

Review

Drivers of Sustainable Supply Chain Management: Identification and Classification

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Abstract: With the increase in awareness of environmental and social issues associated with the development and the use of products, stakeholders—especially consumers—are showing more concern regarding these issues. To address new developments and changing trends, organizations are now compelled to identify and implement innovative and sustainable solutions, not only within their organizations' boundaries, but also across the whole supply chain network. The primary goal of this paper was to identify and analyze drivers of sustainable supply chain management (SSCM) that influence or encourage organizations to undertake sustainability initiatives and implement sustainable solutions throughout their supply chains. For this purpose, a systematic literature review was conducted and 1559 drivers of SSCM were identified from 217 journal articles. Precise interpretation, clear definitions, restructuring, and classification into external and internal driver categories produced a list of 40 unique drivers of SSCM. The results revealed that regulatory and market pressures, with reference to the number of citations, are the most prevailing drivers of SSCM for the implementation of sustainability practices. Classification of the drivers of SSCM into primary and secondary driver categories may assist practitioners and decision makers in prioritizing sustainability-related initiatives and adopting sustainability practices across the whole supply chain network.

Keywords: drivers of sustainable supply chain management; sustainable supply chain management; systematic literature review

1. Introduction

Trends in supply chain management (SCM), such as the globalization of market economies, shorter product life cycles, digitalization, and multifaceted customer expectations, along with developments such as resource scarcity, stricter regulatory requirements, and a more long-term focus, have led to the evolution of highly complex supply chains. The incorporation of environmental and social responsibility issues into the management of supply chains is becoming increasingly relevant to the success of organizations and their supply chains. Organizations are considered accountable for their activities that affect the environment, society, and economy of their own businesses, as well as those of their supply chain participants [1]. As a result, sustainability within the operations of organizations, as well as within the supply chain, has become a contemporary issue and an important area of research [2]. The adoption of sustainability practices not only improves the environmental and social performance of organizations and their supply chains, but also provides an opportunity for organizations to acquire a new set of competencies, which can help them to achieve a competitive advantage by undertaking sustainability initiatives within and outside of the organizational boundaries [2].

However, taking sustainability-related initiatives and adopting sustainability practices are often influenced by various internal and external factors [3]. In addition to the introduction of several new regulations pertaining to different sustainability dimensions, such as carbon discharges, greenhouse effects, carbon taxes, and anti-corruption, organizations and their supply chains are encouraged or even pressured—mostly by various stakeholders—to address sustainability issues caused by their operations [1]. Therefore, responses to various stakeholders' requirements can affect the relationship between adopting sustainability initiatives and their effectiveness on the sustainability performance of the supply chain [4]. In turn, the focal organization within the supply chain network needs to give stakeholders value and extend its focus beyond conventional financial goals to the indispensable sustainability issues highlighted by different stakeholders to adopt sustainability practices across the whole supply chain. The inability to definitively identify important sustainability issues can lead to miscalculated recognition of supply chain risks and can shift top management attention to other non-priority issues. Hence, identification of the important sustainability issues emphasized by various internal and external factors to the supply chain (also described in the literature as the drivers of sustainable supply chain management (SSCM)) not only promotes extensive stakeholder engagement, but also contributes to the achievement of overall supply chain sustainability goals.

In the literature, a multitude of drivers of SSCM are described. Despite the topic's acknowledged relevance, a process for setting priority based on drivers' importance in the supply chain, as well as their degree of influence across the supply chain, is still required. Why and how many drivers of SSCM exist have not been identified [1,4]. There is no clear set of listings, definitions, or ranking of drivers of SSCM in the literature that can help practitioners set their sustainability goals and focus their sustainability-related actions according to the priority established by different stakeholders and drivers of SSCM. A clear identification and classification of the drivers of SSCM may assist practitioners in understanding important sustainability issues, to identify difficulties, and to determine the improvements required. As not all drivers of SSCM pressure organizations in the same way [4], careful consideration of industrial priority is an important aspect for managers to consider. Therefore, the main objective of this research paper was to identify and define the drivers of SSCM, as well as categorize them according to their degree of importance and value contribution. For this purpose, a detailed analysis of the drivers of SSCM was conducted to understand the current landscape of drivers of SSCM and their roles in the implementation of sustainability initiatives. Institutional and stakeholder theories were adopted to examine and understand the various drivers of SSCM.

This study makes the following contributions to the SSCM literature. We categorize the drivers of SSCM based on their access to supply chain knowledge, degree of importance, and value contribution. We define the drivers of SSCM using easy-to-understand and clear language for all stakeholders. We also searched for either internal or external factors that influence organizations and supply chains to help those implementing sustainable supply chain initiatives. The objectives of this research work were achieved by conducting a literature review regarding the drivers of SSCM. In Section 2, the emergence of the concept of sustainability in SSCM is presented. Definitions and summaries of the drivers of SSCM, and their categorization, are described. Section 3 presents the two-step research methodology adopted to conduct this systematic literature review, and Section 4 provides a detailed analysis of the results and findings of the research work. Finally, conclusions and future outlook are presented in Section 5.

2. Research Background

The basic terminologies related to the topic of sustainability, SSCM, drivers of SSCM, and classification of the drivers of SSCM are presented below in detail.

2.1. Sustainable Supply Chain Management

A shift from the one-dimensional perspective of sustainable development toward an integrated three-dimensional concept of sustainability (i.e., environmental, social, and economic) has been

observed. This three-dimensional concept is also known as the triple bottom line (TBL), which aims to decrease harmful ecological impacts and increase positive social impacts while achieving economic sustainability. The integration of the sustainability concept into the context of SCM has been widely discussed in academics and in practice. A number of literature reviews regarding establishing a relationship between the conventional supply chain and sustainability dimensions have been published. Although no single agreement exists on a universal definition of SSCM, the definition proposed by Carter and Rogers [5] is well accepted so far: “the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual organization and its supply chains”.

They emphasized the importance of the integration of the sustainability concept into business processes throughout the supply chain to achieve long-term economic advantages. Hence, in a sustainable supply chain, sustainability-related managerial actions are tasked with accomplishing economic as well as non-economic (social and environmental) performance goals [6,7]. However, wider supply chain sustainability can only be achieved if each participant in the supply chain works together to achieve overall strategic sustainability goals, while simultaneously fulfilling customers’ and other stakeholders’ requirements.

Organizations should provide value to stakeholders and accommodate their needs, as every stakeholder in a supply chain has its own stakes and sustainability-related concerns [8,9]. For example, regulatory authorities are more concerned about the efficient use of natural resources, and employees are more interested in work-related health and safety situations. Consumers are concerned more about the emission of harmful gases and the release of effluent during development, as well as the use of the end products. Hence, the goals of SSCM are to “provide maximum value to all stakeholders, and to fulfill customers’ requirements by achieving sustainable flow of products, services, information, and capital, as well as enabling cooperation among different supply chain participants” [10]. Accordingly, collaboration among different internal and external stakeholders can result in increased pressure on the focal organization as well as on other supply chain partners for the adoption of sustainability practices within their business operations [11].

2.2. Drivers for Sustainable Supply Chain Management

Organizations are influenced by both internal and external factors (such as government, community, investors, customers, suppliers, and employees) to adopt sustainable supply chain initiatives [1,12,13]. These influencing factors are defined synonymously in the literature as pressures, triggers, enablers, and drivers [1,14,15]. Caniato et al. [14] defined drivers of SSCM as pressures that push organizations toward the implementation of specific sustainability initiatives. Köksal et al. [15] defined drivers of SSCM as “external factors that initiate and motivate focal organizations in implementing SSCM practices”. Hence, drivers for SSCM can be defined here as “motivators or influencers that encourage or push organizations to implement sustainability initiatives throughout the supply chain” [2]. However, different drivers affect supply chain decisions to different extents [9]. For example, media can influence purchasing decisions, and shareholders have more impact on logistics-related supply chain decisions. Similarly, employees and non-governmental organizations (NGOs) have more influence on decisions concerning the social dimension, whereas regulatory bodies are more influential in the environmental dimension of the TBL [16,17].

In the literature, *institutional theory* is used to explain how drivers of SSCM affects decisions regarding sustainable actions, with the overarching theme as to how firms better secure their social fitness and legitimacy by conforming to the rules and norms within their operating sphere [1,17]. To categorize drivers, we first analyzed the institutional theory approach to understand the drivers of SSCM as three institutional pressures: coercive pressures, normative pressures, and mimetic pressures [1,4,17]. Coercive pressures are considered the most influential type of pressure, and include pressures from the government, regulatory bodies, or authorities. Normative pressures originate from

social obligations and are exerted by NGOs, trade unions, and society. Mimetic pressures arise when competitors adopt sustainability practices and organizations are, in turn, asked to undertake these sustainable actions [1,17,18]. All institutional pressures have the ability to influence organizations in the adoption of sustainability initiatives [4]. However, these three institutional pressures have been revealed to be theoretically distinct but not necessarily empirically distinguishable [1]. To clearly define and set their goals, drivers of SSCM—based on their degree of influence—are categorized in this research work as internal and external drivers (Figure 1) [1,9,14,17,19–21].

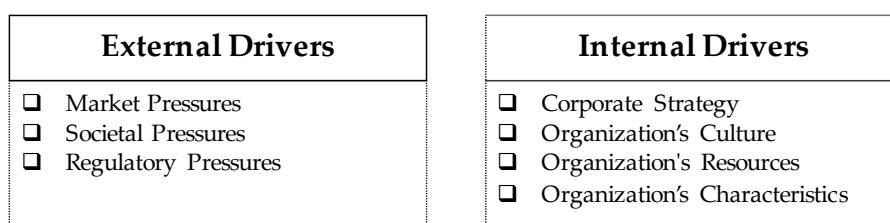


Figure 1. Classification of the drivers of sustainable supply chain management (SSCM).

However, not all the internal and external influencing factors have a similar level of access to the organizational knowledge and level of value contribution within the supply chain. In this regard, *stakeholder theory* explains the role of pressure (direct or indirect) exerted by different stakeholders in the implementation of sustainability initiatives [13,22]. Based on the level of access to supply chain knowledge and value-contribution, drivers of SSCM are also categorized as primary and secondary drivers [13]. The more knowledge they have about the supply chain, and the greater the value contribution, and the greater the importance of the pressure group [2]. Primary drivers have a direct influence on organizations as well as their supply chains, and include pressure from shareholders, suppliers, employees, unions, customers/consumers, financial institutions, regulatory agents, competitors, and top management commitments [1,4,23–25]. Secondary drivers have an indirect influence on organizations as well as their supply chains, and include pressures such as reputation and image, media and press, NGOs, communities, and social groups [1,4,24,25].

3. Research Methodology

In accordance with the objectives of this research paper, a systematic literature review was conducted to identify the drivers of SSCM. A high quality literature review follows a multi-step methodology [26–28]. Accordingly, a two-phase approach was adapted from Tranfield et al. [26], as shown in Figure 2.

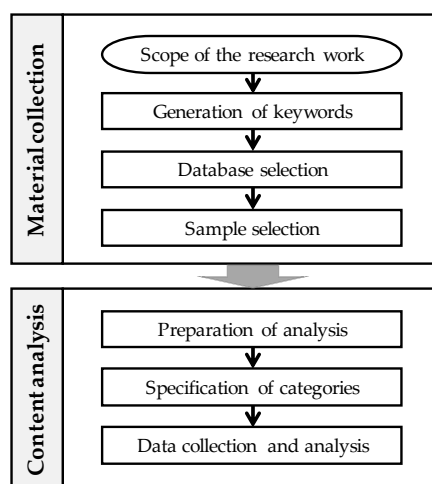


Figure 2. Research methodology.

3.1. Material Collection

The material collection phase was used to identify and select literature relevant to the drivers of SSCM. It included four steps: defining the scope of the research work, generation of keywords, selection of databases, and sample selection. We decided, in defining the scope of the research work, to consider scientific literature articles in the field of drivers of SSCM published until the year 2016. As a result of rigorous trials and test searches for specific terminologies in different databases, two combinations of search keywords related to the subject area of drivers of SSCM were finalized, as outlined in Table 1. The first keyword (K1), which is a combination of two terms (sustainab* AND “supply chain”), helped to identify literature in the field of SSCM. To ensure the selected articles dealt with the topic, the second set (K2) of keywords (Trigg* OR pressur* OR driv*) was used to identify articles that only deal with drivers of SSCM in that sample. These keywords (K1 and K2) were searched in two well-renowned scientific databases, Elsevier’s Science Direct and Web of Science, to identify relevant articles. In the final step of sample selection, only peer-reviewed journal articles published in the English language were selected by excluding every other literature source such as conference papers, books, and working papers.

By following the aforementioned screening procedure, 618 scientific articles were initially identified from two databases. After cleaning and removing 115 duplications, 503 unique articles were selected for further analysis. The selected articles were subsequently processed carefully to ensure the high quality of results and to validate that the identified articles actually addressed the topic under study. Journal articles were selected for the purpose of content analysis only if drivers of SSCM were mentioned, discussed, defined, or explained anywhere within the text of the publications. Hence, detailed reading and establishment of an understanding of each article resulted in 217 relevant articles for further analysis.

Table 1. Drivers of SSCM-related keyword combinations and number of outcomes.

Data Source ¹	K1	K2	Articles with Repetition	Unique Articles	Full-Text Available	Relevant (R)/ Irrelevant (IR)
Science Direct	Sustainab*	Trigg*	160	503	462	217 (R)
Web of Science	AND “supply chain”	OR pressur* OR driv*	458			245 (IR)

¹ Text search categories were ‘Title’, ‘Abstract’, and ‘Keyword’.

3.2. Content Analysis

To analyze the selected articles for obtaining and understanding the required data, a three-step content analysis approach [10] was adopted: preparation of analysis, specification of categories, and data collection and analysis. These are described below in detail.

We decided, in the preparation of analysis step, to restrict this research to scientific literature only. However, the entire sample was selected as the projection of the population was not necessarily required. In the specification of categories step, a single categorization scheme was used in which a driver of SSCM could be related to only one category. Afterward, pilot classification was used to test the categorization of the drivers and the overall coding process. The weaknesses in the coding process, identified during the pilot classification, were removed to attain higher levels of reliability and validity.

In the data collection and analysis step, instances of related information in the selected sample given in the form of tables, figures, appendices, lists, or found anywhere in the content of the articles, were identified. The exact wording of each driver, as mentioned in its respective source, was documented for the whole sample, along with its page number for the purpose of transparency and replicability. Data collection here, however, involved a two-phase coding process: initial coding and focused coding. At first, drivers of SSCM were documented as mentioned in the literature, resulting in a total of 1559 drivers. In the initial coding process, drivers with similar meanings were

combined, such as “government regulations”, “government pressure”, or “government legislation. In focused coding, the drivers that were coded initially were reviewed and classified according to the driver categories mentioned in Section 2.2. The precise interpretation, clear definition, restructuring, and classification into external and internal driver categories produced a list of 40 unique drivers of SSCM.

Hence, the drivers of SSCM were identified and selected carefully and the content of the information obtained was restructured to effectively represent the data in the form of a standardized text. The reliability of the material collection step was ensured by the systematic use of the keyword search and the documentation of each process step. The validity of the coding process was ensured by involving two coders from the start of the research and differing judgments were resolved after detailed discussion.

4. Results and Findings

This section describes the results in detail and discusses the findings to provide practical guidance for researchers and practitioners in the field of SSCM. The first subsection discusses several descriptive features of the selected journal articles: the year of publication, cited journals, publications’ authors, publications’ geographical origin, the methodology applied, the addressed sustainability dimensions, and the addressed industrial sectors. In the second subsection, the driver identification in the literature is analyzed. Finally, analysis regarding the number of occurrences of drivers of SSCM in the literature is reviewed within the third subsection.

4.1. Descriptive Analysis of Research Articles in the Selected Sample

The yearly distribution of research articles retrieved from the two data sources, without considering repetition and for the purpose of analysis of progression and importance of the research area over time, is shown in Figure 3. A continuous increase in the number of articles published until the year 2016 is apparent. Although the number of articles published before 2012 was small, a sharp rise in the number of articles was noted after the year 2011, with 85% of the total articles published after 2011. This rapid increase is a direct indication of the growing attention of the scientific community in the research field of SSCM. As stated in the literature, the number of articles doubles over the span of 10 to 20 years once a research area receives acknowledgment from the scientific community [29]. In this respect, the number of articles identified in this systematic literature review increased more than twofold in the past few years.

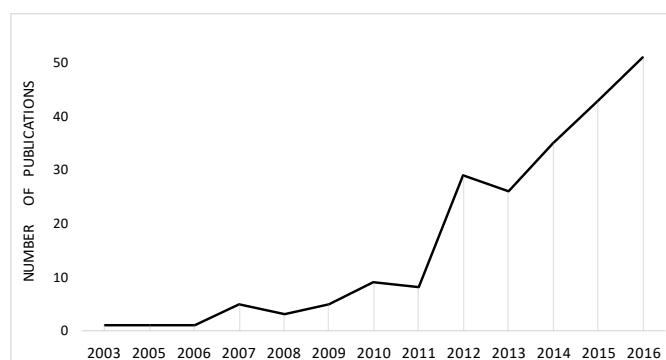


Figure 3. Distribution of scientific literature articles by publication year.

Academic journals represent priorities in a specific research area, and are considered to play an essential role in the development of a given discipline. In this regard, 79 journals published articles related to drivers of SSCM. However, 18 journals published more than three articles, as shown in Table 2. In the selected sample, the *Journal of Cleaner Production* lead with 39 articles. The *International Journal of Production Economics* published 15 articles. *Supply Chain Management: An International Journal*

published 15 articles. The *International Journal of Operations and Production Management* (13 articles) and *Business Strategy and the Environment* (12 articles) are the other two journals among the top five influential journals (in terms of number of articles) in the selected sample. These findings also highlight the difficulty that authors in the field of SSCM are facing in publishing their research, as not many journals are dedicated to the field of SSCM. The *Journal of Cleaner Production*, along with the other top-five journals, can be considered as core journals in the area of SSCM.

Table 2. Distribution of selected articles per journal.

Journal Name	No. Articles
<i>Journal of Cleaner Production</i>	39
<i>International Journal of Production Economics</i>	15
<i>Supply Chain Management: An International Journal</i>	15
<i>International Journal of Operations and Production Management</i>	13
<i>Business Strategy and the Environment</i>	12
<i>Journal of Business Ethics</i>	6
<i>International Journal of Physical Distribution and Logistics Management</i>	5
<i>Journal of Purchasing and Supply Management</i>	5
<i>Resources Conservation and Recycling</i>	5
<i>Resources Policy</i>	5
<i>Industrial Marketing Management</i>	4
<i>International Journal of Production Research</i>	4
<i>Benchmarking: An International Journal</i>	3
<i>Corporate Social Responsibility and Environmental Management</i>	3
<i>Journal of Environmental Management</i>	3
<i>Journal of Operations Management</i>	3
<i>Journal of Supply Chain Management</i>	3
<i>Sustainability</i>	3

The development and the shape of a research field depend on authors working in that research area. The investigation of co-authorship revealed that Joseph Sarkis published the most articles (14, or 6.5% of 217 articles) in the field of SSCM. Figure 4 presents the list of authors who have published, either individually or together with a research group, at least four articles in the research area of the drivers of SSCM. We found that 90% of the articles in the selected sample were from two or more authors, whereas 64% of the articles in the selected sample were from three or more authors. The average number of authors per article in the selected sample was 2.48 until the end of the year 2011. However, this increased to 2.93 from 2012 to 2016. The overall average number of authors per article is 2.86. This is far above the average authorship across all other research disciplines of 1.45 [30]. The higher average of the number of authors in SSCM is either due to the interdisciplinary nature of the research field or due to the involvement and interaction of different research groups within this research field.

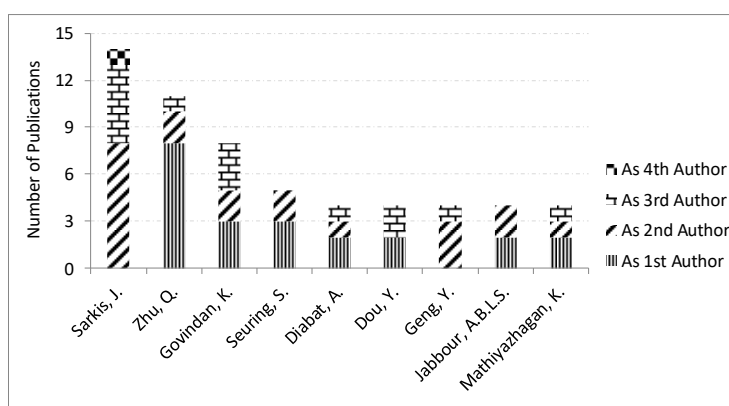


Figure 4. Distribution of authors who have published four or more SSCM-related articles.

In the context of the methodology applied, the content analysis of the selected journal articles helped to identify that a diverse range of methodologies were applied by different authors to address different research questions in their research work. We revealed that surveys were used as one of the leading methodologies to collect data in the field of SSCM. However, many authors applied multiple methods, and combined literature reviews with other methodologies. In this systematic literature review, multiple methodologies were counted individually and results for the top four methodologies are presented in Figure 5.

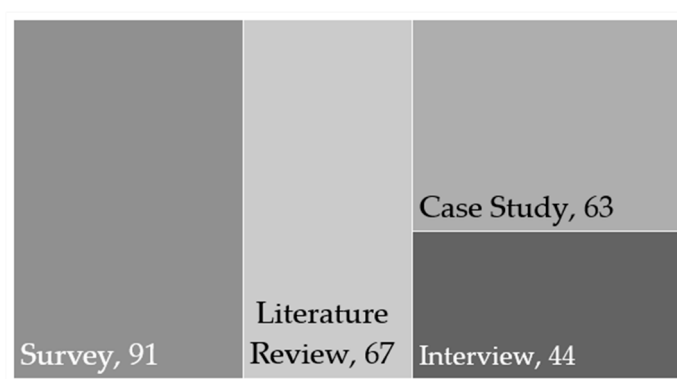


Figure 5. Distribution of research methodologies in selected journal articles.

Our systematic literature review revealed that not all articles in the selected sample addressed the three sustainability dimensions (i.e., environmental, social, and economic) of the TBL. Figure 6 depicts the findings and distribution of selected scientific journal articles in accordance with the three sustainability dimensions of the TBL. Of the articles, 67 (31%) addressed the TBL approach. However, the majority of articles (44 out of 67) addressing the TBL were published in recent years (between 2014 and 2016). This indicates increasing interest in the holistic sustainability approach in the context of SCM. We further revealed that 69% of the articles addressed at least one or two sustainability dimensions of the TBL. Environmental sustainability has been the center of attention in many articles, and here, the environmental sustainability dimension has been the most popular sustainability dimension so far: 95% of the research articles addressed the environmental sustainability dimension, either individually or together with other sustainability dimensions.

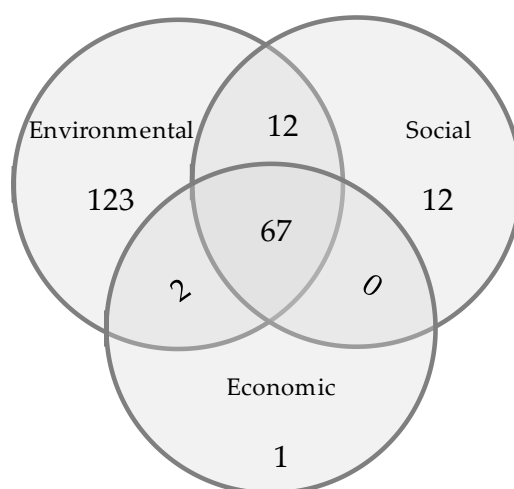


Figure 6. Distribution of selected journal articles across the triple bottom line (TBL).

The analysis of the geographical origin of the data sources identified that the majority of the research articles were from developed countries. Out of 217 articles, as presented in Figure 7, 129 (59%)

were from Organization for Economic Co-Operation and Development (OECD) member countries, whereas 88 (41%) were from non-OECD member countries. In terms of the number of research articles addressing sustainability issues from a specific country, developing countries such as India (26) and China (21) were among the overall top five countries. In addition, 67 research articles were from European Union (EU) member states, and 26 research articles were from the U.K., which composed 72% of the total research articles from OECD member countries. Research articles from India, China, and Brazil contributed 63% of the total research articles from non-OECD member states.

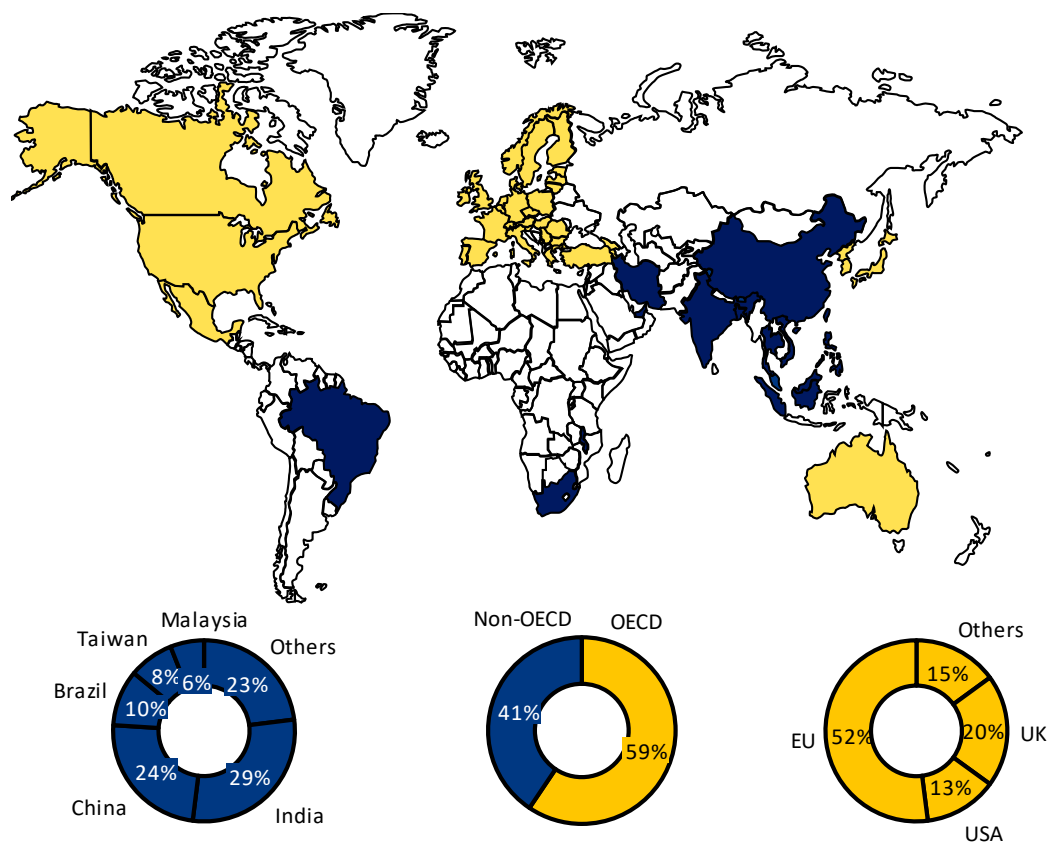


Figure 7. Geographical origin of research articles.

Of the research articles from developing countries, 85% were published between 2012 and 2016, which indicates that researchers have recently started focusing on sustainability issues in developing countries. Despite this increasing trend in addressing sustainability issues in developing countries, a clear gap still exists between developing and developed countries. The current research in SSCM is centered either around developed countries or a few developing countries like China, India, and Brazil. Therefore, to identify country-specific drivers of SSCM and to understand the importance of sustainability issues in the case of developing countries, further research is required from developing countries other than China, India, and Brazil.

An inquiry into the industrial sector considered within the research articles indicated that 19% of the selected research articles addressed more than one industrial sector. The content analysis also revealed that both the manufacturing and automotive sectors are experiencing more pressure, in general, to implement sustainability initiatives than others. We identified that 18% of the selected research articles addressed the manufacturing sector, and 8% of the research articles addressed the automotive sector, as presented in Figure 8. In the food-related industry, sustainability- and food-safety-related issues are attracting more attention [31], and 9% of the research articles addressed the food industrial sector. Other industries, such as textiles, electronics, services, and construction, were also significantly addressed in the selected sample.

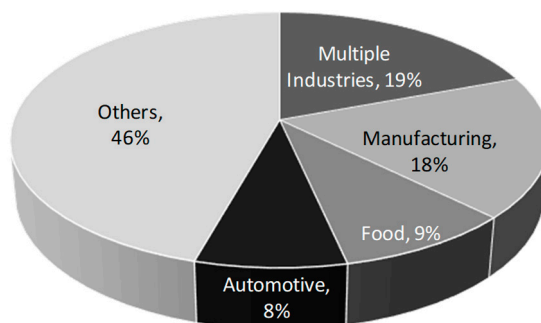


Figure 8. Distribution of selected journal articles according to the industrial sector considered.

4.2. Identification of Drivers of SSCM from the Scientific Literature

Drivers of SSCM encourage and enable organizations to introduce sustainability initiatives into their operations. For the identification of drivers of SSCM from scientific research articles, driver categories from Section 2.2. were followed. The literature analysis revealed that both internal and external drivers of SSCM can collectively motivate organizations to adopt sustainable supply chain initiatives. However, this research attempts to create a clear categorization of drivers of SSCM into external and internal drivers, as well as primary and secondary drivers. A clear understanding and definition of each identified driver of SSCM is provided to address the research gap. This information can be used by practitioners to prioritize their sustainability initiatives and achieve supply chain sustainability goals.

4.2.1. External Drivers of SSCM

As external coercive, normative, and socio-cultural pressures rise, organizations start implementing sustainability initiatives [1,21] to avoid disadvantages or penalties [3]. External (exogenous) pressures include aspects from outside the organization but have a significant influence on the organizations' internal actions. External drivers of SSCM initiate or motivate focal organizations in adopting sustainability practices [4,15], and are classified into three clusters: regulatory pressures, societal pressures, and market pressures, as described in Figure 9. In the external driver category, the systematic literature review clarified five drivers for regulatory pressures, six for societal pressures, and eight for market pressures.

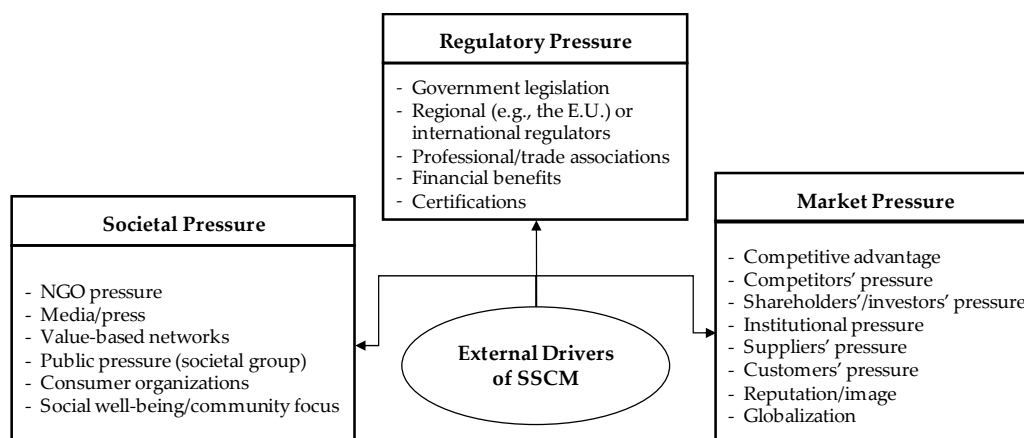


Figure 9. External drivers of SSCM.

Regulatory Pressures

Regulatory pressures are crucial to drive organizations to undertake sustainability initiatives. National, regional, or international regulators, as well trade associations and certification bodies,

exert pressure on organizations and their supply chains to adopt sustainability practices. The regulatory pressure category, as described in Table 3, includes pressures from government agencies, regional (e.g., the E.U.) or international regulators, certifications (e.g., ISO), trade/professional associations, and financial incentives [2].

The literature review affirms that formal and informal requirements enforced by governments [14], professional or trade associations [4], and other regulatory bodies (e.g., the E.U.) [32] influence organizations to undertake sustainability initiatives [3]. Government legislation is related to the needs of both existing and imminent regulations. Legislation helps to increase sustainability-related awareness, and influences organizations to adopt sustainability practices [14]. Any non-adherence to regulations may result in fines and trade barriers. In addition, organizations operating in more than one country have to analyze and comply with regulations from each country or the region (e.g., E.U.) where they operate to maintain their market share. Different countries and/or regions may impose different regulations.

Professional and trade associations play an important role in pressurizing organizations to adopt sustainability practices [4]. This additional pressure helps organizations to improve their sustainability performance. Although direct economic performance gains will probably take longer to visualize, improvement in non-economic (social and environmental) performance can instigate improvement in economic performance [4].

Some national and international standards and guidelines (e.g., International Organization for Standardization (ISO), Occupational Health and Safety Assessment Series (OHSAS)) assist organizations to enact sustainability practices within their operations [32]. Each standard is comprised of a set of procedures, and adherence to these procedures enables organizations to acquire certifications. The scientific literature states that certifications promote sustainable supply chain practices. Certified companies are more likely to adopt sustainability practices; for example, ISO 14001 certified companies are more concerned about their environmental sustainability performance [4]. Certifications also help organizations in improving their operational performance, as well as in gaining a competitive advantage and increasing market share [19,33].

Organizations are also influenced by financial incentives offered by external institutions for proactively adopting sustainability practices, such as tax exemptions for ISO 14001 certification [33]. However, some organizations undertake sustainability actions proactively, and exceed the regulatory requirements without considering financial incentives. Regulatory requirements for some industrial sectors are not yet stringent, and some organizations consider proactive behavior in adopting sustainability practices within their operations as their social responsibility [14].

Table 3. Regulatory pressures.

Regulatory Pressure	Definition
Government legislation	Government agencies are responsible for developing regulations related to labor relations, employment conditions, and environmental management [9,34]. Noncompliance to these regulations result in fines, penalties, or legal costs for organizations [1,4,23,35].
Regional (e.g., the E.U.) or international regulators	Organizations operating in more than one country are influenced by national as well as supranational (regional and international) regulations to adopt sustainability-related practices as proposed by legislators [4,9,32,34,35].
Professional/trade associations	Organizations experience pressure from various sets of requirements proposed by trade/professional associations. Non-compliance can lead to penalties and exclusion of the organization from the members' list. Compliance can lead to benefits such as access to international markets [4,25,34].
Financial benefits	Various incentives are introduced by national and international institutions to stimulate organizations' proactive behavior in adopting sustainability practices [1,24,36]. These are mostly in the form of financial incentives such as a tax exemption for obtaining ISO certification [33].
Certifications	Certifications such as ISO certificates are international voluntary standards designed to help organizations in achieving product- or service-related ecological and social requirements derived from the needs of customers and other stakeholders [4,19,24,33].

Societal Pressures

Different nonprofit organizations, such as NGOs and societal groups, and communication channels such as media and the press, help to increase public awareness and unite efforts to influence organizations and their supply chains to improve their sustainability performance. The societal pressure category, as described in Table 4, includes pressures from NGOs, media/press, societal groups (inhabitants, environmental organizations), value-based networks, consumer organizations, and the community [2].

Both NGOs and media/press help to raise mass consumer awareness regarding poor social and environmental practices by organizations [23,37]. The media disseminate sustainability-related information [19], and NGOs have the ability to mobilize and unite other stakeholders on sustainability issues [38]. In addition, value-based networks such as scientific communities can also influence organizations to adopt innovative approaches towards achieving sustainability goals. Both media reporting and public opinion regarding social and environmental misconduct by an organization results in a bad reputation, as well as fines from legislative agencies [36].

A growing interest from consumers, public pressure groups, and other community groups [7,23,31,34] in supporting responsible business practices has been observed. The demand for transparency in how organizations are addressing sustainability (environmental and social) related issues and opportunities has also increased. Increasing consumer awareness, and their association with societal groups and consumers' organizations, have made them more concerned about organizations' efforts in fulfilling local community expectations, and behavior in tackling issues like global warming and health and safety accidents [14,19,35]. In turn, organizations are under pressure to undertake sustainability initiatives to show their own sense of social responsibility.

Table 4. Societal pressures.

Societal Pressure	Definition
NGO pressure	NGOs raise awareness of bad environmental and social performance by organizations, and constantly exert pressure on them to adopt sustainability initiatives [14,23,31,37]. NGOs have the ability to unite a group of people or stakeholders on sustainability issues [35,38].
Media/press	Media exchange information, making and mobilizing public opinion [19,31,32,39]. Media reporting of sustainability issues can draw both public and government attention, resulting in a bad reputation as well as actions from government agencies against poorly performing organizations [36].
Value-based networks	Value-based networks, such as scientific communities and research centers, can also influence organizations to develop innovative approaches to consider sustainability in their products & operations [3,23,38].
Public pressure (societal groups)	Issues like 'global warming' have increased public awareness [36]. In turn, consumers' purchasing behavior is affected by organizations' sustainability performance. The public, in general, put pressure on organizations to adopt sustainability practices [1,9,14,19,23,25,31,35].
Consumer organizations	Due to the new forms of media and communication, consumers are more organized than before, and several consumer organizations exert pressure on organizations to adopt sustainability behavior [3,31,36].
Social well-being/community focus	Organizations face pressure to implement sustainability initiatives that help to fulfill local communities' expectations (e.g., parks, schools, charities, etc.) and the welfare of people who work for them [1,3,7,23,34].

Market Pressures

To gain a competitive advantage and develop sustainable technologies, organizations and their supply chains face pressure from different market factors, such as shareholders and suppliers. Market-related drivers mainly deal with sustainability issues concerning organizations' business performance, as well as relationship improvement [4]. The market pressure category, as defined in Table 5, includes pressures from downstream customers/consumers, as well as competitors, shareholders, suppliers and buyers, investors, reputation/image, and financial institutions [2].

Competition is considered one of the direct drivers for incorporating sustainability into the supply chain. Organizations, under the influence of external and internal pressures, adopt sustainability practices to gain a competitive advantage [16] by differentiating themselves from their competitors. Implementing sustainable product and process initiatives has become an important consideration in ensuring a global competitive advantage. In this regard, companies implement sustainability initiatives and manufacture sustainable products to meet their customers' requirements as well as to maintain competitiveness in the market.

Organizations may follow sustainability initiatives undertaken by their competitors [4,35]. Sustainability practices adopted by competitors place organizations under higher pressure (learning) to implement sustainability initiatives to achieve the same level of sustainability-related performance as competitors, with a focus on long-term economic sustainability [1,19]. In addition, demands and requirements from other stakeholders, such as shareholders and/or investors, encourage organizations (especially large organizations) to undertake sustainability initiatives [35,40]. Similarly, institutional pressure, such as from banks [20,25], forces organizations to address sustainability issues caused by their operations with the potential of cuts or suspension of credit if organizations are involved in unsustainable practices [20,36,37]. Suppliers in the supply chain can provide indispensable ideas for the implementation of sustainability actions [31,37,41]. Although suppliers in the supply chain are one of the smaller forces driving the adoption of sustainability practices, they have a pivotal role in the incorporation of sustainability initiatives throughout the supply chain network [40,42].

Table 5. Market pressures.

Market Pressure	Definition
Competitive advantage	Organizations improve their social and environmental performance or develop environmentally friendly technologies to gain a competitive advantage [24,31,34,43] over their competitors.
Competitors' pressure	Similarly, organizations are under strict scrutiny from their competitors. Competitors leading in adopting sustainability practices are able to set industry norms, which may result in extra pressure on other organizations to follow [1,4,19,35,37].
Shareholders' /investors' pressure	Organizations face pressure from shareholders and investors in the implementation of sustainability initiatives [19,34,35,42]. Investors can withdraw investments due to bad sustainability performance [31,36,37].
Institutional pressure	Organizations face institutional pressures from banks, financial institutes, and other stakeholders to adopt sustainability practices [7,25]. For example, banks may cut or suspend credit if an organization is involved in poor environmental or social practices [20,31,37].
Suppliers' pressure	Supplier participation is critical in achieving sustainability goals across the supply chain [9,42]. They exert indirect pressure, and help organizations with implementing sustainability-related ideas [19,23,31,37].
Customers' pressure	Consumer demand for sustainable products has increased the pressure on organizations to adopt sustainability practices within their upstream and downstream supply chains [7,19,23,24,41,42].
Reputation/image	Organizations implement sustainability initiatives to fulfill stakeholders' expectations so that the organization's sustainability image improves [7,34,37]. A positive brand image not only lifts the morale of the employees but also increases the sales of organizations [1,9].
Globalization	Globalization has pressured organizations to implement sustainability practices across their entire supply chain [33,34]. The access to different markets has given more choice and freedom to customers, and they are less dependent on a single product or supplier [8].

Customer pressure, a form of core normative pressure, motivates organizations to improve their sustainability performance [14,23]. Organizations place considerable importance on customer demands in order to achieve customer satisfaction. The literature states that adoption of sustainability practices is positively correlated with higher customer satisfaction [7,40]. Non-fulfilment of customers' requirements may result in the loss of additional customers, which, in turn, affects the economic performance of organizations [4,24]. Managing sustainability-related issues is important for organizations that receive value from their brand recognition and reputation [34,40]. Reputation as a

market leader in implementing sustainability initiatives means an organization serves as a role model for competitors, and this increases employee morale as well as sales [1,9].

Exports and sales to different international customers have the potential to persuade organizations to adopt sustainability practices [8,40]. Globalization not only increases institutional and customer pressure on organizations to implement certain sustainability practices across their supply chain network, but also provides opportunities to learn from global competitors regarding sustainability actions [1,4,33].

4.2.2. Internal Drivers of SSCM

Internal drivers of SSCM include organizational-related [40] factors that are supported by efficiency objectives [41] and corporate values, as well as by corporate responsibility objectives [14]. Internal (endogenous) drivers of SSCM were identified from the systematic literature review and classified according to four clusters, as described in Figure 10: corporate strategy, organizational culture, organizational resources, and organizational characteristics. Four drivers of the corporate strategy, five drivers of the organizational culture, six drivers of the organizational resources, and six drivers of the organizational characteristics were identified and described.

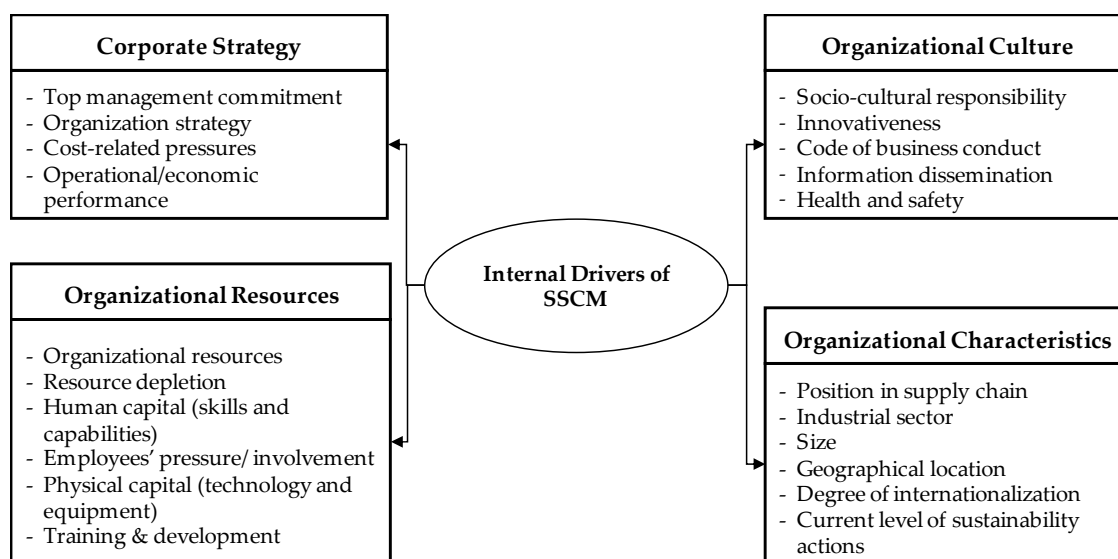


Figure 10. Internal drivers of SSCM.

Corporate Strategy

The operational and economic SSCM-related goals can only be achieved by ensuring internal support within the organization and by setting strategic sustainability performance-related targets. The corporate strategy driver category, as presented in Table 6, includes top management commitment, the organization's sustainability strategy, cost-related pressure, and operational performance [2].

Top management awareness of sustainability is crucial for understanding the sustainability-related pressures from stakeholders, triggering the implementation of sustainability practices within the organization as well as across the supply chain network [25,40]. If the top management of the organization is convinced of future benefits, achieving sustainability throughout the supply chain becomes the priority [24], as top management is responsible for defining the vision and policies for the organization and communicating these policies to employees within the organization [9]. Therefore, support from top management is considered a significant step in achieving supply chain sustainability.

Consumers' sustainability awareness and intention to buy sustainable products can encourage organizations to adopt a sustainable corporate strategy, whereas top management defines corporate strategy and incorporates sustainability related goals within the strategy [3,33]. The organization's

strategy is a link between the external and internal sphere, in which it helps to align external demands and internal resources to achieve SSCM goals [9].

Addressing sustainability-related issues and adopting sustainability practices enable organizations to save costs by conservation of energy, water, and materials [19,41]. In turn, organizations increase their profit [36] and improve their sustainability performance [3]. Cost reduction, increases in customer satisfaction and organization reputation, and higher profits due to the adoption of sustainability practices produce better economic and operational performance, motivating organizations to implement sustainability practices [1,3,14].

Table 6. Corporate strategy.

Corporate Strategy	Definition
Top management commitment	The top management's commitment is the internal political force that supports proactive sustainability behaviors as well as successful implementation of sustainability initiatives [19,24,25,31].
Organization strategy	Sustainability-related issues must be incorporated in the organization's strategy and the mission statement. The organization's strategy acts as a driver for the implementation of sustainability initiatives within the organization [3,9,33].
Cost-related pressure	One of the most desirable drivers for implementing sustainability initiatives is cost reduction [19,41] in the form of energy savings, reduction in material consumption [36], and increased efficiency [3], as well as profit [36].
Operational/economic performance	To achieve the goals of better economic and operational performance, organizations are pressured to implement sustainable strategies that provide long-term monetary benefits [1,3,14].

Organizational Culture

Deterioration of the environment and poor corporate social responsibility have increased public awareness and demand for sustainable products and/or services. The moral obligations of organizations toward society and their obligations to meet stakeholders' expectations influence organizations and their supply chains to adopt sustainability practices. The organizational culture driver category, as described in Table 7, includes information dissemination, innovativeness, health and safety issues, and the organization's code of conduct [2].

Table 7. Organizational culture.

Organizational Culture	Definition
Socio-cultural responsibility	The moral obligation of an organization in the society where it operates, represented by voluntary efforts to achieve harmony with social expectations and norms [1,36].
Innovativeness	An organization's willingness to change and improve the existing sustainability practices, involving the generation of new ideas to reach sustainability goals that also drive the organization toward adopting sustainability practices [38,42].
Code of business conduct	Provides common and standardized decisions, procedures, and systems that meet the expectations of its stakeholders [40,44].
Information dissemination	The sharing of sustainability related information internally and externally is a prerequisite for implementing sustainability practices. It helps generate new ideas and promote collaboration within the supply chain [3,36].
Health and safety	Organizations face pressure from different stakeholders (such as NGOs and media) to report and reduce work-related health and safety incidents [9,36].

Socio-cultural responsibilities are the moral obligations of an organization in the society where it operates [1]. The increase in public pressure forces organizations to reexamine their supply chain operations pertaining to sustainability issues, but it has provided opportunities for organizations to reach new customers interested in buying sustainable products, as well as to improve their image as a sustainable organization [36]. Product and process innovativeness are seen as evidence of an organization's willingness to change and improve existing sustainability practices to reach

sustainability goals [38,42]. Although these innovations have strategic benefits, management should plan for an initial downturn in economic benefits [4].

Regulators, as well as other intergovernmental bodies, such as the United Nations (UN) and international labor organizations, have developed guidelines to define acceptable business conduct. An organization's code of business conduct is an internal driver in implementing sustainability initiatives in accordance with national and international laws and guidelines to meet stakeholders' expectations [40,44]. However, the sharing of information internally and externally is a prerequisite for achieving higher sustainability objectives. Information sharing is considered a driver for the implementation of sustainability practices as it can lead to the generation of new sustainability-related ideas and provide a competitive advantage by increasing collaboration among supply chain partners [3,36].

Work-related health and safety issues have always been a topic of attention. Organizations face pressure from different stakeholders (NGOs, media, employees, etc.) to reduce work-related health and safety incidents [7,9]. This, in turn, helps to increase the overall sustainability performance of organizations.

Organizational Resources

Organizations, due to scarcity and provision of natural resources, face pressure to undertake sustainability initiatives across their supply chains. The organizational resource driver category, as described in Table 8, includes the organizational resources, organizational capabilities, physical capital (technology and equipment), human capital (skills and capabilities), and employees [2].

Table 8. Organizational resources.

Organizational Resources	Definition
Organizational resources	The provision of adequate resources drives an organization's sustainability initiatives [3,9,24] and encourages the adoption of sustainability practices.
Resource depletion	One of the main drivers for adopting sustainability practices, and organizations face pressure to undertake the most efficient use of natural resources [3,36].
Human capital (skills and capabilities)	Organizations that have already adopted sustainability practices gain better professional expertise and capabilities in sustainability management, which encourage them to further implement sustainability-related actions [3,19,36].
Employees' pressure/involvement	Employees of an organization either act alone or through their unions to pressure organizations internally to adopt sustainability practices [31,36,37].
Physical capital (technology and equipment)	New technology and equipment are important factors in process innovation, helping organizations to successfully implement sustainability practices across the supply chain to enhance their sustainability and operational performance [3,9].
Training & development	Cross-functional training and education helps organizations to increase their sustainability-related performance [41], as well as support employees to update their skills, improve job performance, and decrease errors and waste [45,46].

The allocation of organizational resources for the implementation of sustainability practices plays a central role. The management of the organization should provide adequate resources to drive the organization's sustainability initiatives [3,9,24]. The scarcity and depletion of natural resources is considered one of the main drivers for adopting sustainability practices. Resource scarcity and depletion have influenced organizations across all industrial sectors to take action to improve their sustainability performance, as well as their efficient use of available natural resources [3,7,36]. Organizations that have already adopted sustainability practices are gaining better professional expertise and capabilities in sustainability management, which act as drivers for other organizations within or outside the supply chain to achieve the same level of human resource capabilities as that of their partners and competitors [3,19,36].

Within the organization, employees are considered one of the main internal drivers of adopting sustainability practices. Employees or their unions can pressure organizations to undertake

sustainability initiatives to improve the sustainability performance of their organization [31,36,37]. Walker et al. [19] stated that employees involvement positively influences the sustainability performance of organizations and their supply chains. Cross-functional training and education helps employees update their skills, and therefore decrease errors and waste [45,46], helping organizations to increase their sustainability-related performance [41] and reduce the number of job-related health and safety incidents [13].

Organizational Characteristics

Organizations from different industrial sectors, based on their geographical location and size, face a diverse range of pressures from various stakeholders to implement sustainability initiatives within their organizational boundaries and across their supply chains. The organizational characteristics driver category, as described in Table 9, includes organization size, the current level of environmental actions, the degree of internationalization, geographical location, position in the supply chain, and industrial sector [2].

Table 9. Organizational characteristics.

Organizational Characteristic	Definition
Size	Different sized organizations face different problems in implementing sustainability initiatives. Large organizations face more internal pressure from employees as well as external pressures from media, regulatory, and social organizations [7,20,31].
Industrial sector	Organizations competing in one industrial sector experience a different set of demands and associated risks than organizations from other industrial sectors [9,25,31], and require a different set of sustainability initiatives.
Position in supply chain	Has a direct influence on their proactive sustainability behavior. Downstream organizations may face more pressure to adopt sustainability practices [14,25].
Geographical location	Organizations need to obey the laws in the countries of operation [25] as some countries might have more stringent regulations related to environmental and social practices than others [7,31].
Degree of internationalization	Multinational organizations receive more pressure to adopt sustainability practices [25]. International organizations must define their strategies according to their country of operation [31].
Current level of sustainability actions	Organizations with a higher level of sustainability performance experience relatively less stakeholder pressure compared to organizations with low sustainability performance scores [3,9].

The firm size directly influences decisions involving sustainability. Firm size can be measured by the number of full-time employees working in the organization [22,37]. Due to their size, large organizations have to manage more sustainability-related issues compared with small organizations [9] and experience higher pressure to improve their sustainability performance [4,7,20]. However, small organizations face more pressure from competitors [4] and customers [40]. Different industrial sectors have different requirements for sustainability performance assessment. Organizations from one industrial sector might have different expectations from their stakeholders compared to organizations working in other industrial sectors [9,25,31].

Focal organizations face external supply chain pressures and develop relationships with suppliers to achieve sustainability goals. Therefore, the position of an organization in the supply chain is considered a vital driver of SSCM, as it directly influences the sustainability-related behavior of organizations. As stated in the literature, downstream supply chain participants may face more pressure to adopt sustainability practices compared to upstream supply chain partners [14,25]. However, pressure is simultaneously transferred immediately to upstream supply chain participants [31,34].

The geographical location is one of the main drivers when selecting an operational site [31]. Organizations need to obey the laws of the country in which they operate [25], as some countries have stricter ecological and social regulations compared to others [7,31]. Cross-border trade raises concerns

related to environmental and social practices (e.g., issues related to environmental degradation, health and safety, and human resource practices) of multinational organizations and global supply chains [40]. Organizations face pressure by customers and other shareholders to meet the same high level of social equity and environmental preservation everywhere they operate. An organization with more international operations experiences relatively more pressure to adopt sustainability practices compared to organizations with no international presence [25,31]. Organizations with better sustainability performance experience lower stakeholder pressure, whereas organizations with a low level of sustainability performance that have not implemented any sustainability initiatives experience more stakeholder pressure [3,9].

4.3. Number of Occurrences of Drivers of SSCM in the Systematic Literature Review

In the course of the systematic literature review, drivers of SSCM were identified, extracted, coded, and documented to perform a frequency analysis to determine how often drivers of SSCM appeared in the scientific literature. This frequency analysis yielded an excellent understanding of the drivers of SSCM. The precise interpretation, clear definition, restructuring, and classification led to a list of 40 unique drivers of SSCM. Table 10 depicts the frequency distribution of each driver of SSCM cited in the scientific journal articles considered for this systematic literature review. The table documents the number of occurrences of drivers of SSCM in selected articles for each driver category. Table 10 provides information about the number of times in total a driver category has been cited in the selected sample. However, equal weights were assigned to each driver of SSCM in this research paper, with no priority given to any driver category.

Table 10. Number of occurrences of drivers of SSCM in selected journal articles.

		External Drivers (1022)				Internal Drivers (537)		
		Regulatory Pressures (323)	Societal Pressures (204)	Market Pressures (495)	Corporate Strategy (220)	Organizational Culture (114)	Organizational Resources (111)	Organizational Characteristics (92)
Primary Drivers (1029)		Government legislation (134)	Consumer organizations (14)	Competitive advantage (62)	Top management commitment (62)	Health and safety (10)	Organizational resources (32)	Industrial sector (18)
		Professional/trade associations (19)	Media/press (22)	Shareholders'/investors' pressure (29)	Organization strategy (37)	Socio-cultural responsibility (50)	Resource depletion (16)	Geographical location (3)
		Regional (e.g., the EU) or international regulators (115)	NGO pressure (70)	Suppliers' pressure (40)	Cost-related pressure (68)	Innovativeness (17)	Employees' pressure/involvement (21)	Position in supply chain (13)
Secondary Drivers (530)		Certifications (33)	Public pressure (societal groups) (56)	Competitors' pressure (53)	Operational/economic performance (53)	Code of business conduct (14)	Training & development (14)	Size (17)
		Financial benefits (22)	Value-based networks (5)	Customers' pressure (196)		Information dissemination (23)	Physical capital (technology, equipment) (10)	Degree of internationalization (12)
			Social well-being/community focus (37)	Institutional pressure (34)			Human capital (skills and capabilities) (18)	Current level of sustainability actions (29)
				Reputation/image (53)				
		Globalization (28)						

Frequency of each driver is given in the parenthesis. Primary drivers are represented in the table with grey background.

For the external driver category, 19 drivers of SSCM were cited 1022 times in this systematic literature review. Regulatory pressures were cited 323 times, societal pressures were cited 204 times, and market pressures were cited 495 times. The top three drivers in terms of total number of citations in the external driver category were government legislation (cited 134 times), regional (e.g., the E.U.) or international regulations (cited 115 times), and customer pressure (cited 196 times).

For the internal driver category, 21 drivers of SSCM were cited 537 times. Corporate strategy was cited 220 times, the organizational culture was cited 114 times, the organizational resources were cited 111 times, and the organizational characteristics were cited 92 times. The top three drivers

of SSCM (in terms of a total number of citations) in the internal driver category were cost-related pressures (cited 68 times), top management commitment (cited 62 times), and operational/economic performance (cited 53 times).

This systematic literature review not only distinguished drivers of SSCM into external and internal driver categories, but also into primary and secondary driver categories. In terms of the total number of citations, 66% were primary drivers and 34% were secondary drivers. Table 10 further shows that the primary driver category is often driven by internal regulations, customer pressure, and top management commitment. The secondary driver category is often driven by NGOs and general public pressure.

5. Conclusions and Outlook

The aim of this study was to conduct a detailed analysis of the scientific literature to identify, define, and categorize drivers of SSCM. We attempted to understand the roles of drivers of SSCM in adopting sustainability practices. At first, drivers of SSCM were identified from two scientific databases—*Science Direct* and *Web of Science*—and defined holistically to support practitioners and academics with how they might be influenced by the expectations and sustainability pressures from various stakeholders. Identification, precise interpretation, restructuring, and standardizing led to the identification of 40 unique drivers of SSCM. To understand each driver's unique importance for organizations and their supply chains, despite their shared final goal to pressure organizations to adopt sustainability practices, two different classification approaches were identified. Drivers of SSCM, based on their degree of influence, were categorized into external driver and internal driver categories; based on their level of access to supply chain knowledge and value-contribution, were categorized into primary and secondary driver categories.

The findings of this research work identify priorities provided by scientific authors to various drivers of SSCM in implementing sustainability initiatives. At first, studies revealed that external drivers exert more pressure on organizations and their supply chains than internal pressures for the adoption of sustainability practices. In the external driver category, the drivers of SSCM in the regulatory pressure cluster are the most essential factors among all the identified drivers of SSCM. Organizations under the influence of regulatory pressures undertake sustainability initiatives to avoid penalties or developing a bad reputation. International/regional regulatory pressures force organizations to ensure they are fulfilling certain environmental and social requirements [1]. The literature review also revealed that some drivers of SSCM are more influential in pressuring or encouraging organizations to implement sustainability practices by addressing only one sustainability dimension. Others motivate organizations to adopt sustainability practices across all three sustainability dimensions [19]. Regulatory pressures increase the non-financial sustainability performance but might cause, in the short run, poor economic performance in terms of the investment recovery [4]. In the market pressure cluster, customer pressure and reputation were identified as primary reasons for adopting sustainability practices [40]. Reputation, as a market leader in undertaking sustainability initiatives, leads an organization to serve as role models for other organizations [1]. Additionally, supplier participation in sustainability programs and their relationship with the focal organizations were considered important aspects in the adoption of SSCM. The literature review revealed that organizations face pressures from societal groups and public communities to adopt sustainability practices. The top three drivers in the external driver category in terms of total number of citations were government legislation, regional (e.g., the E.U.) or international regulations, and customer pressure.

In the internal driver category, drivers of SSCM in the corporate strategy and the organizational resources clusters are the most essential factors among the identified drivers of SSCM. However, in the corporate strategy cluster, top management commitment and the organization strategy are among the most important internal factors that encourage supply chain participants to initiate and implement sustainability initiatives. Commitment from top management includes setting sustainability

policies, training employees for sustainability, and providing resources for implementing sustainability initiatives. The adoption of sustainable product and process innovations not only increases an organization's sustainability performance, but also gives them a competitive advantage [40]. The size of the organization may affect adoption of sustainability practices, as different internal and external pressures may influence organizations of differing sizes differently. In the case of large organizations, market and regulatory pressures may have a greater influence. In the case of smaller organizations, competitive pressure may have more influence. Due to their size, it is possible for small companies to completely reshape their supply chains to adopt sustainability practices under the influence of external and internal pressures [14]. Research could be expanded in this area by classifying drivers of SSCM according to their effect on organizations' adoption of sustainability actions, with respect to organization size. The top three drivers of SSCM in the internal driver category in terms of total number of citations were cost-related pressures, top management commitment, and operational/economic performance. Cost reduction pressure promotes savings in operational costs and ultimately improves profit margins.

Sustainability has become a globally important issue. However, in developing economies, despite the rapid growth in markets, for businesses, socio-economic and political realities are different from those of developed economies. In turn, there is a distinguishing set of sustainability challenges for organizations in developing countries that are collectively different to those faced by organizations in the developed world. Globalization has provided opportunities for organizations from developing countries to adopt sustainability practices from their customers and their competitors. Competition allows those involved to learn about the implementation of environmental practices in a cost-effective way, expanding upon the economic benefits. Based on the findings of this research, each driver of SSCM appears to influence organizations individually. However, collaboration among two or more drivers can reinforce their influence. For example, NGOs and media alone do not appear as influential in this literature review, but together may have more influence than many of the other prominent drivers of SSCM [16]. It is vital for managers to consider the context of each pressure within a specific industrial environment, to improve their organization's social and ecological image, and increase long-term economic benefits [4].

The findings of the literature review revealed that, due to differing stakeholder requirements, both geographical origin and industrial sector play significant roles in setting the relative importance of different drivers of SSCM, as some industrial sectors face stricter regulatory and societal requirements than others. Similarly, some countries pose more stringent regulations for social and ecological practices than others. We also identified that, in recent years, the research focus in SSCM has shifted from individual supply chain functions toward network supply chain issues. In addition, the current research in SSCM is centered either around developed countries or a few developing countries, like China, India, and Brazil. To identify country-specific or geographically significant drivers of SSCM and to understand the sustainability-related issues of importance further research from developing countries other than China, India, and Brazil is required.

Sustainability in the context of the supply chain presents challenges as well as opportunities for organizations and their supply chains. The adoption of the correct sustainability initiatives within the operations of organizations and their supply chains poses a significant challenge to decision makers. Comprehensive decision-making leads to better performance; however, decision makers have blind spots in terms of sustainability-related decisions [3]. Management of the organization needs to be aware of external and internal pressure for the implementation of sustainability initiatives [4]. This literature review identified a multitude of articles covering the external and internal drivers of SSCM, but the information regarding these drivers is fragmented and limited in clearly defining and explicit categorization of the drivers of SSCM. However, this literature review is an attempt to reduce this gap by providing a consolidated and coherent list of drivers of SSCM, along with clear definitions and taxonomy of these drivers. Both academics and practitioners can obtain knowledge about the drivers of SSCM and understand their current landscape. The findings of this research may assist

decision makers in devising their organizational strategies to improve their sustainability performance by setting sustainability objectives in accordance with the priorities established by different drivers of SSCM. However, a clear interpretation and understanding of sustainability-related issues of importance identified by drivers of SSCM is required for achieving improved and consistent sustainability goals. The findings of this research work are also relevant for legislators and stakeholders in general, who can find details concerning different sustainability drivers considered by organizations and the extent to which they are considered in developing sustainability strategies.

Many improvements could be undertaken to extend this research work. Although employing research articles from two databases (Science Direct and Web of Science) has led to data saturation and an increased number of repetitions, considering other databases (such as Scopus and Springer) might add value and increase the comprehensiveness of this research. The systematic literature review was applied due to its significance, but the research could be expanded by implementing other research analysis techniques. This research can be extended by reviewing research articles published in languages other than English, and by considering other sources of mass media such as books, conference proceedings, and magazines, which might reflect other drivers of SSCM. Future research to identify industry-specific drivers of SSCM, as well as geographically significant drivers of SSCM, is also required. The current list of drivers of SSCM developed in this research may be upgraded after successful research and development of new drivers of SSCM.

This literature review has neither assigned priority to a driver of SSCM nor to a driver category. We assigned equal weights to each driver, and analysis was based on the number of citations for each driver of SSCM in the selected scientific literature. Therefore, an infrequently cited driver of SSCM might be shown here to have more influence than other highly cited drivers in the literature. For this reason, this phenomenon should be further investigated and the findings of this frequency analysis empirically verified to rank drivers of SSCM according to their degree of influence, as well as to analyze their interconnectedness. Another area of future research would be to focus more on objective data for each sustainability dimension, and identify drivers for environmental, social, and economic sustainability performance. This literature review suggests that implementing sustainability practices improves the sustainability (social, environmental, and economic) performance of supply chains. However, future research investigating the moderating effects of drivers of SSCM on the relationship between adopting sustainability practices in the supply chain and sustainable supply chain performance might add further value to the scientific research.

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