and Abdul-Kader, 2013; Subramoniam et al., 2009; Wassenhove and Besiou, 2013; Ye et al., 2013)
Customers	Clients and consumers.	(Abdullah et al., 2012; Alvarez-Gil et al., 2007; Avkiran and Morita, 2010; Crane and Ruebottom, 2011; González-Torre et al., 2010; Hsu et al., 2013; Kannan et al., 2014; Kim and Lee, 2012; Mathiyazhagan and Haq, 2013; Narayana et al., 2014; Rahimifard et al., 2009; Sarkis et al., 2010; Shaik and Abdul-Kader, 2013; Wassenhove and Besiou, 2013; Ye et al., 2013)
Society/NGOs	Society, community and non-governmental organization representing the societal interests.	(Abdullah et al., 2012; Alvarez-Gil et al., 2007; Crane and Ruebottom, 2011; González-Torre et al., 2010; Hsu et al., 2013; Kim and Lee, 2012; Mathiyazhagan and Haq, 2013; Sarkis et al., 2010; Subramoniam et al., 2009; Van Der Wiel et al., 2012; Wassenhove and Besiou, 2013)
Market/Competitors	Market and competitors.	(Abdullah et al., 2012; Crane and Ruebottom, 2011; González-Torre et al., 2010; Ye et al., 2013)
Suppliers	Upstream side of the SC.	(Alvarez-Gil et al., 2007; Crane and Ruebottom, 2011; Hsu et al., 2013; Kannan et al., 2014; Rahimifard et al., 2009; Van Der Wiel et al., 2012)
Organization	Focal company including interest of shareholders.	(Alvarez-Gil et al., 2007; Avkiran and Morita, 2010; Crane and Ruebottom, 2011; Kim and Lee, 2012; Narayana et al., 2014; Rahimifard et al., 2009; Sarkis et al., 2010; Shaik and Abdul-Kader, 2013; Subramoniam et al., 2009; Van Der Wiel et al., 2012; Wassenhove and Besiou, 2013)
Employees	Manpower from the focal company.	(Avkiran and Morita, 2010; Crane and Ruebottom, 2011; Hsu et al., 2013; Kannan et al., 2014; Kim and Lee, 2012; Sarkis et al., 2010; Shaik and Abdul-Kader, 2013; Wassenhove and Besiou, 2013); Kannan, 2018
Media	Including traditional media and social media.	(Crane and Ruebottom, 2011; Mathiyazhagan and Haq, 2013; Sarkis et al., 2010; Wassenhove and Besiou, 2013)

described in Section 3, 37 drivers have been found and classified into categories based on their similarities and meaning. The drivers were classified by internal and external (i.e. is it related to internal or external resources?), and each of them was related to one or more stakeholders defined previously in Table 4. The selected drivers were then classified into eight clusters. These clusters emerged inductively from the paper portfolio, based on functional aspects of RL, and they were also inspired by previous classification schemes found in literature, such as those offered by Abdulrahman et al. (2014) and Govindan et al. (2014). The clusters are:

- Policy related issues (P): this cluster includes issues on regulations and laws concerning product take back and RL.
- Governance and SC process related issues (G&SC): this cluster refers to reverse supply chain drivers, co-operation issues, and business partners.
- Management related issues (M): this cluster includes issues such as employee satisfaction, human resources support, and department integration for RL practice.
- Market and competitor related issues (M&C): this cluster includes customer satisfaction, competitive advantage potential, green market issues, and competitive pressures.
- Technology and infrastructure related issues (T&I): this cluster includes information technology drivers, availability of eco-design and design for 'X' techniques and recovery technologies.
- Economic related issues (E): this cluster includes financial and economic drivers related to RL.
- Knowledge related issues (K): this cluster refers to internal resources such as information flows and RL awareness in companies.
- Social related issues (S): this cluster refers to RL drivers related to societal pressures, such as higher public awareness on environmental conservation and corporate citizenship pressure.

From the 37 drivers, 23 were classified as internal to the organization, and 14 classified as external. Internal drivers are those factors that exist in the firm itself and are related to resource commitment that promote the adoption of RL, whereas external drivers involve motivational factors from outside the companies that impel the adoption of RL. The drivers were also classified according to the stakeholders involved, either as creating the motivational factor or, conversely, as being influenced by the driver.

This research also analyzed the popularity of RL drivers according to the number of times the driver appeared in the article portfolio. The result of this analysis is presented in Fig. 4.

Regulatory pressure for the adoption of environmental initiatives is by far the leading driver according to the studied papers; almost half of the articles cited this driver. The next most commonly cited motivational factor is green consumerism, which appeared in 13 papers and clearly demonstrates that environmental concern is a tendency among consumers. Economic viability, appearing 10 times, attained third place, which shows that companies will not perform product return practices unless RL can improve economic efficiency.

5.3. RL barriers

The barriers can be classified as external or internal (Srivastava, 2013). External barriers involve impediments from outside of firms that disrupt the adoption of green activities, whereas internal barriers are the hindrances that exist within the company itself that obstruct the adoption of green efforts (Hillary, 2004). Many authors have considered and discussed the several barriers for RL implementation. Similar to the drivers' classification, Table 6 depicts each encountered barrier, its description, classification as internal or external, the stakeholders involved, and sources. The 36 selected barriers were classified into seven clusters, following the same approach used for the drivers' classification. The encountered clusters are:

- Technology and infrastructure related issues (T&I): this cluster includes information technology barriers, technical skills issues and barriers related to lack of infrastructure for RL development.
- Governance and SC process related issues (G&SC): this cluster refers to reverse SC barriers, co-operation issues and performance measurement.
- Economic related issues (E): this cluster includes financial and economic barriers related to RL.
- Knowledge related issues (K): this cluster refers to information flows and RL awareness in companies.

Table 5
List of RL drivers, classification, and sources.

Driver	Description	Internal/ External	Stakeholders involved	Sources
1 - Policy related issues				
D1. Regulatory pressure for product return/ recovery	Many nations have introduced laws to ensure effective disposal of products or may make it obligatory for the firms to recover used products.	External	Government	Agrawal et al., 2015; Aitken and Harrison, 2013; Alvarez-Gil et al., 2007; Andiç et al., 2012; Chan and Chan, 2008; Chan et al., 2012; de Sousa Jabbour et al., 2013; Hsu et al., 2013; Jayaraman and Luo, 2007; Jindal and Sangwan, 2013; Kannan et al., 2014; Kapetanopoulou and Tagaras, 2011; Krikke et al., 2013; Kumar and Putnam, 2008; Lau and Wang, 2009; Mathiyazhagan and Haq, 2013; Saavedra et al., 2013; Shaik and Abdul-Kader, 2013; Shaik and Abdul-Kader, 2014; Srivastava, 2008; Subramanian et al., 2014; Subramoniam et al., 2013; Van Der Wiel et al., 2012; Wang and Sun, 2005)
D2. License to operate	Firms are increasingly adopting RL practices in their business schedule in order to get license to operate.	External	Government	(Andiç et al., 2012)
D3. EOL levies at point of sale for the consumer	Tax revenues at point of sales drive customers to return their EOL products.	Internal	Organization	(Rahimifard et al., 2009)
D4. Motivation laws	Take-back levies from manufacturers drives industries to take back their products. For example: special tax discharge for ISO 14001 certified companies.	External	Government	(Mathiyazhagan and Haq, 2013; Rahimifard et al., 2009)
2–Governance and SC process related issues				
D5. Qualification and support of business partners	Well-trained SC partners may assist RL implementation and management.	External	Suppliers, Customers	(Aitken and Harrison, 2013; Ho et al., 2012)
D6. Cooperation and integration with partners in the SC	Cooperation with business partners in the SC can help the RL implementation.	External	Suppliers, Customers	(Ho et al., 2012; Janse et al., 2010; Saavedra et al., 2013; Shaik and Abdul-Kader, 2013; Subramoniam et al., 2009, 2013; Xie and Breen, 2012)
3 - Management related issues				
D7. Employee satisfaction	Feel-good factors, employee morale, individual satisfaction obtained by environmental practices in the company.	Internal	Employees	(Andiç et al., 2012)
D8. Number of staff	Number of employees is positively related to RL implementation.	Internal	Employees	(Ho et al., 2012)
D9. Human resources support	Company's human resources support boosts RL activities.	Internal	Employees	(Ho et al., 2012)
D10. Top management awareness and commitment	RL implementation is facilitated when top managers are conscious about its relevance and committed to RL implementation.	Internal	Employees	(Agrawal et al., 2015; Janse et al., 2010; Xie and Breen, 2012)
D11. Department integration	An integrated organizational structure (physical and non-physical) with the manufacturing divisions has a positive influence on the decision to perform RL.	Internal	Organization	(Subramoniam et al., 2009)
4–Market and Competitors related issues				
D12. Customer satisfaction	Customer satisfaction and customer trust/loyalty can be increased by better after sales services.	External	Customers	(Andiç et al., 2012; Jayaraman and Luo, 2007; Jindal and Sangwan, 2013; Kapetanopoulou and Tagaras, 2011; Mathiyazhagan and Haq, 2013; Shaik and Abdul-Kader, 2013)
D13.Competitive advantage	Firms might get competitive advantage from RL implementation, e.g. higher profits or lower costs, larger market share, differentiation, etc.	External	Market/ Competitors	(Andiç et al., 2012; Chan and Chan, 2008; Jayaraman and Luo, 2007; Kapetanopoulou and Tagaras, 2011; Lau and Wang, 2009; Mathiyazhagan and Haq, 2013)
D14. Green consumerism/ consumers' environmental awareness	Customer pressure is an increasing concern for green protection among consumers.	External	Customers	(Andiç et al., 2012; Chan et al., 2012; Hsu et al., 2013; Jindal and Sangwan, 2013; Kapetanopoulou and Tagaras, 2011; Lau and Wang, 2009; Mathiyazhagan and Haq, 2013; Shaik and Abdul-Kader, 2013, 2014; Srivastava, 2008; Subramanian et al., 2014; Subramoniam et al., 2013)
D15. Green marketing	Industries are progressively concerned about providing a green image. Additionally, firms do not want to get negative media attention by environmental action groups.	External	Society, Media	(Jindal and Sangwan, 2013; Kapetanopoulou and Tagaras, 2011; Lau and Wang, 2009; Mathiyazhagan and Haq, 2013; Shaik and Abdul-Kader, 2013; Van Der Wiel et al., 2012; Wang and Sun, 2005)
D16. Long-term sustainability	Firms are concerned about their long term survival in the market, considering, for example, the increasing shortage of raw materials and the green consumerism.	Internal	Organization	(Andiç et al., 2012; Jindal and Sangwan, 2013; Kannan et al., 2014; Kumar and Putnam, 2008; Mathiyazhagan and Haq, 2013)
D17. Competitors' pressures to adopt green initiatives	Many companies face pressures from competitors inducing them to adopt environmental initiatives.	External	Market/ Competitors	(Hsu et al., 2013; Mathiyazhagan and Haq, 2013; Shaik and Abdul-Kader, 2014)
D18. Brand protection	The outside RL competition and the consequential brand erosion may pressure the decision to perform RL.	Internal	Organization	(Jindal and Sangwan, 2013; Subramoniam et al., 2013)
5–Technology and infrastructure related issues				
D19. RL management information system	The availability of specific IT for RL is a success factor for RL development.	Internal	Organization	(Subramanian et al., 2014)
D20. Recycling management system	The availability of good recycling management system and recycling service drives RL practice.	Internal	Organization	(Lau and Wang, 2009)
D21. Technological innovations	Rapid innovations, quicker obsolescence and shortening product lifecycle propel RL activities.	Internal	Organization	(Lau and Wang, 2009; Shaik and Abdul-Kader, 2014)
		Internal	Organization	

Table 5 (*continued*)

Driver	Description	Internal/ External	Stakeholders involved	Sources
D22. Eco-design and Design for X techniques	Design for remanufacturing, recycle, or disassemble are techniques that can enhance the chance of getting an EOL product back because RL costs are reduced.			(Kannan et al., 2014; Subramoniam et al., 2009, 2013; Xie and Breen, 2012)
D23. Recycling and remanufacturing technologies	Many recycling and remanufacturing strategies are evolving towards continuous improvement by the researchers.	Internal	Organization	(Kannan et al., 2014; Shaik and Abdul-Kader, 2013)
6 - Economic related issues				
D24. Benefits of recycling	Economic benefits of recycling places more pressure on companies to develop a better RL strategy.	Internal	Organization	(Chan et al., 2012)
D25. Reduction on raw material consumption and waste disposal cost	Decreasing the use of raw materials by replacing them by recovered ones as well as reduction of final disposal costs.	Internal	Organization	(Mathiyazhagan and Haq, 2013; Rahimifard et al., 2009; Subramanian et al., 2014; Subramoniam et al., 2013)
D26. Value recovery	RL enables recapturing value from spare parts, recovering assets.	Internal	Organization	(Chan and Chan, 2008; Chan et al., 2012; Janse et al., 2010; Kannan et al., 2014; Kapetanopoulou and Tagaras, 2011; Mathiyazhagan and Haq, 2013; Rahimifard et al., 2009; Subramanian et al., 2014; Subramoniam et al., 2013)
D27. Second hand market	Other financial opportunities are realized from entering the second hand market.	Internal	Organization	(Chan et al., 2012)
D28. Reduction of cost risks	Companies implement RL in order to avoid fines and penalties and to lessen risks. Example: Carbon tax forces fuel cost reduction.	Internal	Organization	(Andiç et al., 2012; Mathiyazhagan and Haq, 2013)
D29. Economic viability	RL can improve economic efficiency.	Internal	Organization	(Agrawal et al., 2015; Chan et al., 2012; Jindal and Sangwan, 2013; Kannan et al., 2014; Krikke et al., 2013; Lau and Wang, 2009; Ravi et al., 2015; Shaik and Abdul-Kader, 2013, 2014; Srivastava, 2008; Subramoniam et al., 2013; Wang and Sun, 2005)
D30. Financial support	Availability of initial capital for investment in RL operations.	Internal	Organization	(Ho et al., 2012)
7 - Knowledge related issues				
D31. Knowledge on sustainable issues and perception of RL benefits	Awareness of manager and industries in general on environmental issues, sustainable development, corporate citizenship.	Internal	Organization, Employees	(Ho et al., 2012)
D32. Cost and performance knowledge	Full insight in cost and performance of RL operations.	Internal	Organization, Employees	(Janse et al., 2010; Mathiyazhagan and Haq, 2013)
D33. Intellectual property (IP)	The need to protect the IP of the product affects the decision to perform RL.	Internal	Organization	(Subramoniam et al., 2013)
8–Social related issues				
D34. Higher public awareness	Greater concern of environment by the population drives RL operations and claim for environmental behavior by NGOs.	External	Society, Customers	(Alvarez-Gil et al., 2007; Lau and Wang, 2009)
D35. Corporate citizenship pressure	Firms are under pressure to act in a socially responsible way, by meeting ethical, legal, and economic responsibilities.	External	Society, Media	(Chan and Chan, 2008; Hsu et al., 2013; Jayaraman and Luo, 2007; Shaik and Abdul-Kader, 2014; Van Der Wiel et al., 2012); (Aitken and Harrison, 2013; Chan et al., 2012; Jindal and Sangwan, 2013; Mathiyazhagan and Haq, 2013; Shaik and Abdul-Kader, 2013)
D36. Increasing landfill	Illegal landfills became a major threat and RL is a solution to give a proper disposal to EOL products. Scarcity of landfill.	External	Society	(Jindal and Sangwan, 2013; Kannan et al., 2014)
D37. Environmental conservations	Hazardous substances can be released from EOL goods that are dangerous for the environment.	External	Society	(Kannan et al., 2014)

- Policy related issues (P): this cluster includes issues on regulations and laws concerning product take back and RL.
- Market and competitors related issues (M&C): this cluster includes competition advantage reasons and recovery market issues.
- Management related issues (M): this cluster includes issues such as managers' posture concerning RL and the relative importance of RL compared to other activities.

From the 36 barriers, 23 were classified as internal to the organization, and 14 classified as external (one barrier was sorted as both internal and external). As well as the analysis performed for the drivers, the popularity of RL barriers was analyzed according to the number of times the obstacle appeared in the article portfolio. The result of this investigation is presented in Fig. 5.

The lack of personnel technical skills appears as the leading barrier according to the number of times this impediment is confirmed in the literature. Many authors (Abdulrahman et al., 2014; Aitken and Harrison, 2013; Kapetanopoulou and Tagaras, 2011; Škapa, 2011) have recognized personnel resources issues, such as lack of training and low level of technical knowledge. The lack of initial capital and low involvement of top management barriers come next, cited by 21 and 19 articles respectively.

5.4. Towards a RL multi-perspective framework

Pressures that emerge from stakeholders are considered one of the most relevant determinants influencing a company's environmental initiative (Kim and Lee, 2012). In this sense, very little is known about how a company deals with the factors affecting its return operations when considering multiple stakeholders' perspectives, where the same variables may be interpreted in a

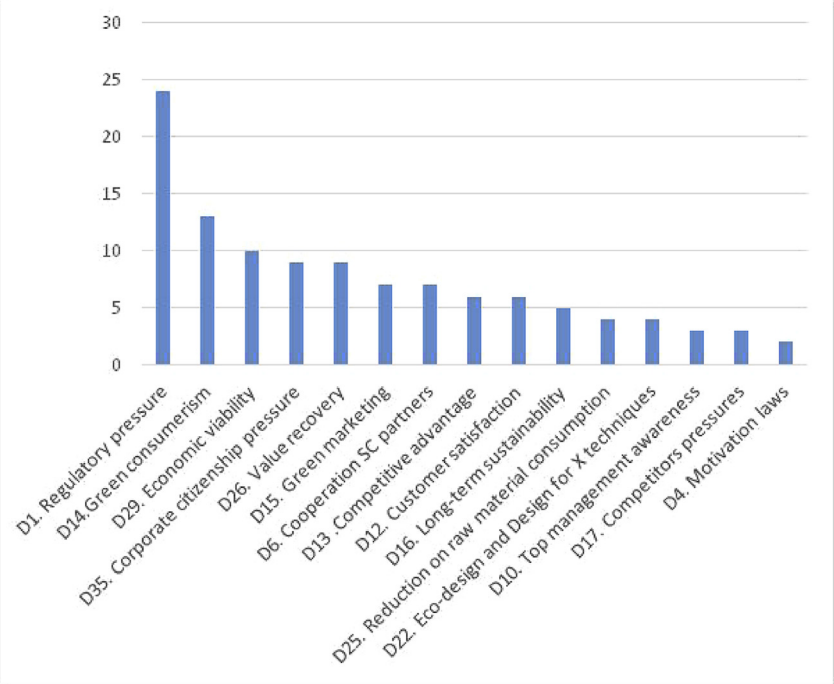

Fig. 4. Most frequently drivers according to appearance in previous literature.

different way. Aligning the many interests of stakeholders is crucial to strategic planning, and not addressing the interests of the many stakeholders may harm firm performance (Avkiran and Morita, 2010).

A primary motivation for the construction of this framework is to show the connections among different perceptions from the multiple RL stakeholders on a common set of drivers and barriers. To do so, this research focuses on the definitive stakeholders for RL implementation. According to the already discussed classification of stakeholders based on legitimacy, power, and urgency, the definitive stakeholders for RL are government, society, and customers. The chosen stakeholders are in line with the suggestion from (Fineman and Clarke, 1996) for the "green stakeholders" and also represent the most used stakeholders according to the literature review on stakeholder pressure in SSCM by Meixell and Luoma (2015).

The perspectives of each definitive stakeholder are shown in Tables A5 to A7 in the Appendix, and the multiple perspective framework involving RL influential factors is presented in Fig. 6. Information used to build the aforementioned tables was gathered from the massive literature compilation presented in Tables 5 and 6.

Considering these external perspectives, Fig. 6 presents the multiple perspectives of definitive stakeholders who exert pressures and place obstacles for RL development. Due to the huge number of barriers and drivers from the organizational point of view, for this framework, only the most widely used drivers and barriers were considered, extracted from Figs. 4 and 5.

6. Discussion

Based on the deliberation of this research, there are some investigation directions noticeable by researchers. Grounded on the classifications adopted for this research, the findings are divided into three sub-sections: RL barriers, RL drivers, and further insights.

6.1. RL barriers

6.1.1. Governmental perspective

From the government standpoint, six barriers were identified in the literature. The lack of specific legislation (B24) was found as an impediment, such as absence of supportive policies for EOL management. Lack of waste practices (B25) is also understood as a RL barrier. In many countries, waste management practices are not implemented due to an ineffectively regulated waste management system, as confirmed by Starostka-Patyk et al. (2013). Next is lack of inter-ministerial communication (B26), which can generate conflicting laws (Abdulrahman et al., 2014) and, consequently, complications for implementing RL. Another factor hindering RL from the government perspective is the lack of motivation laws (B27). This barrier can be interpreted as the lack of directives or regulations to stimulate manufacturers' to perform RL and maintain a green environment and also to motivate customers to buy green products (Shaharudin et al., 2014). Still, from this perspective, the misuse of environmental regulations (B28) may harm RL implementation, as previously mentioned by Abdulrahman et al. (2014), Andiç et al. (2012), and González-Torre et al. (2010). At last, there are complications in extended producer responsibility across nations (B29). Abdulrahman et al. (2014) previously confirmed this complexity created by the globalization of the supply chains.

6.1.2. Customers' perspective

From the customers' perspective, including clients and consumers, three barriers were identified from the literature. Difficulties with SC members (B7) is pointed out as an impediment. There is a reduced support and coordination from customers in the SC for RL implementation, as lack of the retailers' willingness to share costing information, and an unwillingness of support from the distributors, dealers, and retailers towards the RL practices (Bernon et al., 2013). When bringing this issue to an international context, it is relevant to mention that some countries' laws put more responsibility for RL on the manufacturers whereas other

Table 6
RL barriers, classification, and sources.

Barrier Name	Description	Internal/ External	Stakeholders Involved	Sources
1 - Technology and infrastructure (T&I)				
B1. Lack of technical skills	There is a lack of skilled manpower and lack of capabilities to perform RL activities.	Internal	Employees, Organization	(Abdulrahman et al., 2014; Aitken and Harrison, 2013; Bouzon et al., 2015; Chan and Chan, 2008; Daily and Huang, 2001; Ganjali et al., 2014; González-Torre et al., 2010; Govindan et al., 2013; Hillary, 2004; Kapetanopoulou and Tagaras, 2011; Perron and Student, 2005; Prakash and Barua, 2015; Pumpinyo and Nitivattananon, 2014; Ravi and Shankar, 2005; Rogers and Tibben-Lembke, 2001; Sarkis et al., 2010; Shaharudin et al., 2014; Sharma et al., 2011; Škapa, 2011; Van Der Wiel et al., 2012; Walker et al., 2008; Wang and Sun, 2005; Yusuf and Raouf, 2013)
B2. Lack of IT systems standards	IT connectivity issues, including: lack of information and technological systems, incompatibility of IT systems and inadequate information technology support.	Internal	Organization	(Abdulrahman et al., 2014; Aitken and Harrison, 2013; Bernon et al., 2013; Bouzon et al., 2015; Chan and Chan, 2008; Chileshe et al., 2015; González-Torre et al., 2010; Janse et al., 2010; Ravi and Shankar, 2005; Rogers et al., 1999; Sharma et al., 2011; Škapa, 2011; Wang and Sun, 2005; Yusuf and Raouf, 2013)
B3. Lack of most recent technologies	Lack of latest available technologies for performing product/material recycling.	External	Organization	(Abdulrahman et al., 2014; Bouzon et al., 2015; Chan et al., 2012; Ganjali et al., 2014; Lau and Wang, 2009; Pumpinyo and Nitivattananon, 2014; Shaharudin et al., 2014)
B4. Lack of facilities	Deficient industrial infrastructure for reverse operations in terms of handling equipment, storage, and vehicles.	Internal	Organization	(Abdulrahman et al., 2014; Bouzon et al., 2015; Chileshe et al., 2015; González-Torre et al., 2010; Shaharudin et al., 2014)
B5. Technology and Research and Development issues related to product recuperation	There is a complexity of design to recycle/reuse used products and manufacturers resist improving design for EOL recovery. Recycling technologies or design for 'X' techniques are mostly not in practice, especially in developing countries.	Internal	Organization	(Andiç et al., 2012; Beamon, 1999; Bouzon et al., 2015; Ganjali et al., 2014; Govindan et al., 2013; Rahimifard et al., 2009; Shaharudin et al., 2014)
B6. Complexity in operation	RL systems are more uncertain and complex when compared to forward distribution because the recovery options and processes vary in view of characteristics of products and life cycles, capacity of facilities, and resources required.	Internal/ External	Organization	(Kapetanopoulou and Tagaras, 2011; Wang and Sun, 2005)
2—Governance and SC process (G&SC)				
B7. Difficulties with supply chain members	Lack of support and poor coordination in the SC for RL implementation and management.	External	Suppliers, Customers	(Abdulrahman et al., 2014; Agrawal et al., 2015; Bernon et al., 2013; Bouzon et al., 2015; Chileshe et al., 2015; González-Torre et al., 2010; Mangla et al., 2012; Ravi and Shankar, 2005; Sharma et al., 2011; Walker et al., 2008; Wang and Sun, 2005)
B8. Limited forecasting and planning	Many firms face difficulties in forecasting and planning RL as a result of the degree of assortment of products and flows (i.e. stochastic return and demand, variable product mix).	Internal	Customers, Organization	(Abdulrahman et al., 2014; Abraham, 2011; Bouzon et al., 2015; Chan et al., 2012; Janse et al., 2010; Lau and Wang, 2009; Shaharudin et al., 2014; Sharma et al., 2011; Yusuf and Raouf, 2013)
B9. Inconsistent quality	When compared to forward logistics, the product quality is not consistent.	External	Organization	(Abraham, 2011; Bouzon et al., 2015; Ravi and Shankar, 2005; Shaharudin et al., 2014; Sharma et al., 2011; Yusuf and Raouf, 2013)
B10. Complexity for finding third party for RL	Finding third parties to collect used goods is not easy. Additionally, there are few consultancy companies for the field of RL.	External	Organization	(Ganjali et al., 2014; Govindan et al., 2013; Shaharudin et al., 2014; Škapa, 2011)
B11. Lack of suitable performance management system	Lack of appropriate performance metrics and a performance management system for RL.	Internal	Organization	(Abdulrahman et al., 2014; Janse et al., 2010; Ravi and Shankar, 2005; Shaharudin et al., 2014; Sharma et al., 2011; Yusuf and Raouf, 2013)
B12. Inappropriate organizational co-operation	Lack of co-operation between departments for communication, causing restrictions in the information flow.	Internal	Organization	(González-Torre et al., 2010; Govindan et al., 2013; Ravi and Shankar, 2005; Shaharudin et al., 2014)
3 - Economic related issues (E)				
B13. Lack of initial capital	RL is a restructuring process that demands investment.	Internal	Organization	(Abdulrahman et al., 2014; AlKhidir and Zailani, 2009; Andiç et al., 2012; Bouzon et al., 2015; Carter and Ellram, 1998; Chan and Chan, 2008; Ganjali et al., 2014; González-Torre et al., 2010; Govindan et al., 2013; Hervani et al., 2005; Lau and Wang, 2009; Mangla et al., 2012; Mudgal et al., 2010; Pumpinyo and Nitivattananon, 2014; Ravi and Shankar, 2005; Rogers and Tibben-Lembke, 2001; Sharma et al., 2011; Škapa, 2011; Van Der Wiel et al., 2012; Wang and Sun, 2005; Yusuf and Raouf, 2013)
B14. Funds for training	Lack of funding for training human resources for RL operations.	Internal	Organization	(Abdulrahman et al., 2014; Ganjali et al., 2014)
	Lack of support for investments in monitoring systems for RL, storage and handling operations. Investing in	Internal	Organization	(Abdulrahman et al., 2014; Bouzon et al., 2015; Ganjali et al., 2014; Kapetanopoulou and Tagaras, 2011)

(*continued on next page*)

Table 6 (*continued*)

Barrier Name	Description	Internal/ External	Stakeholders Involved	Sources
B15. Return monitoring system/storage and handling	product recovery activities is not justifiable in economic terms.			
B16. Financial burden of tax	Complex flows of products and the varied bought-in services embedded in RL create an elevated degree of tax difficulty and lead to unpredicted tax and costs.	Internal	Organization	(Abdulrahman et al., 2014; Lau and Wang, 2009; Sharma et al., 2011)
B17. Uncertainty related to economic issues	There is a demand for profit from shareholders and the establishment of product recovery activities constitutes a highly uncertain investment, one in which it is hard to see the economic benefits.	Internal	Organization	(Alvarez-Gil et al., 2007; González-Torre et al., 2010; Kapetanopoulou and Tagaras, 2011; Shaharudin et al., 2014)
B18. Lack of economy of scale	Compared to forward flows, RL might be uncertain regarding the volume of returned products, creating a difficulty on attaining economy of scale.	Internal	Organization	(Bouzon et al., 2015; Prakash and Barua, 2015)
4–Knowledge related issues (K)				
B19. Lack of knowledge on RL practices	Difficulty in obtaining information about the best practices in RL.	Internal	Organization	(Abdulrahman et al., 2014; Agrawal et al., 2015; Bouzon et al., 2015; Prakash and Barua, 2015)
B20. Lack of information on take back channels	No proper dissemination of information regarding take back channels available for customers to return their products.	External	Organization	(Abdulrahman et al., 2014; Bouzon et al., 2015; Govindan et al., 2013; Shen and Tam, 2002)
B21. Lack of awareness concerning RL and its benefits	Lack of publicity and knowledge of RL benefits.	Internal	Organization, Employees	(Abdulrahman et al., 2014; Agrawal et al., 2015; Aitken and Harrison, 2013; Bouzon et al., 2015; Shaharudin et al., 2014)
B22. Lack of taxation knowledge on returned products	Companies can face a cost burden due to lack of knowledge of customs procedures, and financial support for value-added tax payments.	Internal	Organization, Employees	(Bouzon et al., 2015; González-Torre et al., 2010; Govindan et al., 2013; Lau and Wang, 2009; Meade et al., 2007; Mudgal et al., 2010; Rahimifard et al., 2009; Ravi and Shankar, 2005; Rogers and Tibben-Lembke, 2001; Sharma et al., 2011; Van Der Wiel et al., 2012; Yusuf and Raouf, 2013)
B23. Lack of environmental regulations awareness	Lack of knowledge on environmental laws and unawareness of environmental impact on the firm's activities and benefits of implementing RL.	Internal	Organization, Employees	(Janse et al., 2010)
5–Policy related issues				
B24. Lack of specific laws	Lack of supportive policies: a lack of legislation or appropriate laws is seen as a major barrier for companies to be involved in EOL returns.	External	Government	(Abdulrahman et al., 2014; Agrawal et al., 2015; Bouzon et al., 2015; Carter and Ellram, 1998; Chan and Chan, 2008; Ganjali et al., 2014; Krikke et al., 2013; Lau and Wang, 2009; Mangla et al., 2012; Shaharudin et al., 2014; Sharma et al., 2011; Walker et al., 2008)
B25. Lack of waste management practices	In many countries, waste management practices are not implemented due to a lack of clear return policies or not fully regulated waste management.	External	Government	(Abdulrahman et al., 2014; Bouzon et al., 2015; Ganjali et al., 2014; Janse et al., 2010)
B26. Lack of inter-ministerial communication	Lack of inter-ministerial communication could provide conflicting laws.	External	Government	(Abdulrahman et al., 2014; Bouzon et al., 2015)
B27. Lack of motivation laws	Lack of regulations or directives to motivate manufacturers to perform RL and maintain a green environment and also motivate customers to buy green products	External	Government	(Abdulrahman et al., 2014; AlKhidir and Zailani, 2009; Bouzon et al., 2015; Ganjali et al., 2014; Govindan et al., 2013; Perron and Student, 2005; Pumpinyo and Nitivattananon, 2014; Shaharudin et al., 2014; Zhu et al., 2012)
B28. Misuse of environmental regulations	Some environmental laws are not well implemented: for example, non-deterrent penal sanctions and loopholes in WEEE regulations.	External	Government	(Abdulrahman et al., 2014; Andiç et al., 2012; González-Torre et al., 2010)
B29. Difficulties in extended producer responsibility across countries	Complexity created by the globalization of the supply chains, hindering the implementation of the extended producer responsibility.	External	Government	(Abdulrahman et al., 2014)
B30. Company polices against RL	Many firms fear cannibalization of their first quality products by remanufactured ones, making policies against product recovery operations.	Internal	Organization	(Abdulrahman et al., 2014; Aitken and Harrison, 2013; Chan and Chan, 2008; Ravi and Shankar, 2005; Rogers et al., 1999; Sharma et al., 2011; Škapa, 2011)
6 - Market and competitors related issues (M&C)				
B31. Perception of a poorer quality product	Customers might think recovered products or the use of recycled material as a lower quality standard.	External	Customer	(Bouzon et al., 2015; Carter and Ellram, 1998; González-Torre et al., 2010; Rahimifard et al., 2009; Shaharudin et al., 2014)
B32. Undeveloped recovery marketplaces	Difficulty on establishing end-of-life recycled material markets and on establishing remanufactured products markets.	External	Market/ Competitors	(Abraham, 2011; Bouzon et al., 2015; Rahimifard et al., 2009; Shaharudin et al., 2014)
B33. Little recognition of competitive advantage	Many companies do not recognize RL as a factor for creating competitive advantages.	Internal	Organization	(Abdulrahman et al., 2014; Bouzon et al., 2015; Janse et al., 2010; Rogers et al., 1999; Shaharudin et al., 2014; Škapa, 2011)
7 - Management related issues				
B34. Low importance of RL relative to other issues	Product recovery activities are perceived as inconsistent with the firm's main operations (low priority when compared to other duties).	Internal	Organization	(Abdulrahman et al., 2014; Bouzon et al., 2015; Chan and Chan, 2008; Ganjali et al., 2014; Kapetanopoulou and Tagaras, 2011; Rogers et al., 1999; Shaharudin et al., 2014; Škapa, 2011; Walker et al., 2008; Wang and Sun, 2005)
	Resistance of top management to change to RL due to organizational culture. Resistance to change existing	Internal	Organization	(Abdulrahman et al., 2014; Bernon et al., 2013; Bouzon et al., 2015; González-Torre et al., 2010; Govindan et al.,

Table 6 (*continued*)

Barrier Name	Description	Internal/ External	Stakeholders Involved	Sources
B35. Low involvement of top management and strategic planning	investments, information systems and habits. Lack of strategic planning and structure for RL.			2013; Hillary, 2004; Lin and Ho, 2008; Perron et al., 2006; Prakash and Barua, 2015; Ravi and Shankar, 2005; Rogers et al., 1999; Rogers and Tibben-Lembke, 2001; Sarkis et al., 2010; Shaharudin et al., 2014; Sharma et al., 2011; Škapa, 2011; Van Der Wiel et al., 2012; Walker et al., 2008; Yusuf and Raouf, 2013; Zhu et al., 2007)
B36. Limited approval of disposal licenses	A system does not permit one firm to hold many products' disposal permissions at the same time.	Internal	Organization	(Andiç et al., 2012)

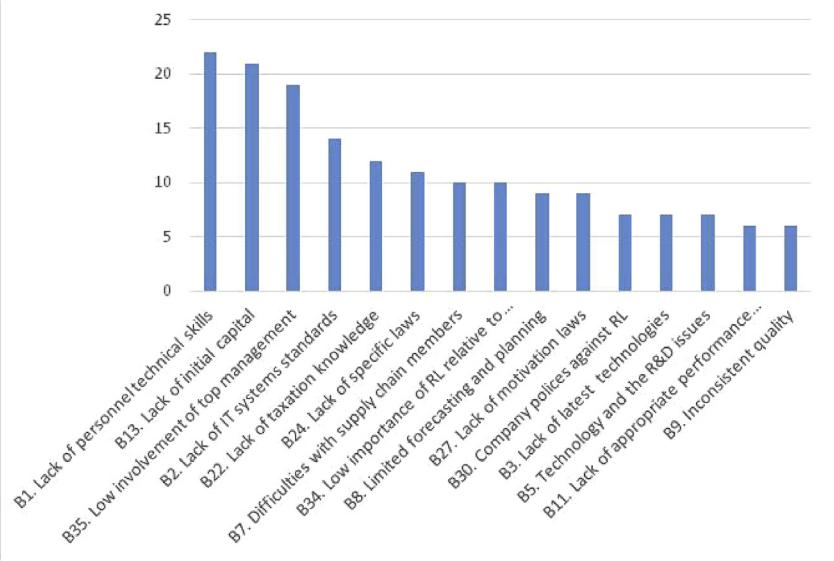

Fig. 5. Most frequently used barriers according to appearance in previous literature.

countries' laws adopt a more shared responsibility between all actors in the SC (including retailers and distributors). Consequently, these differences in laws result in very different sets of challenges and opportunities. From the downstream side of the SC, there is an important influence for RL activities because customers and clients become suppliers for return operations. In this sense, there is a barrier for implementing product recovery systems (B8) since the forecasting and planning of returns are limited (Shaharudin et al., 2014; Starostka-Patyk et al., 2013). Finally, the perception of a poorer quality product may be a barrier (B31) from the customers' point of view. Customers might think that remanufactured products or the use of recycled material results in lower quality standards (González-Torre et al., 2010; Rahimifard et al., 2009).

6.1.3. Organizational perspective

Most of the barriers were identified from the organizational viewpoint. Eleven barriers were listed. The most widely cited barrier, lack of personnel technical skills (B1), is related to the organizational perspective. The low commitment level of workers, low level of technical knowledge, and lack of training and qualifications were mentioned by several authors (Abdulrahman et al., 2014; Kapetanopoulou and Tagaras, 2011; Shaharudin et al., 2014). Lack of initial capital for investing in RL operations (B13) is stated by many authors (Abdulrahman et al., 2014; Andiç et al., 2012; Chan and Chan, 2008; Lau and Wang, 2009; Yusuf and Raouf, 2013) and, consequently, ranks as the second most cited barrier. Another key barrier from the organizational perspective is the low participation of top management and lack of strategic planning regarding RL (B35), the third most widely used barrier. The resistance of top management to adopt RL is due to organizational culture, and their resistance to change information systems, ongoing investments, and habits is debated by many authors (Abdulrahman et al., 2014; Bernon et al., 2013; Govindan et al., 2014; Shaharudin et al., 2014). Similar barriers are also debated in organizational change management literature, which postulates that the implementation of sustainable practices is not seen as adding value to the company (Lozano, 2012). In addition, RL practice needs synchronization from all levels of the employees, from bottom-line to top management (Bouzon et al., 2015). Lack of IT standards (B2) is the fourth most widely cited impediment for RL. Many authors (Bernon et al., 2013; Chan and Chan, 2008; González-Torre et al., 2010; Janse et al., 2010; Ravi and Shankar, 2005; Škapa, 2011) have confirmed problems in IT connectivity, such as incompatibility of IT systems and inadequate IT support. Finally, a firm's lack of taxation knowledge on returned products (B22) also hinders RL implementation (fifth most cited). Companies can face a cost burden due to their ignorance of customs procedures and financial support for value-added tax payments (González-Torre et al., 2010; Govindan et al., 2014; Sharma et al., 2011; Van Der Wiel et al., 2012).

6.2. RL drivers

6.2.1. Government perspective

Three motivational factors were identified from the governmental point of view. First, regulatory pressure for recovering EOL products (D1) serves as the most widely used driver. Many nations

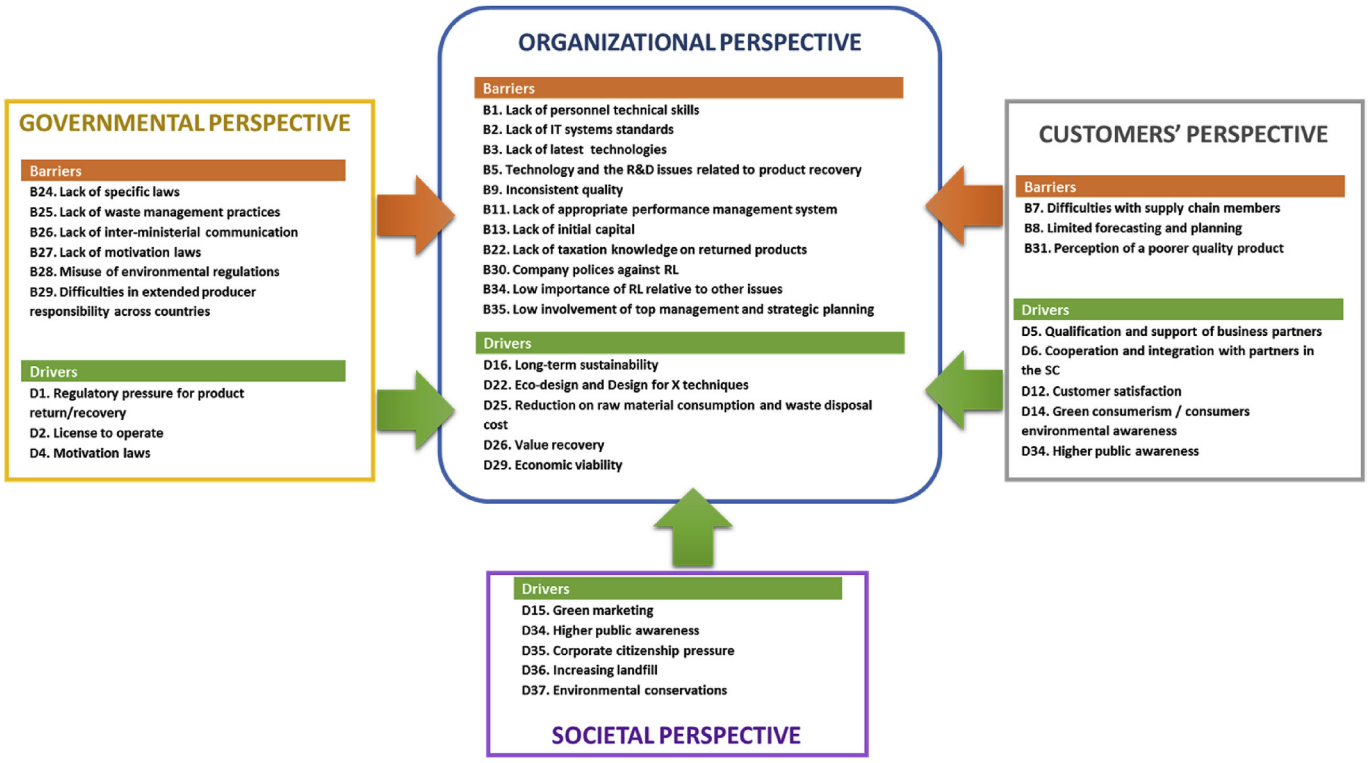

Fig. 6. Multi-perspective framework for RL implementation.

have introduced directives or legislation to guarantee effective disposal of goods or they may make it obligatory for firms to recover used/EOL products (Hsu et al., 2013; Kapetanopoulou and Tagaras, 2011; Shaik and Abdul-Kader, 2013). This driver is also highlighted by Lozano (2012), incentivizing corporate sustainability practices (drivers to change). The second driver is the license to operate (D2). Companies are progressively adopting RL initiatives in order to get a license to operate (Andiç et al., 2012). Finally, incentives such as tax exemptions were also found as a motivational factor for RL (D4). Take-back levies from manufacturers drives industries to take back their products (Mathiyazhagan and Haq, 2013; Rahimifard et al., 2009; Srivastava, 2013).

6.2.2. Customers' perspective

The literature review process uncovered five drivers from the customers' point of view. The qualification and support of business partners, such as clients and suppliers, acts as a motivational factor for RL implementation (D5). In this matter, well-trained supply chain partners may assist RL management (Aitken and Harrison, 2013; Ho et al., 2012). Not only training, but also cooperation was identified as a propelling force towards RL (D6). Cooperation with clients, such as shared responsibility for returned products, can promote RL implementation (Ho et al., 2012; Janse et al., 2010; Subramoniam et al., 2013). From the market perspective, customer satisfaction is a driving force for after-sales initiatives (D12). Regarding this issue, the support developed through proper disposal of products and RL activities can enhance customer loyalty (Abdullah et al., 2012; Kapetanopoulou and Tagaras, 2011). Still concerning marketing issues, green consumerism (D14) was the second most widely used driver. Consumers' environmental awareness is a growing tendency, pressuring companies to cope with environmental standards and legislation.

6.2.3. Societal perspective

No barrier was found in literature coming from the society prism. That is, none of the 36 barriers found in this thorough literature research process emerges from this stakeholder or is related directly to the societal perspective. The authors believe that society, community and non-governmental organizations representing the societal interests claim for responsible environmental behavior; thus, they do not create any direct impediment for RL implementation and development. On the other hand, five motivational factors were gathered during the review process. Green marketing (D15) is a growing concern among industries, in order to respond to pressures from groups such as NGOs. This driver is the fourth most widely used by authors from our portfolio. In addition, firms fear unfavorable media attention by green action organizations or groups (Mathiyazhagan and Haq, 2013). As already discussed from customers' perspective, a higher public awareness of environmental issues (D34) is a driver for RL from the social standpoint. Next, corporate citizenship pressure (D35) emerges in support of green initiatives, taking the third place for the most used drivers. In this matter, firms are under pressure to "behave in a socially responsible manner by meeting legal, ethical, and economic responsibilities placed on them" (Abdullah et al., 2012). Some authors posit that the scarcity of landfill (D36) drives RL (Jindal and Sangwan, 2013; Kannan et al., 2014). Because illegal landfills pose a major threat, RL is a solution to provide proper disposal to EOL products.

6.2.4. Organizational perspective

From firms' point of view, including shareholders' claims, five drivers emerged. First, concern about the long-term sustainability of the firm's business (D16) is a driving force (Jindal and Sangwan, 2013; Mathiyazhagan and Haq, 2013). Companies are worried about their survival in the long run in the market, considering, for example, the increasing shortage of raw materials and the green

consumerism. Second, eco-design (D22) drives RL implementation. The introduction of practices and techniques such as design for remanufacturing, recycle, or disassemble can enhance the chance of getting an EOL product back because RL costs are reduced (Subramoniam et al., 2013; Xie and Breen, 2012). Next, there is an economic benefit boosting RL practices. The possible reduction on raw material consumption and waste disposal cost (D25) drives product return initiatives. Firms are interested in decreasing the use of raw materials by replacing them by recovered ones and, at the same time, diminishing disposal costs (Rahimifard et al., 2009; Subramoniam et al., 2013). Still from an economic perspective, the possibility of recovering the remaining value of used products drives RL implementation (D26). This value may come from spare parts, recapturing value and recovering assets (Subramoniam et al., 2013). This driver is also mentioned in corporate sustainability literature (Lozano, 2012). Finally, the economic viability (D29) is mentioned by many authors as a main driver for RL (Jindal and Sangwan, 2013; Kannan et al., 2014; Krikke et al., 2013; Subramoniam et al., 2013), attaining the fifth position for the most widely used drivers.

6.3. Further insights

Content analysis from 59 articles reveals a plurality of factors affecting RL implementation, both internally and externally. The choice of stakeholders for the framework was successful. The multiple matrix of associated perspectives, including company, society, government, and customers, was satisfactory since 12 from the 15 most widely used drivers (see Fig. 4) are considered in the framework as well as 14 from the 15 most widely used barriers (see Fig. 5).

From the theoretical viewpoint, some insights arise. First, some business customers frequently want the SC partner to follow their green standards, which might include RL operations. In addition, expectations are changing and consumers may prefer greener products from companies with a good social and environmental reputation (Wassenhove and Besiou, 2013). Second, the role of government can have a great influence on firms' strategic decision making by requiring ecological behavior to comply with regulations. Thus, firms have to meet environmental laws to avoid legal actions (Sarkis et al., 2010). Third, NGOs and society have played an important role in encouraging companies to behave in socially responsible way. Furthermore, they frequently work (in a direct or indirect manner) with the Government to pressure corporate behavior. Lastly, “companies generally need to satisfy the demand of shareholders to prevent the loss of their capital investment” (Kim and Lee, 2012). Thus, a recognized view in the business world, mainly among executives, is that “a firm's primary loyalty is to its shareholders” (Avkiran and Morita, 2010). Confirming this information and the outcomes from this research, Meixell and Luoma (2015) posit that shareholders are influential in logistics decisions, including RL.

Another relevant consideration to be done at this analysis is on the difference between the types of effect from stakeholder pressures. Meixell and Luoma (2015) state that the stakeholder demands may result in the company becoming aware of the stakeholder's concern or may simply reflect the company's goals towards a sustainable initiative (i.e. RL), “rather than resulting in implementation of a practice.” This is why the present study focused on expected or definitive stakeholders, in order to deal with influential factors that effectively affect RL implementation.

On the barrier side, some insights arise. Most of the encountered barriers are placed in the firm's perspective; however, it becomes clear how these barriers may be an effect from outside impediments. An example of this argument is the lack of specific laws (B24) and lack of motivation laws (B27) – from the governmental perspective – and their influence in the system. The lack of specific laws may hinder the investment in R&D initiatives towards reducing EOL costs (B5) and provoke the low involvement of top management (B35) – both internal barriers. The lack of motivation laws may also have an effect on aggravating the barrier B34 (low importance of RL relative to other issues). From the customers' perspective, limited forecasting and planning (B8) may harm the involvement of top managers in RL efforts (B35). The presented multi-perspective framework elucidates these potential links between factors that could be further investigated in future research.

6.4. Future research opportunities

With the assistance of previous analysis and proposed framework, the following future research questions can be raised.

- ✓ What is the interactions and influential relationships among drivers and barriers of reverse logistics? By addressing this, the influential driver and barrier can be identified, further, two prioritized driver and barrier can focused to better implementation of reverse logistics.
- ✓ How to include social pillars in reverse logistics to become reverse logistics more sustainable? However, the previous studies only reported RL as eco efficient perspective, but to gain full advantage of supply chain and competitiveness, RL has to addressed all pillars including economy, environment and society. Addressing this research question improve the performance of RL to promote sustainable development.
- ✓ How does the customer perspective on RL affect the firm to implement RL in their operations? Many studies deals with the customer perspective with the name of green customer, but very few studies shed light on customer perspectives on RL, even many customers don't have enough awareness on RL. Hence, by addressing this question, the knowledge on RL can be improved among customers and it would improve the sustainable relationship between company and customers through RL. In addition, the organization come to know the expectation of the customer regarding RL implementation.
- ✓ What are the suitable approaches for implantation of RL at organization level? From the Fig. 6, it can be clearly understood that more barriers can be seen on organization perspective than any other perspective. Hence, this question will address the RL implementation barriers with proposed approaches.

7. Final remarks

This paper reviewed more than a decade's worth of research focusing on RL, stakeholders, and influential factors issues. More than one hundred sixty articles were identified, from which 59 were used in the analysis. In general, the number of publications in the field is growing. The data were gathered and analyzed from the literature with the purpose of furthering our perception on the aspects that enable or inhibit RL implementation from a multiple stakeholder perspective. A systematic approach of content analysis was applied to enhance the reliability and validity of results. Papers have been evaluated according to the structural dimensions and related analytic categories, extracted deductively, and deductively/inductively respectively. Thirty-seven RL drivers were identified in literature, while 36 barriers emerged from the paper portfolio. All influential factors were classified as internal or external and assigned to one or more stakeholders.

The overall contribution of this study was to obtain insights about the factors for RL implementation from a manifold company, society, government, customer association perspective and the

creation of a RL multi-perspective framework for RL drivers and barriers. Concerning the managerial implications, a significant analysis of the influential elements, as well as recognizing the actors either creating them or being influenced by these factors, can be an important source of information to managers and decision makers. The consideration of these influential factors from this multiple perspective is critical for creating a comprehensive industry strategy to successfully implement RL. On the organizational change management side, drivers must be acknowledged, so managers can plan for change by exploring these positive influential factors, as change may represent an opportunity if anticipated. On the other hand, facing the plurality of impediments, different organization levels must be involved so firms can better overcome the internal and external barriers to change, integrating their efforts for RL more holistically.

Even though this work was systematically concluded, clearly there are limitations that present opportunities for future studies. Firstly, an issue that can be addressed in further research on the topic is the fact that some drivers can be seen as barriers and vice-versa, depending on the context in which the issue is analyzed. A typical example is the case of regulatory pressure for product return. Although such laws are created to ensure effective product disposal (hence, a driver), the same laws might include some conditions that complicate the effective implementation of RL, resulting in a circumstance that might be considered a barrier.

Secondly, a limitation of this work is concerned with extracting the interaction among different drivers and barriers, calculating contingencies among them, and allowing deeper insights. Beyond that, the proposed RL multi-perspective framework needs to be empirically investigated and tested. In addition, now that influential factors are selected and classified in this framework, the next step is to understand the interactions among the RL barriers and drivers. Moreover, there is an emerging need to analyze the link between RL barriers and drivers, as well as the level of importance or influence of each factor in the system. Further research can be done by including other stakeholders in the framework or adapting this structure to a country context. A priority rank of overcoming actions regarding RL barriers can also be extracted considering the importance level of each barrier.

Moreover, regardless of the fact that three researchers were included in the process for content analysis and validation, the categorization of these papers remains interpretative and hence subjective. More comprehensive bibliometric citation analyses appear as a further solution and structured approach to classify these factors. In this regard, the encountered limitations create space for future research on these RL topical areas. There are still some fertile topics of research to be considered, such as the use of multi-criteria decision making (MCDM) tools to evaluate the interactions among factors influencing RL implementation.

Appendix

Table A1
References divided by journals.

Journal title	Number of articles
Journal of Cleaner Production	5
Int J of Production Economics	4
The Int J of Advanced Manufacturing Technology	4
Int J of Operations & Production Management	3
Supply Chain Management: An Int J	3
Resources, Conservation and Recycling	3
Int J of Physical Distribution & Logistics Management	2
Academy of Management Perspectives	1
Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis	1
Applied Sciences	1
Benchmarking: An Int J	1
British Journal of Management	1
Clean Technologies and Environmental Policy	1
Computers & Industrial Engineering	1
European Journal of Operational Research	1
Global Journal of Flexible Systems Management	1
Int J of Business Performance and Supply Chain Modelling	1
Int J of Logistics Management	1
Int J of Modelling and Optimization	1
Int J of Production Research	1
Int J of Sustainable Development & World Ecology	1
Int J of Sustainable Engineering	1
Int J of Technology Management	1
Journal of Applied Science and Engineering Management	1
Journal of Business Research	1
Journal of Fashion Marketing and Management	1
Journal of Manufacturing Systems	1
Journal of Operations Management	1
Journal of Purchasing and Supply Management	1
Management Decision	1
Measuring Business Excellence	1
Omega	1
Proceedings of the Pakistan Academy of Sciences	1
Production Planning & Control	1
Resources Policy	1
Technological Forecasting and Social Change	1
Sustainability	1

Table A2
Distribution according to industry sector.

Industry Sector	Papers
Many (more than 2 sectors)	14
Transportation Equipment Manufacturing	12
Electrical Equipment, Appliance, and Component Manufacturing	10
Chemical Manufacturing	2
Apparel Manufacturing	1
Paper Manufacturing	1
Primary Metal Manufacturing	1
Construction	1
Not specified	12

Table A3
Country specific.

Country	Papers
India	12
China	5
UK	3
Malaysia	3
Many (more than 2)	3
Spain	3
Brazil	3
Hong Kong	2
Turkey	2
Australia	1
Czech Republic	1
Greece	1
Holland	1
Pakistan	1
Poland	1
Taiwan	1
USA	1
Thailand	1
None	9

Table A4
Methods used in papers.

Method	Papers
Case study	16
Survey	15
Other	9
Theoretical	6
Literature review	4
Mathematical Modelling	4

Table A5
Customers' perspective.

Drivers	Barriers
D5. Qualification and support of business partners	B7. Difficulties with supply chain members
D6. Cooperation and integration with partners in the SC	B8. Limited forecasting and planning
D12. Customer satisfaction	B31. Perception of a poorer quality product
D14. Green consumerism/consumers' environmental awareness	
D34. Higher public awareness	

Table A6
Governmental perspective.

Drivers	Barriers
D1. Regulatory pressure for product return/recovery	B24. Lack of specific laws
D2. License to operate	B25. Lack of waste management practices
D4. Motivation laws	B26. Lack of inter-ministerial communication
	B27. Lack of motivation laws
	B28. Misuse of environmental regulations
	B29. Difficulties in extended producer responsibility across countries

Table A7
Societal perspective.

Drivers	Barriers
D15. Green marketing	–
D34. Higher public awareness	
D35. Corporate citizenship pressure	
D36. Increasing landfill	
D37. Environmental conservations	

References

Abdullah, N.A.H.N., Yaakub, S., Abdullah, H.H., 2012. The impact of customer and stakeholder pressure, financial and competitive pressure, regulatory pressure and corporate citizenship pressure on reverse logistics adoption. In: 2nd International Conference on Management (2nd ICM 2012), 11th-12th June 2012 (Langkawi Kedah, Malaysia).

Abdulrahman, M.D., Gunasekaran, A., Subramanian, N., 2014. Critical barriers in implementing reverse logistics in the Chinese manufacturing sectors. Int. J. Prod. Econ. 147, 460–471.

Abraham, N., 2011. The apparel aftermarket in India - a case study focusing on reverse logistics. J. Fash. Mark. Manag. 15, 211–227.

Agrawal, S., Singh, R.K., Murtaza, Q., 2015. A literature review and perspectives in reverse logistics. Resour. Conserv. Recycl. 97, 76–92.

Aitken, J., Harrison, A., 2013. Supply governance structures for reverse logistics systems. Int. J. Oper. Prod. Manag. 33, 745–764.

Akdoğan, M.Ş., Coşkun, A., 2012. Drivers of reverse logistics activities: an empirical investigation. Procedia. Soc. Behav. Sci. 58, 1640–1649.

AlKhidir, T., Zailani, S., 2009. Going green in supply chain towards environmental sustainability. Global J. Environ. Res. 3, 246–251.

Alvarez-Gil, M.J., Berrone, P., Husillos, F.J., Lado, N., 2007. Reverse logistics, stakeholders' influence, organizational slack, and managers' posture. J. Bus. Res. 60, 463–473.

Andiç, E., Yurt, Ö., Baltacıoğlu, T., 2012. Green supply chains: efforts and potential applications for the Turkish market. Resour. Conserv. Recycl. 58, 50–68.

Avkiran, N.K., Morita, H., 2010. Benchmarking firm performance from a multiple-stakeholder perspective with an application to Chinese banking. Omega 38, 501–508.

Beamon, B.M., 1999. Designing the green supply chain. Logist. Inf. Manag. 12, 332–342.

Bernon, M., Upperton, J., Bastl, M., Cullen, J., 2013. An exploration of supply chain integration in the retail product returns process. Int. J. Phys. Distrib. Logist. Manag. 43, 586–608.

Blank, R.M., 1991. The effects of double-blind versus single-blind reviewing: experimental evidence from the American Economic Review. Am. Econ. Rev. 1041–1067.

Bouzon, M., Govindan, K., Rodriguez, C.M.T., 2015. Reducing the extraction of minerals: reverse logistics in the machinery manufacturing industry sector in Brazil using ISM approach. Resour. Policy 46, 27–36.

Brandenburg, M., Govindan, K., Sarkis, J., Seuring, S., 2014. Quantitative models for sustainable supply chain management: developments and directions. Eur. J. Oper. Res. 233, 299–312.

De Brito, M.P., Dekker, R., Flapper, S.D.P., 2005. Reverse logistics: a review of case studies. In: Distribution Logistics. Springer Berlin Heidelberg, pp. 243–281.

Campos, E.A.R.D., Paula, I.C.D., Pagani, R.N., Guarnieri, P., 2017. Reverse logistics for the end-of-life and end-of-use products in the pharmaceutical industry: a systematic literature review. Supply Chain Manag. Int. J. 22 (4), 375–392.

Carter, C.R., Ellram, L.M., 1998. Reverse logistics: a review of the literature and framework for future investigation. J. Bus. Logist. 19, 85–102.

Chan, F.T.S., Chan, H.K., 2008. A survey on reverse logistics system of mobile phone industry in Hong Kong. Manag. Decis. 46, 702–708.

Chan, H.K., Yin, S., Chan, F.T., 2010. Implementing just-in-time philosophy to reverse logistics systems: a review. Int. J. Prod. Res. 48, 6293–6313.

Chan, F.T.S., Chan, H.K., Jain, V., 2012. A framework of reverse logistics for the automobile industry. Int. J. Prod. Res. 50, 1318–1331.

Chanintrakul, P., Coronado Mondragon, A.E., Lalwani, C., Wong, C.Y., 2009. Reverse logistics network design: a state-of-the-art literature review. Int. J. Bus. Perform. Supply Chain Model. 1, 61–81.

Chileshe, N., Rameezdeen, R., Hosseini, M.R., Lehmann, S., Wagner, B., 2015. Barriers to implementing reverse logistics in South Australian construction organisations. Supply Chain Manag. Int. J. 20, 179–204.

Crane, A., Ruebottom, T., 2011. Stakeholder theory and social identity: rethinking stakeholder identification. J. Bus. Ethics 102, 77–87.

Daily, B.F., Huang, S.-C., 2001. Achieving sustainability through attention to human resource factors in environmental management. Int. J. Oper. Prod. Manag. 21, 1539–1552.

de Sousa Jabbour, A.B.L., de Souza Azevedo, F., Arantes, A.F., Jabbour, C.J.C., 2013. Green supply chain management in local and multinational high-tech companies located in Brazil. Int. J. Adv. Manuf. Technol. 68, 807–815.

Diabat, A., Govindan, K., 2011. An analysis of the drivers affecting the implementation of green supply chain management. Resour. Conserv. Recycl. 55, 659–667.

Dowlatshahi, S., 2000. Developing a theory of reverse logistics. Interfaces 30, 143–155.

Dyllick, T., Hockerts, K., 2002. Beyond the business case for corporate sustainability. Bus. Strat. Environ. 11, 130–141.

Fineman, S., Clarke, K., 1996. Green stakeholders: industry interpretations and response. J. Manag. Stud. 33, 715–730.

Fink, A., 2013. Conducting Research Literature Reviews. Sage Publications.

Flapper, S.D.P., Gayon, J.P., Vercraene, S., 2012. Control of a production-inventory system with returns under imperfect advance return information. Eur. J. Oper. Res. 218, 392–400.

Fleischmann, M., Bloemhof-Ruwaard, J.M., Van der Laan, E., Van Nunen, J., Van Wassenhove, L., 1997. Quantitative models for reverse logistics: a review. Eur. J. Oper. Res. 103, 1–17.

Freeman, R.E., 1984. Strategic Management: a Stakeholder Approach. Pitman, Boston.

Ganjali, M., Shirouyehzad, H., Shahin, A., 2014. Evaluating barriers of reverse logistics using DEMATEL method. J. Appl. Sci. Environ. Manag. 51, 61.

Gill, R., 2003. Change management - or change leadership? J. Change Manag. 3, 307–318.

González-Benito, J., González-Benito, Ó., 2006. The role of stakeholder pressure and managerial values in the implementation of environmental logistics practices. Int. J. Prod. Res. 44, 1353–1373.

González-Torre, P., Álvarez, M., Sarkis, J., Adenso-Díaz, B., 2010. Barriers to the implementation of environmentally oriented reverse logistics: evidence from the automotive industry sector. Br. J. Manag. 21, 889–904.

Govindan, K., Jepsen, M.B., 2016. ELECTRE: a comprehensive literature review on methodologies and applications. Eur. J. Oper. Res. 250 (1), 1–29.

Govindan, K., Khodaverdi, R., Jafarian, A., 2013. A fuzzy multi criteria approach for measuring sustainability performance of a supplier based on triple bottom line approach. J. Clean. Prod. 47, 345–354.

Govindan, K., Kaliyan, M., Kannan, D., Haq, A., 2014. Barriers analysis for green supply chain management implementation in Indian industries using analytic hierarchy process. Int. J. Prod. Econ. 147, 555–568.

Govindan, K., Soleimani, H., Kannan, D., 2015. Reverse logistics and closed-loop supply chain: a comprehensive review to explore the future. Eur. J. Oper. Res. 240, 603–626.

Hillary, R., 2004. Environmental management systems and the smaller enterprise. J. Clean. Prod. 12, 561–569.

Ho, G.T.S., Choy, K.L., Lam, C.H.Y., Wong, D.W.C., 2012. Factors influencing implementation of reverse logistics: a survey among Hong Kong businesses. Meas. Bus. Excell. 16, 29–46.

Hsu, C.-C., Tan, K.C., Zailani, S.H.M., Jayaraman, V., 2013. Supply chain drivers that foster the development of green initiatives in an emerging economy. Int. J. Oper. Prod. Manag. 33, 656–688.

Janse, B., Schuur, P., Brito, M., 2010. A reverse logistics diagnostic tool: the case of the consumer electronics industry. Int. J. Adv. Manuf. Technol. 47, 495–513.

Jayaraman, V., Luo, Y., 2007. Creating competitive advantages through new value creation: a reverse logistics perspective. Acad. Manag. Perspect. 21, 56–73.

Jindal, A., Sangwan, K.S., 2013. Development of an interpretive structural model of drivers for reverse logistics implementation in Indian industry. Int. J. Bus. Perform. Supply Chain Model. 5, 325–342.

Kannan, D., 2018. Role of multiple stakeholders and the critical success factor theory for the sustainable supplier selection process. Int. J. Prod. Econ. 195, 391–418.

Kannan, D., Diabat, A., Shankar, K.M., 2014. Analyzing the drivers of end-of-life tire management using interpretive structural modeling (ISM). Int. J. Adv. Manuf. Technol. 72, 1603–1614.

Kapetanopoulou, P., Tagaras, G., 2011. Drivers and obstacles of product recovery activities in the Greek industry. Int. J. Oper. Prod. Manag. 31, 148–166.

Kim, S.T., Lee, S.Y., 2012. Stakeholder pressure and the adoption of environmental logistics practices: is eco-oriented culture a missing link? Int. J. Logist. Manag. 23, 238–258.

Kovács, G., Spens, K.M., Korkeila, R., 2006. Stakeholder response to future changes in the reverse supply chain. Int. J. Logist. Syst. Manag. 2, 160–176.

Krikke, H., Hofenk, D., Wang, Y., 2013. Revealing an invisible giant: a comprehensive survey into return practices within original (closed-loop) supply chains. Resour. Conserv. Recycl. 73, 239–250.

Kumar, S., Putnam, V., 2008. Cradle to cradle: reverse logistics strategies and opportunities across three industry sectors. Int. J. Prod. Econ. 115, 305–315.

Lage Junior, M., Godinho Filho, M., 2010. Variations of the kanban system: literature review and classification. Int. J. Prod. Econ. 125, 13–21.

Lau, K.H., Wang, Y., 2009. Reverse logistics in the electronic industry of China: a case study. Supply Chain Manag. Int. J. 14, 447–465.

Lin, C.-Y., Ho, Y.-H., 2008. An empirical study on logistics service providers' intention to adopt green innovations. J. Technol. Manag. Innovat. 3, 17–26.

Lozano, R., 2012. Orchestrating organisational changes for Corporate Sustainability: overcoming barriers to change. Greener Manag. Int. 57.

Lozano, R., Ceulemans, K., Seatter, C.S., 2015. Teaching organisational change management for sustainability: designing and delivering a course at the University of Leeds to better prepare future sustainability change agents. J. Clean. Prod. 106, 205–2015.

Lozano, R., Nummert, B., Ceulemans, K., 2016. Elucidating the relationship between sustainability reporting and organisational change management for sustainability. J. Clean. Prod. 125, 168–188.

Mangla, S., Madaan, J., Chan, F.S., 2012. Analysis of performance focused variables for multi-objective flexible decision modeling approach of product recovery systems. Global J. Flex. Syst. Manag. 13, 77–86.
Mathiyazhagan, K., Haq, A.N., 2013. Analysis of the influential pressures for green supply chain management adoption—an Indian perspective using interpretive structural modeling. Int. J. Adv. Manuf. Technol. 68, 817–833.
Meade, L., Sarkis, J., Presley, A., 2007. The theory and practice of reverse logistics. Int. J. Logist. Syst. Manag. 3, 56–84.
Meixell, M.J., Luoma, P., 2015. Stakeholder pressure in sustainable supply chain management: a systematic review. Int. J. Phys. Distrib. Logist. Manag. 45, 69–89.
Mitchell, R.K., Agle, B.R., Wood, D.J., 1997. Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts. Acad. Manag. Rev. 22, 853–886.
Mudgal, R.K., Shankar, R., Talib, P., Raj, T., 2010. Modelling the barriers of green supply chain practices: an Indian perspective. Int. J. Logist. Syst. Manag. 7, 81–107.
Muduli, K., Govindan, K., Barve, A., Kannan, D., Geng, Y., 2013. Role of behavioural factors in green supply chain management implementation in Indian mining industries. Resour. Conserv. Recycl. 76, 50–60.
Narayana, S.A., Elias, A.A., Pati, R.K., 2014. Reverse logistics in the pharmaceuticals industry: a systemic analysis. Int. J. Logist. Manag. 25, 379–398.
Nikolaou, I.E., Evangelinos, K.I., Allan, S., 2013. A reverse logistics social responsibility evaluation framework based on the triple bottom line approach. J. Clean. Prod. 56, 173–184.
Hervani, A.A., Helms, M.M., Sarkis, J., 2005. Performance measurement for green supply chain management. Benchmark Int. J. 12 (4), 330–353.
Perron, G.M., Student, I.P., 2005. Barriers to Environmental Performance Improvements in Canadian SMEs. Dalhousie University, Canada.
Perron, G.M., Côté, R.P., Duffy, J.F., 2006. Improving environmental awareness training in business. J. Clean. Prod. 14, 551–562.
Phillips, R., Freeman, R.E., Wicks, A.C., 2003. What stakeholder theory is not. Bus. Ethics Q. 479–502.
Pishvaee, M.S., Farahani, R.Z., Dullaert, W., 2010. A memetic algorithm for bi-objective integrated forward/reverse logistics network design. Comput. Oper. Res. 37, 1100–1112.
Pokharel, S., Mutha, A., 2009. Perspectives in reverse logistics: a review. Resour. Conserv. Recycl. 53, 175–182.
Prakash, C., Barua, M.K., 2015. Integration of AHP-TOPSIS method for prioritizing the solutions of reverse logistics adoption to overcome its barriers under fuzzy environment. J. Manuf. Syst. 37, 599–615.
Pumpinyo, S., Nitivattananon, V., 2014. Investigation of barriers and factors affecting the reverse logistics of waste management practice: a case study in Thailand. Sustainability 6, 7048–7062.
Rahimifard, S., Coates, G., Staikos, T., Edwards, C., Abu-Bakar, M., 2009. Barriers, drivers and challenges for sustainable product recovery and recycling. Int. J. Sustain. Eng. 2, 80–90.
Ravi, V., Shankar, R., 2005. Analysis of interactions among the barriers of reverse logistics. Technol. Forecast. Soc. Change 72, 1011–1029.
Ravi, V., Shankar, R., Tiwari, M.K., 2005. Analyzing alternatives in reverse logistics for end-of-life computers: ANP and balanced scorecard approach. Comput. Ind. Eng. 48, 327–356.
Ravi, V., Shankar, R., Gunasekaran, A., 2015. Survey of reverse logistics practices in manufacturing industries: an Indian context. Benchmark Int. J. 22, 874–899.
Rogers, D.S., Tibben-Lembke, R., 2001. An examination of reverse logistics practices. J. Bus. Logist. 22, 129–148.
Rogers, D.S., Tibben-Lembke, R.S., Council, R.L.E., 1999. Going backwards: reverse logistics trends and practices. Reverse Logistics Executive Council Pittsburgh, PA.
Saavedra, Y.M.B., Barquet, A.P.B., Rozenfeld, H., Forcellini, F.A., Ometto, A.R., 2013. Remanufacturing in Brazil: case studies on the automotive sector. J. Clean. Prod. 53, 267–276.
Sarkis, J., 2012. A boundaries and flows perspective of green supply chain management. Supply Chain Manag. 17, 202–216.
Sarkis, J., Gonzalez-Torre, P., Adenso-Diaz, B., 2010. Stakeholder pressure and the adoption of environmental practices: the mediating effect of training. J. Oper. Manag. 28, 163–176.
Sarkis, J., Zhu, Q., Lai, K.-H., 2011. An organizational theoretic review of green supply chain management literature. Int. J. Prod. Econ. 130, 1–15.
Seuring, S., Gold, S., 2012. Conducting content-analysis based literature reviews in supply chain management. Supply Chain Manag. Int. J. 17, 544–555.
Shaharudin, M.R., Zailani, S., Tan, K.C., 2014. Barriers to product returns and recovery management in a developing country: investigation using multiple methods. J. Clean. Prod. https://doi.org/10.1016/j.jclepro.2013.1012.1071.
Shaik, M.N., Abdul-Kader, W., 2013. Transportation in reverse logistics enterprise: a comprehensive performance measurement methodology. Prod. Plann. Contr. 24, 495–510.
Shaik, M.N., Abdul-Kader, W., 2014. Comprehensive performance measurement and causal-effect decision making model for reverse logistics enterprise. Comput. Ind. Eng. 68, 87–103.
Shapiro, G., Markoff, G., 1997. Methods for drawing statistical inferences from text and transcripts. In: Roberts, C.W. (Ed.), Text Analysis for the Social Sciences. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 9–31.
Sharma, S., Panda, B., Mahapatra, S., Sahu, S., 2011. Analysis of barriers for reverse logistics: an Indian perspective. Int. J. Model. Optim. 1, 101–106.
Shen, L., Tam, V.W., 2002. Implementation of environmental management in the Hong Kong construction industry. Int. J. Proj. Manag. 20, 535–543.
Mahaboob Sheriff, K.M., Gunasekaran, A., Nachiappan, S., 2012. Reverse logistics network design: a review on strategic perspective. Int. J. Logist. Syst. Manag. 12, 171–194.
Škapa, R., 2011. Reverse logistics in the Czech republic: barriers to development. Acta Univ. Agric. Silvic. Mendelianae Brunensis 59, 363–370.
Srivastava, S.K., 2007. Green supply-chain management: a state-of-the-art literature review. Int. J. Manag. Rev. 9, 53–80.
Srivastava, S.K., 2008. Network design for reverse logistics. Omega 36, 535–548.
Srivastava, S.K., 2013. Issues and challenges in reverse logistics. In: Gupta, S.M. (Ed.), Reverse Supply Chains: Issues and Analysis. Taylor & Francis, Boca Raton, FL, pp. 61–82.
Starostka-Patyk, M., Zawada, M., Pabian, A., Abed, M., 2013. Barriers to reverse logistics implementation in enterprises. In: Advanced Logistics and Transport (ICALT), 2013 International Conference on. IEEE, pp. 506–511.
Subramanian, N., Gunasekaran, A., Abdulrahman, M., Liu, C., 2014. Factors for implementing end-of-life product reverse logistics in the Chinese manufacturing sector. Int. J. Sustain. Dev. World Ecol. 21, 235–245.
Subramoniam, R., Huisingh, D., Chinnam, R.B., 2009. Remanufacturing for the automotive aftermarket-strategic factors: literature review and future research needs. J. Clean. Prod. 17, 1163–1174.
Subramoniam, R., Huisingh, D., Chinnam, R.B., Subramoniam, S., 2013. Remanufacturing Decision-Making Framework (RDMF): research validation using the analytical hierarchical process. J. Clean. Prod. 40, 212–220.
Touboulic, A., Walker, H., 2015. Theories in sustainable supply chain management: a structured literature review. Int. J. Phys. Distrib. Logist. Manag. 45, 16–42.
Van Der Wiel, A., Bossink, B., Masurel, E., 2012. Reverse logistics for waste reduction in cradle-to-cradle-oriented firms: waste management strategies in the Dutch metal industry. Int. J. Technol. Manag. 60, 96–113.
Walker, H., Di Sisto, L., McBain, D., 2008. Drivers and barriers to environmental supply chain management practices: lessons from the public and private sectors. J. Purch. Supply Manag. 14, 69–85.
Wang, B., Sun, L., 2005. A review of reverse logistics. Appl. Sci. 7, 16–29.
Wang, J.J., Chen, H., Rogers, D.S., Ellram, L.M., Grawe, S.J., 2017. A bibliometric analysis of reverse logistics research (1992-2015) and opportunities for future research. Int. J. Phys. Distrib. Logist. Manag. 47 (8), 666–687.
Wassenhove, L., Besiou, M., 2013. Complex problems with multiple stakeholders: how to bridge the gap between reality and OR/MS? J. Bus. Econ. 83, 87–97.
Xie, Y., Breen, L., 2012. Greening community pharmaceutical supply chain in UK: a cross boundary approach. Supply Chain Manag. Int. J. 17, 40–53.
Ye, F., Zhao, X., Prahinski, C., Li, Y., 2013. The impact of institutional pressures, top managers' posture and reverse logistics on performance—evidence from China. Int. J. Prod. Econ. 143, 132–143.
Yusuf, I., Raouf, A., 2013. Reverse logistics: an empirical study for operational framework. Proc. Pakistan Acad. Sci. 50, 201–210.
Zhu, Q., Sarkis, J., Lai, K.-H., 2007. Green supply chain management: pressures, practices and performance within the Chinese automobile industry. J. Clean. Prod. 15, 1041–1052.
Zhu, Q., Sarkis, J., Lai, K.-H., 2012. Green supply chain management innovation diffusion and its relationship to organizational improvement: an ecological modernization perspective. J. Eng. Technol. Manag. 29, 168–185.