

Review

# Sustainable Supply Chain Management—A Literature Review on Emerging Economies

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**Abstract:** In recent years, the interest in sustainable supply chain management has increased significantly in both business and academic areas. This is reflected in the growing number of articles, conferences, special publications and websites devoted to the subject. Nonetheless, sustainable development in emerging economies just started gaining importance. The objective of this article is to review, from a global perspective, the existing literature regarding sustainable supply chain management (SSCM) in emerging economies. For this purpose, a systematic literature review was performed, analyzing 56 articles from the year 2010 to April 2020 from a descriptive and content approach. Subsequently, the results are presented, showing the increasing interest in SSCM, however lagging behind in emerging economies' research versus developed ones. Findings indicate the context in developing countries plays an important role when conducting empirical or case study investigations. Additionally, the integration of the three dimensions of sustainability and how they impact supply chain performance becomes crucial to research from an emerging economy perspective. Consequently, limitations of this work are presented, and opportunities are identified for future lines of research, in particular in key supply chain functions. Finally, the conclusion confirms the need for further research from different supply chain viewpoints, such as collaboration, sustainable practices innovation, sourcing and supplier development from emerging countries' standpoint and background.

**Keywords:** sustainable supply chain management; sustainability; supply chain; emerging economies; developing countries; emerging market; literature review

## 1. Introduction

Nowadays, organizations are under pressure to demonstrate sustainable development in their operations, and these demands are coming from consumers, government, media, investors and stakeholders [1–4]. Furthermore, it is becoming clear that a traditional approach towards operations is not sustainable, and organizations must adapt their processes to comply with regulations and achieve sustainability [5]. This has resulted in companies being identified as a means to facilitate the implementation of sustainable practices [6], besides the need to meet the interests of stakeholders and generate competitive advantage for their business [7].

Sustainability has been interpreted by industry and literature through different terms and approaches. However, the common theme that arises from different definitions presented by researchers and professional organizations is the concurrent approach in its three dimensions of performance: Economic, environmental and social.

An important factor in the promotion of sustainability in organizations and an area of interest in current research is sustainable supply chain management (SSCM) [8–11]. Moreover, sustainability is one of the most important topics in the field of supply chain management and organizations are increasingly considering it in their long and short term decisions [12,13]. Authors like Carter and Rogers [14], Seuring and Müller [15], and Ahi and Searcy [16], have defined SSCM and converged on the importance of integrating sustainable development initiatives with supply chain management (SCM) for present and future improvements of organizations. Furthermore, rapid changes in customer demand patterns, competition growth, and pressures from governments and other stakeholders groups have encouraged most companies to adopt sustainable practices in supply chains [17]. Likewise, there is a growing need to understand how a company can participate with key parties within its supply chain (SC) to increase focus on sustainability [18]. Additionally, there is a worldwide increasing trend in literature review research on SSCM issues in combination with different related topics [19–22]. Carter and Washispack [9] performed a systematic literature review (SLR) of SSCM, and highlighted the increasing number of papers targeting to provide an overview and evolution of this subject.

Emerging economies is another topic of increasing research and industry interest, as these economies have become key players in supply chains, mainly due to market globalization and worldwide operations [23]. Even though literature being researched refers mainly to developed countries, it is expanding and integrating sustainability, the supply chain and emerging economies [24]. Jia, et al. [25] presented a systematic review on SSCM practices in developing countries and concluded there is a strong need to research trends and pathways to achieving sustainability in emerging markets. Likewise, Geng, et al. [26] conducted a literary review and identified articles that surveyed manufacturing companies in Asian emerging economies within a green supply chain context; concluding that research is growing but empirical evidence is needed in this domain, and that it is needed to explore SSCM practices and their impact on firm performance. Furthermore, organizations are required to develop global SSC considering individual country's characteristics, identifying specific variables that influence their performance and opportunities that create value throughout the SC in collaboration with other emerging regions worldwide [27].

Therefore, due to the rising concern about sustainable development in emerging economies, it is necessary to conduct research on sustainable initiatives [28] and identify key challenges in emerging countries so that any sustainable supply chain increases the efficiency and effectiveness of its operations from the three dimensions of sustainability: Economic, environmental, and social [29].

Therefore, the objective of this literature review is to present current concepts and trending topics on sustainable supply chain management in emerging economies. For this purpose, a systematic literature review published from 2010 to April 2020 is carried out. This time span provided the latest trends and evolution in research relevant to the topic in fact 91% of the papers were published from 2016 onwards. A systematic literature review was chosen due to its transparent and replicable characteristics, as well as its identification of research gaps and occurrence for further investigation [30]. This review analyzes the literature from descriptive and content standpoints, to assess advancement, and emphasize the areas of further research required. Thus, this study aims to answer the question: How has SSCM research evolved in emerging economies?

For this purpose, the present review is organized as follows: A literature review, including different concepts and definitions, is presented in Section 2; the methodology description is provided and discussed in Section 3, followed by Section 4 which presents the descriptive and content analysis of the investigation. A discussion on the topic, findings, and recommendations for future research are provided in Section 5, and finally Section 6 presents a brief conclusion.

## 2. Background

Literature repeatedly claims organizations and businesses need to implement initiatives towards environmental and social principles that promote sustainability [31]. Empirical evidence, case studies,

and literature reviews indicate that to achieve sustainable performance improvement, practices from a triple bottom line approach must be integrated along the supply chain [32,33]. Research in emerging economies has argued sustainable solutions and managerial involvement are essential to eliminate losses across supply chain operations and improve business performance [34]. Demands from government regulations and stakeholder expectations have provoked SSCM attention, and stimulated research to examine strategies on SSCM practices implementation in emerging economies [35].

### *2.1. Sustainability Playing a Critical Role in Prosperity*

Sustainability has emerged from concerns about the depletion of natural resources for future generations [5] and has evolved to be considered the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [36] (p. 16). This definition of sustainability from the Brundtland Commission states the importance of future generations, in such a way that it highlights enduring plans [14]. Zailani, Jeyaraman, Vengadasan and Premkumar [3] recognized sustainability as the equilibrium between “economic development, caring for the environment and social equity” (p. 331). In 2013, the Council for Supply Chain Management Professionals (CSCMP) made an update of its definitions, providing the concept of sustainability as a business effort to comply with sustainable development elements, taking into account stakeholders requirements and corporate social responsibility. [37]. Other authors have chosen to define sustainable performance as a term related to results that measure the intersection of the three dimensions [14,38]. According to Bateh, et al. [39], there are multiple definitions found in academic journals, suggesting that sustainability should incorporate a long-term vision and maintain a general purpose. Despite the different definitions in literature, the most noticeable and consistent notion is the inclusion of the three dimensions and the guarantee of future evolution [15]. Still, academic authors have mainly adopted the definition of sustainability provided by the commission of the United Nations in Brundtland [36]. These definitions help in understanding the concept, which includes not only environmental aspects, but also economic and social ones.

The concept of sustainability has also been called the “triple bottom line” (TBL), which consists of the intersection of the three components of the TBL (economic, environmental, and social) [14]. This concept appeared when it was recognized that companies focused mainly on economic topics and gave little or no consideration to their environmental and social issues. Nowadays, performance of the TBL can be sustained by firms’ and their suppliers’ processes and practices, listening to customers, and meeting market demands [40].

Another concept in this arena, is the partial sustainability that can result from the intersection of two of the TBL components [41] or even just one of them being practiced. From this perspective, each dimension has its own emphasis. The environmental dimension of sustainability is related to the natural environment, which includes land, water, plants, and animals. Around the world, accomplishing environmental sustainability is observed as an urgent matter due to its direct relationship to mankind’s survival [42]. The social dimension of sustainability is related to human capital; improving this dimension involves developing and implementing practices that are fair and favorable for workers, the community, and the region where the company operates [43]. The economic dimension of sustainability is related to the economic benefits acquired by members of the chain, including the community, the region, and the nations where the operations are carried out [44].

Therefore, sustainable development has globally become an imperative objective due to its key role in economic, environmental, and social prosperity [45]. Furthermore, due to increased external pressures, organizations are required to implement sustainable practices to improve supply chain efficiency and increase competitiveness [40].

### *2.2. Sustainable Supply Chain Management in the Global Context*

Supply chain management (SCM) early emphasis was the fast and reliable supply of raw materials and finished products to customers. As a result, the efficient operation, and continuous flow of

products and information along the chain was an everyday challenge. In addition, companies were looking for ways to minimize waste, not for social or environmental reasons, but for economic ones [46]. Furthermore, traditional supply chain literature perceived suppliers as nonstrategic, and the focal company's strategy involved using the company's purchasing control [47]. As a result, a usual definition of SCM included the "supply chain activities associated with the transformation and flow of goods and services, including business attendant information flows from the sources of materials to the end users" [48] (p. 48).

However, now a days SCM plays an essential role in global economies, and thus requires a comprehensive assessment, underlining the relationships between its participants [49]. As a consequence, organizations that have managed their supply chain operations have encountered ways to respond and recover from potential global risks [50]. Hence, SCM has moved to more complex scenarios, not only pursuing economic benefits but also including sustainable development in its operations [51].

As a result there has been an increasing interest about SSCM among researchers, academia, and managers [52]. Also, SSCM practices are becoming a widespread business trend for sustainable development in industry [53]. This need for sustainability achievement and improved supply chain performance in organizations has encouraged sustainable supply chain (SSC) development, which encompasses operations from a three dimensional approach (economic, social, and environmental). Kim, et al. [54] defined the SSC as "a supply chain that not only simultaneously makes a profit and achieves its potential, but it is one that also is responsible to its consumers, suppliers, societies and environments by innovative strategic, tactics and management technologies" (p. 8); this is a supply chain integrating sustainable development and operating under the three dimensions of sustainability. Nonetheless, more than a decade ago researchers combined the management of a SSC to define SSCM [55], to meet the objectives and overcome the challenges of sustainable development, and incorporate the means in which tools and techniques are used to achieve it. The earliest approaches focused on environmental issues and associated topics, such as green design, ecological products, and green supply chains [48]. Afterwards, literature reviews identified different definitions on SSCM [56,57], where groups of authors emphasized the importance of the three sustainable dimensions and underlined the significance of coordination, cooperation, and collaboration throughout the supply chain [14–16,58–60].

Carter and Rogers [14] moved into the investigation of non-economic issues to include sustainability in the management of the supply chain and presented a conceptual framework in this regard. This brought a new stream of research, where sustainable supply chain management was referenced as the "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 company and its supply chains" (p. 368). Seuring and Müller [15] defined SSCM as "the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements" (p. 1700). Another description of SSCM, which included topics on coordination, efficiency, and effectiveness, was presented by Ahi and Searcy [16], which defined it as:

*"The creation of coordinated supply chains through the voluntary integration of economic, environmental, and social considerations with key inter-organizational business systems designed to efficiently and effectively manage the material, information, and capital flows associated with the procurement, production, and distribution of products or services in order to meet stakeholder requirements and improve the profitability, competitiveness, and resilience of the organization over the short- and long-term" (p. 339).*

These definitions highlight the supply chain as a key component for sustainability development in which environmental, social, and economic criteria must be satisfied [61]. Also, as it can be seen, SSCM research has gradually advanced, and has placed itself as a significant management method for organizational sustainability enhancement [49]; however, business direction regarding sustainability incorporation into their supply chains operations is still limited [62].

Based on the above definitions, sustainable supply chain management can be understood as the preservation of balance that may exist between social responsibility, care for the environment and economic feasibility throughout the supply chain functions.

### *2.3. Emerging Economies and Sustainable Supply Chain Management*

Global markets have encouraged emerging economies to be a topic of increasing interest in sustainable supply chain operations. Although there is no general agreement on the emerging economy definition, researchers have used the emerging and developing economies concepts interchangeably [63]. These economies are characterized by their lower per capita income and business or industrial activity, limited infrastructure, similar or higher economic growth rates than developed countries [63,64]. The main difference strives in their economic growth rate [65]. For this research purpose which explores existing literature on SSCM in emerging economies, the terms “emerging” and “developing” economies will be treated interchangeably, since both present similar characteristics. Nevertheless, it is important to highlight that in other types of research it would be necessary to segregate them to take into account their differences,

It is precise then, to distinguish such countries as critical participants in global supply chains and sustainable development; especially since operations such as: extraction, manufacturing, assembly and production are carried out in their locations [66]. From this perspective, emerging economies, also called emerging markets, are characterized by being in a process of development compared to developed countries [67], and have taken a primary stand on their contributions to initiatives and practices on sustainability [68]. However, research does not sufficiently deal with the specific issues of SSCM in developing countries as it has with developed ones [23], and abundant work on SSCM literature has pointed out this situation [23,69,70]. Khalid and Seuring [71] provided an understanding of SSCM initiatives being critical to developing markets, and confirmed the distinctive organizational challenges to which these markets are exposed to. Gold, Hahn and Seuring [47] discussed how SCM complements sustainable goals of multinational organizations in developing countries. Jia, Zuluaga-Cardona, Bailey and Rueda [25] sought to fill this gap from an operations management literature review, by analyzing SSCM practices in the context of global chains supplied by developing countries.

From a social sustainability perspective, literature has also acknowledged the relationship of social issues to business operations [5]. Tang [67] argued that corporate social responsibility was connected to supply chain operations in emerging markets. Tong, et al. [72] researched the implementation of socially responsible operations with suppliers across the supply chain, also in emerging markets. Abreu, Castro, Soares and Silva Filho [66] analyzed the influence of country location, firm size, and position in the value chain on the implementation of corporate social responsibility practices, in Brazilian and Chinese textile firms. Other authors have discussed how emerging economies have become a critical component in supply chains operations in the global market of many firms [24].

Empirical studies have examined the extent of use of supply chain management initiatives amongst businesses in developing countries, and recognized the vital part sustainability plays in their effectiveness [73–75]. Silvestre [76] explored the case of a Brazilian oil and gas supply chain, from the focal company perspective, and how it has succeeded in transforming its chain, when implementing sustainable practices. Furthermore, Silvestre [69] provided a glance on supply chain characteristics in developing economies, by exploring sustainable practices and how these are implemented in similar economies. On the other hand, Moktadir, Ali, Rajesh and Paul [53] identified barriers to implementing sustainable practices in the Bangladesh leather processing industry, and analyzed the relationships

between them to enable an effective execution of a SSC. Overall, developing countries are evolving and demonstrating a major role in economy, multi-national companies are aiming to launch or source products from them, and sustainability development is playing a key role in this business arena [21].

Moreover, supply chain operations in a global context claim the increase of logistics costs, complexity, market barriers, and decrease in yields which directly affect developing countries [77]. According to Kazancoglu, Ozkan-Ozen and Ozbiltekin [34], developing countries normally use simple technologies and it is difficult to find integration between stakeholders in their supply chain. Even Rajeev, Pati, Padhi and Govindan [23] detected that a substantial amount of research studies, examined developed economies contrary to emerging economies. This could be the result of deficiency on data availability which in turn increases the difficulty in obtaining research on emerging economies. Based on the background from previous studies, this work aims to conduct a literature review on SSCM in emerging economies and provide the current status of the research arena, by investigating, classifying, and analyzing significant and appropriate articles found through the search methodology. This helps to reduce a significant research gap as present research until now has mainly concentrated on developed economies.

### 3. Materials and Methods

In this section, the research methodology is defined, and the steps taken are described in the following subsections.

#### 3.1. Sources of Information, and Inclusion and Exclusion Criteria

First of all, given the purpose of this study, a systematic literature review was chosen to be conducted, since it reduces bias and errors in the research process, by precisely defining inclusion and exclusion criteria for the selection of articles [28]. The systematic literature review process began by choosing the databases for research; due to the objective of this study and access availability, the databases that were chosen are: Elsevier, MDPI and Springer, which provide excellent peer-reviewed journals. Secondly, the period for analysis was determined. A complete decade was chosen, as it provided a good glance for the objective of the study. This also included the first months of 2020 as part of the investigation. Therefore, the analysis time frame runs from 2010 to April 2020, and includes documents written in English only. Also, the search was limited to research and review articles only, excluding books or book chapters, technical reviews, conference papers, and editorials.

#### 3.2. Keywords Definition and Articles Search

To find the associated articles centering on sustainable supply chain, the databases search began by article title containing the combination of words: “supply chain” and “sustainab\*”. An asterisk sign was included at the end of the “sustainab” to address sustainability or sustainable topics in any combination. As a result, 780 articles were found (567 Elsevier, 129 MDPI, and 84 Springer). The next validation step was to examine the 780 articles’ title, abstract, and keywords section, for specific words related to developing countries, which included a variety of associated and combined keywords. The chosen developing countries related keywords were: “developing countr\*”, “developing nation\*”, “developing econom\*”, “developing market\*”, “emerging countr\*”, “emerging econom\*” and “emerging market\*”. An asterisk sign was included at the end of specific words, mainly to identify singular and plural descriptions (e.g., countr\*: country and countries). Thus, search strings were generated to perform the search in the database, by using simple operations and Boolean logic; resulting in 67 articles (62 Elsevier, three Springer and two MDPI); duplicated results were taken out. Table 1 shows the list of keywords, and Table 2 shows the applied search strings.

**Table 1.** List of keywords researched in articles.

Step	Area of Search	Keywords
1	Title	Supply chain, sustainability, sustainable
2	Title, Abstract, Keywords	Developing country, developing countries, developing nation, developing nations, developing economy, developing economies, developing market, developing markets, emerging country, emerging countries, emerging economy, emerging economies, emerging market, emerging markets

**Table 2.** Search strings and Boolean operators used for the research.

Step	Area of Search	Search String	Articles Output (qty)
1	Title	(Supply chain AND Sustainab*)	780
2	Title, Abstract, Keywords	(Developing countr* OR developing nation* OR developing econom* OR developing market* OR emerging countr* OR emerging econom* OR emerging market*)	67

### 3.3. Articles Review and Selection

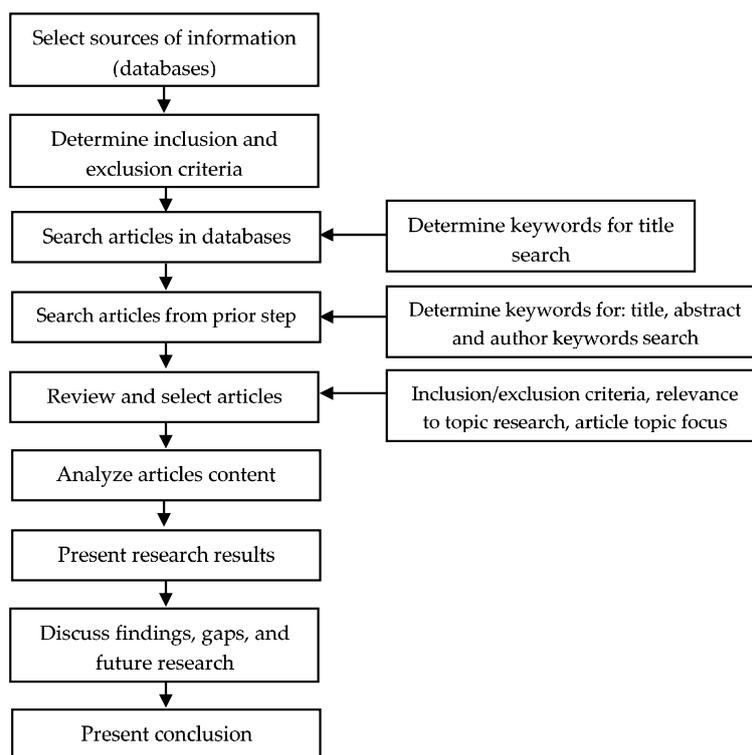
Subsequently, the search was restricted to carefully read and review each of the 67 articles: Title, keywords, abstract and entire article content, focusing on the combination of sustainability and supply chain topics in emerging economies, following the inclusion and exclusion criteria, and considering the relevance of each paper to the purpose of this article, to guarantee pertinence of the study. As a result, a total of 56 papers were identified (51 Elsevier, three Springer and two MDPI) for this literature review. It is important to highlight that the main characteristics of the 11 papers taken out on this last step included: Lack of focus on emerging economies, papers not related to the critical subject of developing countries, conference papers and an editorial issue being classified as articles, documents not meeting the inclusion or exclusion criteria. Certainly, some papers mentioned in their abstract related keywords to developing countries, however they did not apply their research on this specific topic of study.

Therefore, out of 780 papers found, dated from 2010 to 2020, 56 articles are related to sustainable supply chain in emerging economies, contributing to 7.2% of the total papers.

### 3.4. Articles Analysis and Results

In this step, the 56 chosen articles were analyzed and classified according to different categories based on their characteristics and content. First, the descriptive analysis which included: Year of publication, industry sector, country of research application, and research methodologies being used. Within this analysis, the different tools and techniques being used to solve the stated problem in each paper were also classified as part of the research methodologies content examination. Second, the content analysis which included the classification of sustainability dimension or combination of dimensions being addressed, and topics being discussed. Therefore, the results of the descriptive and content analysis provide the basis for the following research steps.

The closing part of the methodology consists of presenting the discussion on the research findings, gaps and limitations, as well as future research recommendations followed by the conclusion. Figure 1 shows the sequence of steps taken for this research methodology. Consequently, the following sections will present the results, discussion, and conclusion of this literature review.



**Figure 1.** Sequence of steps taken for this research methodology.

## 4. Results

The results integrate the descriptive and content analysis of the 56 articles. The descriptive analysis consists in identifying and classifying the articles by publication year, and the industry sector and country in which the research was carried out. The content analysis focuses on the dimension of sustainability investigated in the articles, and the research methodologies used in the articles analyzed.

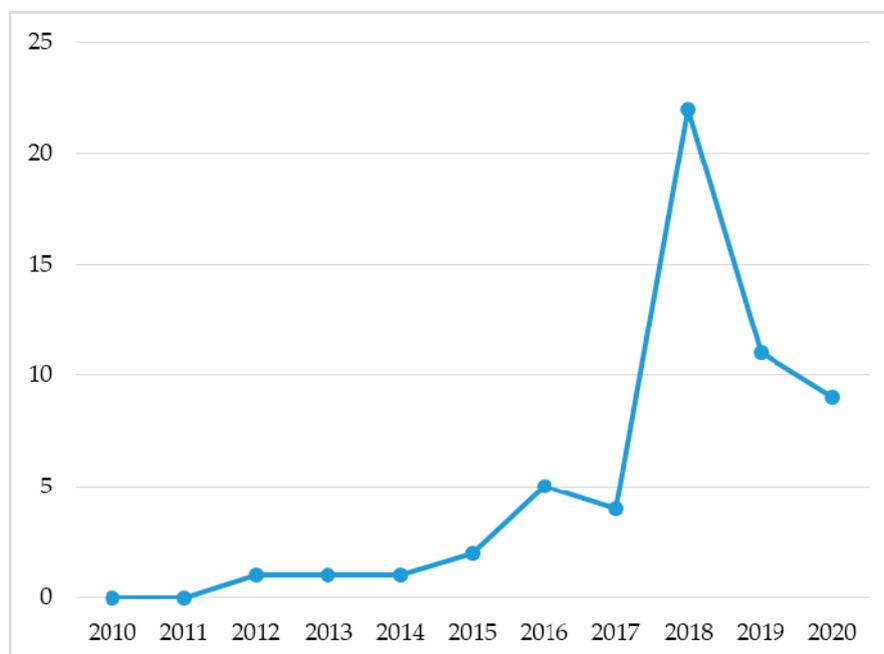
### 4.1. Descriptive Analysis

This subsection presents the descriptive analysis, statistics and insights on the 56 articles of this study. The information is analyzed by year of publication, industry sector, country of study, and research methodology.

#### 4.1.1. Analysis of Articles by Year of Publication

Figure 2 illustrates the distribution per year of the 56 articles. As it is shown, there is an increase in publications related to sustainable supply chain in emerging economies in the last 10 years, indicating an interest in the area. There seems to be a stable growth until 2014, and from 2015 onwards, it is visible there is an exponential growth; note 2020 information was collected from January until April 30th. Also, it is important to point out, there are no publications between the years of 2010 and 2011; three articles published between 2012 and 2014; and as of 2015, the positive growth in the number of articles published per year is shown; where 2018 appears as the more prolific year overall. Notoriously, the spike in the number of articles addressing sustainability-related aspects in emerging economies published in 2018, is accounted mainly to the *Journal of Cleaner Production* (JCP) with 10 articles out of the 22 published that year (a 45.5%). Ansari and Kant [21] state of the art literature review showed, an exponential increase on SSCM research; however, this increase starts around 2007–2009. Likewise, Jia, Zuluaga-Cardona, Bailey and Rueda [25] presented an analysis of literature on SSCM practices in emerging economies from 2000–2016, and showed a rapidly increasing trend starting in 2008. Carter and Washispack [9] indicated that systematic literature reviews on SSCM have been growing in

number since 2009. Even Masoumi, et al. [78] stated that from 2011 onward, review papers on SSCM showed a significant growth in number. This concludes there is research evidence in the interest and progressive increase in discussion about SSCM in emerging economies; this could be a result of such economies being more interactive and actively participating in global economies around the world [26].



**Figure 2.** Distribution of articles published per year. Note: Year 2020 is recorded until 30 April.

#### 4.1.2. Analysis of Articles by Industry Sector

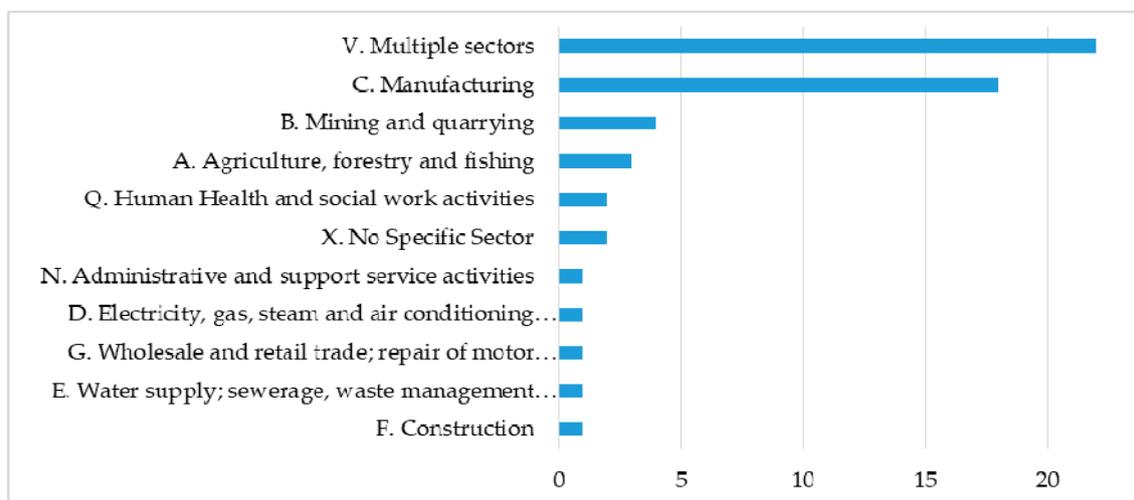
For the industry sector classification, the International Standard Industrial Classification (ISIC) of all industrial activities from the United Nations industry classification system was used [79]. This classification includes 21 different sectors, and classifies data based on the economic activity. As done by Tebaldi, Bigliardi and Bottani [22] and Gao, et al. [80], two other sectors were included: V, which represents multiple sectors and X, when no specific sector is stated in the papers. This was done to include those papers which lay on such categories and are not contemplated in the ISIC list.

Figure 3 shows the distribution of the articles reviewed per industry sector. As it is observed, out of the 56 articles, 22 articles (39.3%) are focused on multiple industry sectors, followed by the manufacturing sector with 18 articles (32.1%); the mining and quarrying sector with four articles (7.1%); the agriculture, forestry, and fishing sector with three articles (5.4%), and the remaining of papers include a diversity of different industry sectors (16.1%). Manufacturing, as the second most researched sector, could be mainly due to the triple bottom line taking more managerial attention since it has become fundamental in managing any business [81].

Multiple industry sectors were mostly researched by empirical studies (77.3% of them), and have been analyzed in different countries, India being the most prolific one. Also, the manufacturing industry was predominantly researched by empirical studies (55.6%); nonetheless, the impact of SSCM implementation on manufacturing firms' performance in emerging economies is limited in such empirical studies [74]. The detailed classification of these articles per industrial sector can be seen in Appendix A.

Scavarda, et al. [82] analyzed the healthcare supply chain in Brazil from a sustainable perspective and proposed a management framework to provide strategic operational advantages to organizations. Mani, et al. [83] investigated the relationship between small and medium enterprises' (SME's) social sustainable practices and its supply chain performance in multiple sectors in India. The findings

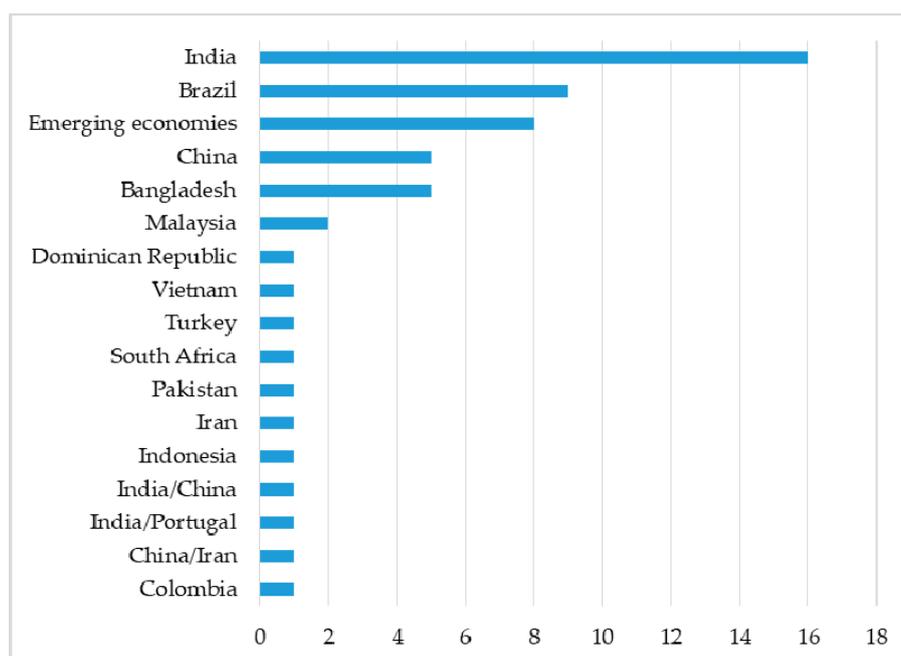
showed there is a positive relationship, helping the focal firm to improve performance, and facilitated by the supplier. Li and Mathiyazhagan [84] developed a set of sustainable measurement indicators in the Indian auto component sector, applied a survey questionnaire, and found that among the indicators, the carbon management indicator helps in measuring sustainability performance. Multiple industry sectors have found it necessary to analyze sustainable development to ensure improvement in their supply chain sustainability performance [42,85,86].



**Figure 3.** Distribution of industrial sectors. Definitions: D. Electricity, gas, steam and air conditioning supply; E. Water supply; sewerage, waste management and remediation activities; G. Wholesale and retail trade; repair of motor vehicles and motorcycles.

#### 4.1.3. Analysis of Articles by Researched Country

The geographical distribution of the papers being researched is listed in descending order in Figure 4. The analysis of the data showed that research in India dominates the field by occupying 28.6% of the total number, followed by Brazil 16.1%, and Bangladesh and China each contributing to 8.9%. Also, there are some papers which included different emerging countries in their study, contributing to 14.3% of the research. Furthermore, other papers combined two countries in their study, such as China and Iran, India and China, and Portugal and India, representing 5.4% all together. India's substantial contribution could even be 32.1% of total research by including the combined research. On the other hand, Ansari and Kant [21] findings showed authors from India and China as contributing with the most papers on SSCM research topics from 2002–2016 after four other developed countries. Bastas and Liyanage [87] literature review revealed the geographical locations of the main authors' publications from 2015 to half of 2017, combining SSCM and quality management; where the top contributors in order of occurrence were: USA, India, Germany and China. Tebaldi, Bigliardi and Bottani [22] results presented China in second place, Brazil in third and India in sixth place, in regards to countries with more publications on SSC and innovation topics from 2015 to 2017; right after and before other developed countries.



**Figure 4.** Distribution of country being researched.

#### 4.1.4. Analysis of Research Methodologies

Analyzing sustainable supply chains in emerging economies is an ambitious task, especially in chains with complex products where the identification of all partners in the supply chain is particularly difficult [88]. Table 3 shows the research methodologies used to analyze sustainable supply chains in emerging economies; empirical studies are the most common approach for research purposes with 62.5% of total papers, followed by case study with 21.4%. It is important to highlight that the use of interviews and surveys is observed as a common instrument for information gathering.

**Table 3.** Distribution of research methodology.

Research Methodology	Total
Empirical Model/Analysis	35
Case Study	12
Methodological, Analytical, Mathematical	6
Systematic literature review	3

Empirical models and analysis were used as a means to investigate SSCM in emerging economies, through different methods and tools. Akhtar, et al. [89] examined the connecting links between leadership practices and sustainability, by using the data collected from top management of such global supply chains in agrifood industries in emerging markets. The research was carried out through structural equation models (SEMs), where the results provided a deeper understanding of how global supply chain leaders can manage data-driven and adaptive leadership to sustainable initiatives. Ilyas, Hu and Wiwattanakornwong [45] applied a structured questionnaire to the manufacturing sector in Pakistan and analyzed the collected data using SEM. They concluded that top management support significantly influences green supply chain management, and sustainable development objectives. Also, the results showed government support significantly helps top management in the green supply chain endeavor. Thong and Wong [40] research in Malaysia showed the environmental and social performance impact on economic performance and its benefits. The study used SEM and partial least square (PLS) methodologies to analyze survey results from different manufacturing sectors, such as electrical and electronics, food beverage and tobacco, and fabricated metal, amongst others.

Bag, et al. [90] also combined SEM and PLS, to identify means by which managers can improve sustainable supply chain performance in the mining industry in South Africa. A survey was used to address the research questions on big data analytics. The findings showed that big data analytics management capabilities had a strong and significant effect on innovative green product development as well as sustainable supply chain outcomes. Another group of authors who also analyzed innovation as part of SSC was de Vargas Mores, et al. [91] who conducted an in-depth case study of a Brazilian petrochemical company. The study analyzed the innovation process in the production of green plastic from a SSCM perspective. The results showed that collaboration between the focal company and other participants of the supply chain is key for product development. Tebaldi, Bigliardi and Bottani [22] literature review in SSCM and innovation, showed the classification of papers reviewed by research methodology, where empirical surveys appeared as the most used methodology in 45.9% of papers, followed by case studies with 22.9%.

Some other authors used primary data for qualitative studies, where information was obtained from companies in a number of industries [92], and the data collection process was carried out through a series of interviews [93–95]. The data from a survey conducted by Wan Ahmad, et al. [96] to two national oil and gas companies, was analyzed through the use of best worst method (BWM), to evaluate the external forces affecting sustainability. Munny, et al. [97] also used BWM to investigate the enablers of social sustainability in the footwear supply chains in Bangladesh. Suhi, et al. [98] assessed industrial activities affecting the environment by using BWM as well. The results revealed waste management as the most important indicator for establishing environmental sustainability in industries such as garments, leather, and footwear in Bangladesh.

Interpretive structural modelling (ISM) was used by Diabat, et al. [99], Mani, et al. [100] and Luthra and Mangla [35], and they also combined this method with “Matricesd’Impacts Croises Multiplication Appliquée un Classement” (MICMAC) analysis to evaluate their survey questionnaires applied in India in different industry sectors such as textile, automotive and manufacturing. The focus topics analyzed dealt with strategies, enablers and social issues in sustainable supply chain management.

Hermawan, et al. [101] studied the impact of infrastructure availability in the economic growth and increase of a country’s competitiveness. For this purpose, the principles of life cycle assessment (LCA) were applied in a descriptive analysis in the construction sector in Indonesia.

Padhi, et al. [102] applied a semi-structured survey to different industry sectors in India. This research combined six fuzzy multi-criteria decision making methods, for a better understanding of new sustainable strategies through the identification of the most appropriate practices that should be adopted by industrial organizations. The study showed five important sustainable supply chain processes: Sustainable design and development, strategic sourcing, efficient technology, and sustainable product returns and recycling.

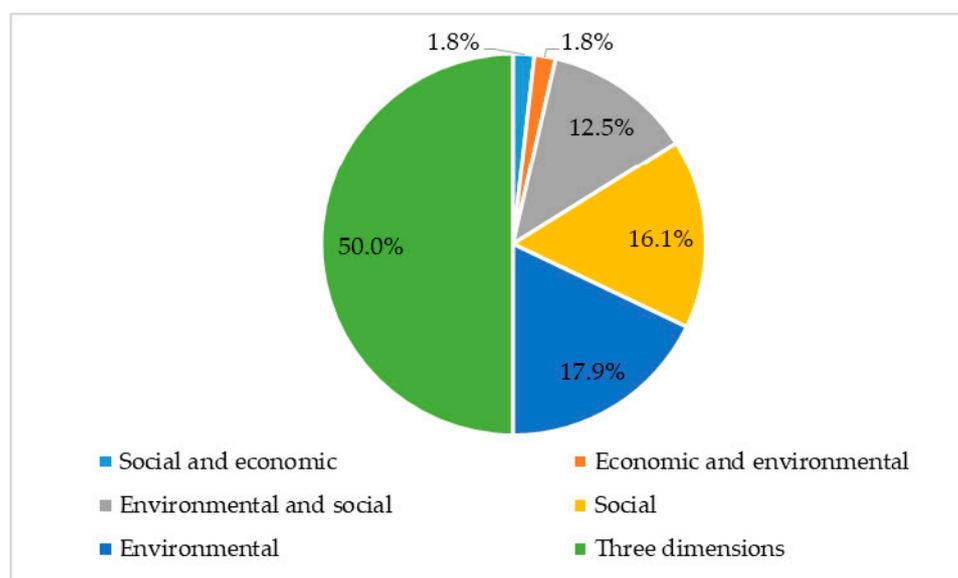
To conclude the research methodology analysis, Appendix B shows the 56 articles, classifying the methodology and articles making use of it. It is worth mentioning that some of the articles combined different methodologies to develop their research. Also, most of the articles performed a literature review, which was used as a basis for research. There is a wide range of approaches by which to analyze sustainable supply chains in emerging economies. However, a direct comparison with other systematic literature reviews is not always achievable, since those other studies do not focus on emerging economies or take into consideration other specific topics related to SSCM. For instance, some papers include detailed topics on different types of innovation in SSC, green supply chain management, sustainability and global SC, sustainability metrics, and SSC quality management, with no emphasis on emerging economies. Other examples, which do include emerging economies, are limited to a single country.

#### 4.2. Content Analysis

The following subsections analyze the sustainable dimensions being researched in the 56 articles, as well as their frequency of study, and the methodologies and approaches used to analyze sustainable supply chains in emerging economies.

##### 4.2.1. Sustainable Dimensions

The concept of sustainability in its three dimensions has been widely accepted, allowing the analysis of each dimension individually or combined, integrating two or three dimensions during the investigation. Therefore, the articles were classified according to the sustainable approach being researched. Figure 5 shows the distribution of the articles with respect to the sustainable approach. Fifty percent of these articles show the integrative approach of the three sustainable dimensions, followed by the single environmental and social dimensions with 17.9% and 16.1% respectively, which show an important role in research. Next, the environmental dimension is combined with the social one in seven articles (12.5% of research), and the social and economic dimensions are combined in one article; similarly, the economic and the environmental dimensions combined in one. The economic dimension is not present by itself in any of the 56 articles being analyzed.



**Figure 5.** Distribution of articles per sustainable dimension.

On the other hand, Moreno-Camacho, Montoya-Torres, Jaegler and Gondran [28] literature review from 2015 to 2018 on sustainable metrics, observed 96.5% of papers include environmental issues vs this review which only shows 82.1%. Furthermore, they observed 45.2% of papers focus on social issues vs. this review with on 80.4% of them. These differences could be attributed to the time frame difference and specifically to the implicit focus of this study on emerging economies.

As part of the objective of this review, in the following subsections each sustainable dimension, its interactions, and its importance in sustainable supply chain in emerging economies are closely examined.

##### 4.2.2. Environmental Dimension

A total of 82.1% of the articles focused their analysis on environmental issues, either by concentrating all their discussion on environmental concerns or by combining this dimension with either social and/or economic aspects. Furthermore, 95% of the articles focused on environment, carried out an empirical or case study, where the information generated was validated. Moreno-Camacho,

Montoya-Torres, Jaegler and Gondran [28] revealed an increasing concern for sustainable practices in emerging economies primarily in Asia, and highlighted the environmental increasing emphasis on research, and the social criteria still being hardly studied.

The articles focused solely on environmental issues, analyzed topics on urban solid waste, carbon performance measurement, pollution reduction, minimization of waste and carbon foot print, and resources use and recovery [7,101,103–106]. Other authors discussed supply chain environmental performance enhancement [4], strategies for environmental sustainability improvement [42], environmental sustainability assessment [98,106]. Additionally, barriers affecting sustainable procurement practices [107]; the impact of outsourcing, supplier collaboration on environmental development [104]; and stakeholder significance on SSCM practices embracement [4], have been other topics on papers research. In general, a wide range of environmental aspects have been taken into account. As a result, empirical and case studies showed the need to monitor sustainable performance from an environmental perspective in supply chains, as well as the importance of stakeholders active participation in motivating, promoting and supporting the implementation of environmental practices across the supply chain in emerging economies. Furthermore, environmental sustainability and green issues have become progressively imperative amongst researchers and managers due to new regulations, customer expectations, and pressures on green products purchasing [53].

#### 4.2.3. Economic Dimension

From a supply chain perspective, the economic performance is a key factor for its successful operation. Frequently, the total cost of managing the supply chain is one of the most important indicators [74,108,109]. A total of 54% of the papers analyzed economic issues, by merging this dimension with either social and/or economic aspects. Meanwhile, 77% of these articles performed an empirical research or case study in emerging economies. There are articles where the pursued economic objectives were centralized in the performance of areas such as sales, market share, or efficient use of resources, although they do refer to the importance of costs within the chain [3,110,111]. Research by Kumar, et al. [112] revealed finance as a key driver for social responsibility implementation in the context of emerging economies garments supply chain. Esfahbodi, Zhang and Watson [74] focused on economic issues and combined the research with the environmental dimension, making direct reference to the importance of complying with the environment regulations and needs, without primarily neglecting the economic performance.

It should be mentioned though, that none of the 56 articles carried out their research focused solely on the economic dimension; on the contrary, in all instances the articles combined their analysis with the social and/or environmental dimensions [68,74].

#### 4.2.4. Social Dimension

The social dimension is the most addressed in the articles research, with 80% of them focusing on the dimension by itself or in combination with the economic and/or environmental dimensions.

Out of the 56 total papers, 10 of them focused their research on social issues only, seven more combined the social dimension with the environmental one, and only one combined it with economic issues; besides 28 articles being studied from a triple bottom line approach. Koberg and Longoni [30] literature review on global SSCM, showed that papers considering a single dimension of sustainability concentrated more on the social dimension than economic or environmental dimensions. Morais and Silvestre [43] analyzed, through a multiple case study in Brazil, why and how focal companies implement and achieve social sustainability in their supply chain. The results showed motivation, collaboration and information sharing as key elements for social initiatives to be effective. Chacón Vargas, et al. [113] results showed a win-win relationship between social supply chain practices and competitive advantage in the context of emerging economies. Furthermore, Mani, et al. [114] argued addressing labor issues as an integral part of social sustainability, can enhance the supply chain performance.

Social dimension research reveals that assessing social sustainability has received less attention in literature and in practice, and is still an under-researched area in the context of emerging economies [97,115]. Yawar and Seuring [116] argued that research in SSCM inclines on social issues which have a direct impact on supply chain performance, however subjects which might have damaging effect on society are neglected. Hence, they highlighted that social issues related to social development should be investigated from a SSCM framework. Additionally, articles that have developed their research from a triple bottom line context, have argued that the social dimension is not treated with equal importance as the economic and environmental dimensions, since sustainable performance analysis deals with environmental and economic issues with greater emphasis than the social one [12,117].

#### 4.2.5. Combination of Dimensions

The integration of the three dimensions plays a central role with 50% of the articles being analyzed from a triple dimensional context. Nonetheless, a triple bottom line approach drives managerial attention in current manufacturing activities, so ecological, economic, and social issues have become crucial in managing any business [10]. Additionally, this is congruent with other literature reviews where the TBL is the focal research line and continues as an essential challenge for sustainable development in supply chain management [30,62,87,118]. Gold, Hahn and Seuring [47] analyzed three cases in the food industry and indicated that applying SSCM initiatives to base of the pyramid (BoP) projects can help multinational corporations to achieve sustainability objectives. Another investigation from a TBL approach was carried out by Mathivathanan, Kannan and Haq [85], where they researched the Indian automotive industry practices from a multi-stakeholder view. The findings revealed that management commitment in regards to incorporating a triple bottom line approach on decision making strategies is one of the most influential practices for SSCM implementation. Katiyar, et al. [119] also studied the Indian automobile firms but from a buyers' perspective. The results showed a positive relationship of procurement to environmental performance, and that manufacturing performance has a weak relationship with sustainability, suggesting an opportunity for implementation of the three dimensions from a focal industry perspective.

Zailani, Jeyaraman, Vengadasan and Premkumar [3] concluded that SSCM practices lead to a reduction of materials usage and waste generation, allowing a better use of resources, which plays an important role in achieving the triple bottom line, thus contributing to sustainable global development.

Another approach is to combine the dimensions in pairs (17% of total articles), with environmental and social dimensions being the most common combination. Koberg and Longoni [30] literature review showed the majority of articles focus on the three dimensions of sustainability (29%) or on environmental and social dimensions combined (27%) in global SSC. Bastas and Liyanage [87] literature review presented the distribution of the sustainability dimensions, where 43% of papers considered all three pillars (TBL), followed by environmental sustainability with 40%, and the integrated approach of environmental and social dimensions with 15% of publications. The research conducted by Esfahbodi, Zhang and Watson [74], analyzed emerging economies, SSCM practices and their relationship with organizational performance. The results revealed that the adoption of sustainable supply chain practices results in higher levels of environmental performance but does not necessarily lead to better a cost performance. The findings suggested that companies operating in emerging markets should undertake initiatives of the SSCM with a broader consideration of their financial results in order to minimize the tradeoffs between environmental performance and costs.

As a result, studies have revealed an increasing concern for the adoption of sustainable practices in emerging economies, so that performance improvement and expected results are achieved [99].

#### 4.2.6. Models on Sustainable Supply Chain Management in Emerging Economies

Different models have been developed on SSCM in emerging economies, different perspectives have been analyzed, and though some authors have presented comprehensive models the empirical

applicability is limited. Some 42 papers developed and tested a theoretical or conceptual framework as part of their study, another 10 papers provided theoretical or mathematical insight on specific topics, and four more used a framework previously developed to analyze data and provide findings.

Hong, et al. [120] empirically tested their constructed conceptual framework, which examined the relationship between SSCM practices, enterprise performance, and SC dynamic capabilities in China's multisector industry. The findings explained the importance for firms of implementing sustainable practices and reinforcing SC dynamic capabilities in developing countries. Nonetheless, the dynamic capabilities might not include potential operations processes or new and innovative capabilities, which limits the results. Also, Maktadir, Ali, Rajesh and Paul [53] developed a conceptual framework to model the interrelationships between barriers and enable the successful implementation of SSCM. They used a case study to demonstrate the proposed model, nonetheless their approach is dependent on experts' feedback, and therefore data should be collected cautiously. Gómez-Luciano, Rondón Domínguez, González-Andrés and Urbano López De Meneses [75] developed a "glocal" sustainable supply chain theoretical model, which analyzed the SC performance according to sustainable indicators from a global and local approach in developing countries. This model was empirically validated in the Dominican Republic supplies market, approaching sustainability at all stages of the SC to meet the domestic demands and allow global market competition. The limitations of this model could come from conditional hypotheses, which could restrict the research potentiality. Padhi, Pati and Rajeev [102] study presented an approach to improve sustainability of supply chains. The developed framework identified sustainable processes and ranked industries, using the lenses of stakeholder theory and resource-based view. This research is limited by collected data from specific regions in India only, and perhaps its objectiveness.

Moreno-Camacho, Montoya-Torres, Jaegler and Gondran [28] classified indicators in the three dimensions using Chardine-Baumann and Botta-Genoulaz [121] framework for sustainability valuation. This comprehensive model included five fields for each dimension, with a total of 15 sustainable fields, to assess sustainable performance. Bendul, et al. [122] research linked SSC with base of the pyramid (BoP) strategies, using the supply chain operations reference (SCOR) model developed by the Supply Chain Council. This framework was adapted and applied to build a structured database from three management processes: Plan and source, make, and deliver. As a result, their research provides best practices for SSC operations at the BoP for developing countries. However, different challenges might emerge from diverse contexts, hence a more comprehensive overview of literature and specific practices could be addressed when trying to apply this model to other developing countries.

The complexity of supply chains, their widespread reach on global markets, and each emerging economy-particular context, have made it difficult for research models to grasp all possible perspectives. However, it is imperative that different approaches and models are developed to understand the intrinsic characteristics of SSCM in emerging economies and help to enhance their performance across their global operations. Recommendations for the future research should focus on delivering thoughtful analysis on emerging economies' impact on SSCM, their advantages and disadvantages as part of a sustainable chain, practices and strategies from their background standpoint, and areas of needed development and support for improved performance.

## 5. Discussion

This study conducts a literature review of articles on sustainable supply chain management in emerging economies, published from 2010 to April 2020, in Springer, Elsevier and MDPI databases. This research investigates the available literature under several constraints: Time period, English language, three database sources, research and literature articles only, focus on emerging economies with different variants on search key words, and sustainable supply chain emphasis. Furthermore, this research classifies the extracted articles under different approaches: Distribution of articles per year, country and type of sector focused on in research, research methodology, and tools and techniques used for analysis. The results of these classifications have facilitated the discussion

on current status and progress on SSCM in emerging economies. Therefore, the key findings will be discussed, followed by the research gaps and future research opportunities.

### 5.1. The Findings

- Researchers and practitioners have become increasingly aware and interested in sustainable supply chains in emerging economies; however research findings show that although developing countries are playing a key role in global markets, the concept of a sustainable supply chain is new to many of the supply chain players [123]. This review found SSCM research for emerging countries is behind in research on SSCM globally. It could be argued that interest in SSCM in emerging economies has taken place years after the research of SSCM itself has started. Nevertheless, the pressure from customers, government, and nongovernmental organizations, has made sustainable development become an essential and challenging assignment in the new ways of doing business [124].
- The research on SSCM in emerging economies is led by empirical research methodologies, with 63% of the 56 articles, which include structured and semi-structured surveys and interviews through questionnaires, in person or by mail. Tebaldi, Bigliardi and Bottani [22] also found empirical surveys to be the most popular applied methodology when researching SSC and innovation. On the other hand, Ansari and Kant [21] findings revealed SSC research was dominated by qualitative research like case studies and conceptual/theoretical models and highlighted the need for more empirical and quantitative research.
- Articles are using a mixed method approach to answer research questions. Researchers have used qualitative and quantitative methods for data collection and analysis. This approach can enhance the perspectives of the investigation and provide different perception on the topics being discussed. Luthra and Mangla [35] used interpretive structural modelling (ISM) methodology integrated with fuzzy MICMAC within a qualitative nature of research. Motevali Haghighi, Torabi and Ghasemi [12] used data envelopment analysis (DEA) for sustainable supply chains performance assessment, but including quantitative and qualitative indicators.
- A diversity of SSCM related topics have been addressed, such as Base of the Pyramid (BoP), enablers and barriers, innovation, collaboration with suppliers, leadership and multi-tier/suppliers initiatives, SSC practices and processes, influential indicators for sustainable development, SSC metrics and indicators, environmental impact assessment, etc.
- Structural equation modeling (SEM) is the most used technique for analysis (9 articles), followed by data analysis (eight), and partial least squares (PLS) (five). SEM has been combined, in several cases, with PLS (PLS-SEM) [40,90,113] or covariance-based (CB-SEM) [83,86], and it is used when series of regression analyses are required [125]. Also, Zeng, et al. [126] used SEM in empirical research, to study the relationships between institutional pressure, supply chain relationship management, circular economic capacity, and SSC design from Chinese eco-industrial park firms. Furthermore, Paulraj, et al. [127] used SEM to examine the links between business motives, SSCM practices and the performance of the business using a sample of companies in Germany.
- Thirty-nine percent of the studies are conducted in multiple sectors, as it gives a more general idea on SSCM in emerging economies, followed by the fashion/textile/apparel sector (11%), the oil/gas/petrochemical/power/electric power sector (9%), the automotive sector (7%) and the food sector (7%). India is the most researched country (32%), followed by Brazil (14.3%), China (10.7%), and Bangladesh (8.9%).
- Several sustainability measures have been presented in the literature to recognize the sustainability of supply chains helping stakeholders in making strategic decisions [128]. Mani, Agarwal, Gunasekaran, Papadopoulos, Dubey and Childe [114] discussed and proposed 20 supply chain social sustainable measures across multiple sectors in India, under six fundamental indicators: Equity, philanthropy, safety, health and welfare, ethics, and human rights. Furthermore, Mani, Gunasekaran and Delgado [86] explored social issues related to suppliers and identified measures

associated with social sustainability in emerging economies. The findings showed there is a positive relationship between suppliers' social sustainability practices and supply chain performance. It is a challenge to analyze sustainable development indicators, however, managers need to evaluate SSCM performance in specific sectors in emerging economies [84].

- Environmental sustainability in emerging economies is taking a primary stand in supply chain operation, due to natural resources consumption, labor intensive operations [129] and all the logistics involved in delivering the manufactured products [103]. Suhi, Enayet, Haque, Ali, Muktadir and Paul [98] provided a framework on environmental sustainability indicators identification and evaluation for Bangladesh industries. Furthermore, the environmental impact is different based on the resources consumed, and there is a dearth of studies, in emerging economies, on how to evaluate the resources consumption throughout the supply chain and mitigation strategies to overcome it [106]. Nonetheless, increasing concern on social issues and practices in emerging economies is present, even though research is still new to the research field [28].
- Collaboration in supply chain plays an essential role for sustainable development achievement [69]. However, in emerging economies it is suggested that it may not always be "good" because in some instances it could increase the risk of corruption [130]. On the other hand, de Vargas Mores, Finocchio, Barichello and Pedrozo [91] findings revealed that collaboration between the focal organization and other supply chain parties is essential for sustainable development. Even external stakeholders play an important role in SC collaboration, since they can be a source of risk if their concerns are not taken into account [69]. Beske and Seuring [118] identified collaboration as a key category of high importance for sustainable management of supply chains, from operational and structural perspectives, helping to achieve competitive advantage and reduce overall cost and uncertainty. Campos, Straube, Wutke and Cardoso [27] argued that there is evidence of collaboration opportunities between countries in response to enhance global sustainability performance. A critical subject in supply chain collaboration then, is the distinct interests that can exist in each participant and achieving the overall success of the chain [104]. From a global perspective, prior researchers have found differences in SSC practices implemented by developed and developing countries [131].
- Innovation topics in sustainable supply chain practices in emerging economies is needed. As the markets evolve and competition is global, emerging economies operational capabilities become crucial, and sustainable innovation plays a key role in this context. Silva, et al. [132] findings showed product and process innovation enhance sustainability performance, including green supply chain practices. Managers now need to consider sustainability issues when adopting new technologies, Industry 4.0, and innovative production processes [29]. Upgrading technology is a priority in emerging economies, as well as collaboration with research and development (R&D) for achieving sustainability [133]. However, sustainable development in business operations is not simple for emerging economies [35]. Intrinsic characteristics become crucial when desires for innovation in any of the supply chain functions are ambitious.
- Barriers to SSCM in emerging economies are characteristic, hence becoming another area of interest in research [25]. Identification of these influential barriers is key to achieving sustainability throughout the supply chain [53]. Mangla, et al. [134] analyzed barriers to achieving sustainable consumption and production practices, and further discussed SSCM as a driver on political and economic transformation from regional, national, and global backgrounds. Economic, social and ecological aspects need to be integrated in institutional barriers and constraints for new SC models in developing countries [122]. Tumpa, et al. [135] determined 15 barriers based on opinions of Bangladesh textile practitioners and SC management divisions and identified the most critical hurdles. There is evidence in developing countries that collaboration amongst stakeholders can improve innovation potential in supply chain operations and remove barriers across its global

sustainable practices [27]. For example, the lack of infrastructure and sustainability knowledge can be overcome by cooperation from developed countries [27].

- Top management leadership and government support are critical elements in SSCM achievement in emerging economies [136]. Supply chain managers are more interested in sustainability issues due to government regulations [53], and these principles can powerfully influence sustainable supply chain partners' profit share, achieve a win-win business environment, and become economically feasible [104]. Also, a closer partnership with government and a richer relationship with customers in emerging economies, provides benefits for further technological innovation [27]. Wan Ahmad, Rezaei, Sadaghiani and Tavasszy [96] reported that academic and industry experts have pointed out economic and political stability, and regulatory factors as the most relevant forces in implementing sustainable practices in Brazil. Silvestre [76] even found that regulatory pressure is more significant than market and competitive pressures for businesses in developing countries, and Gold and Schleper [62] argued even contemporary corporate engagement with sustainability is a key barrier when not targeted from a true overall SSC perspective.

These findings show the importance of understanding the emerging economies context in SCM to better implement sustainable practices, and to achieve more efficiently and effectively true sustainable development throughout the entire supply chain operations.

### 5.2. The Research Gaps

Research on sustainable supply chains in developing countries is limited [128], current studies focus in the triple bottom line of sustainable supply chains and there is a need to investigate deeper to identify additional topics on sustainable supply chains management in emerging economies.

Social issues research in SSCM is still scarce and, in addition, focus on developing countries has received less attention [47].

Current research shows significant improvements in environmental initiatives, but information on how these improvements are achieved is limited, particularly on emerging economies.

Even though, SSCM research is available, perspectives of other participants on the chain besides the focal company is needed. This includes components and raw materials suppliers, and logistics service providers, which are particularly important due to their involvement in performing critical SCM functions and impacting sustainable results.

There are areas of research opportunity that may offer new avenues for future exploration, since sustainable development requires consideration of social, environmental and economic dimensions at the same time. Therefore, a clear research gap is the global integration of the three dimensions of sustainability in emerging economies, which traditional practices used in developed countries cannot be purely conveyed to developing countries [122].

### 5.3. Limitations and Future Research

This paper presents limitations. The restriction of database access availability has limited the research and thus articles from other sources of primary importance in SSCM could have been excluded from processing. The keywords used may not be all inclusive; expanding search to include the names of developing countries and emerging markets could provide a more comprehensive review of the topic. The review was carried out on 56 articles; therefore, the exploration of more articles could broaden the conceptualization and knowledge of empirical research, and issues currently addressed regarding sustainable supply chain in emerging economies.

It is observed that the economic performance has a positive relationship with environmental performance, however, there is a lack of information on its relationship with social performance. Social and environmental initiatives have dominated the field of research, and yet SSCM studies are still at an early stage in the development of appropriate measures of organizational SSC performance [137].

There are functions in sustainable supply chain management that have not been studied in the same magnitude as others, including logistics activities such as distribution and transport. This topic exhibits an opportunity for research, since it entails implications in the three dimensions of sustainability with particular characteristics in emerging economies.

Another function needing research development is customer service, which can provide opportunities and advantages of improvement in sustainable performance due to its direct involvement in the requirements and demands throughout the management of the supply chain in emerging economies.

Future studies may examine other emerging markets to eliminate the potential effect of country-level variance such as market size, economic development and legal systems [75]. Also, industry specific empirical studies are required within the context of SSCM in emerging markets, this is also confirmed by Rajeev, Pati, Padhi and Govindan [23] conclusions.

The context of India as a source of products and services as well as knowledge capital makes it a pertinent choice to study trends in supply chain practices [24] in emerging economies.

The social dimension of sustainability and its relationship with the economic and environmental dimensions in empirical studies and case studies is a new venue for future investigations in a search for inherent emerging economies issues.

Furthermore, by increasing the number of articles, more specific topics can be analyzed, and trends can be identified with greater precision. Also, it is recommended to highlight the need to segregate empirical research for emerging economies and developing countries, due to intrinsic differences that may result in distinctive findings.

## 6. Conclusions

Research on SSCM in emerging economies has begun and advanced in the last years, however it is still in its infancy when compared to research on developed countries. This study attempts to enrich the knowledge of the research field by carrying out a literature review of articles available on specific databases in the last decade. The undertaken different approaches classification and analysis of the selected papers, helped to provide and discuss outcomes on current research status. Certainly, it can be concluded that there is a trend to develop and search for integrating the supply chain and its sustainable practices in emerging economies, however there are opportunities for research on this subject which is still at its early period of research. Topics such as: collaboration of emerging economies as an essential part of the supply chain; sustainable practices innovation within an emerging market context; sourcing and supplier development in developing countries; and even research on methodologies being used for analysis, comprise some of the new perspectives for study on SSCM in emerging economies.

In addition, it can be said that sustainable development has become a term that goes beyond economic issues, since it includes concerns on environmental impact and use of resources, together with social effects. For this reason, this analysis provides knowledge of the current status of research in the field of sustainability in emerging markets, and provides guidance for future research. There is a need to address developing countries context in supply chain management, to highlight the social importance on operations and investigate the interconnections between the three dimensions within a supply chain, looking for a truly sustainable balance in emerging economies. Furthermore, this literature review suggests an integrative approach in the supply chain, targeted to guarantee a thorough improvement on sustainable performance. This research suggests sustainable supply chains move to other developing arenas, such as the use of new technologies and resources from a global context, the implementation of integrated systems, and the generation of resilient grounds, which all have a direct impact on emerging market operations and performance.

It is important to highlight the different perspectives being analyzed, since an emerging economy participating in a SSC is not limited to a geographical area, and it is not restricted to activities undertaken only within that space. In this regard, globalization plays a major role, and the successful management

of a SSCs comprehend an integrated participation of stakeholders, where emerging economies are part of the operations. The basic concept of supply chain comprises the flow of materials, funds, and information across its activities; hence there is an inherent involvement and contribution of emerging economies in SSCM performance results.

Nonetheless, this study has limitations like the quantity of papers found, the databases access and the keyword search. Consequently, further research can contemplate other data sources and research streams to enhance the background and results of this research study.

An effort has been made to enhance the knowledge on the field and this review can be considered as a preliminary group of evidence on the research of SSCM in emerging economies in the last decade. Furthermore, the acknowledged gaps and opportunities for improvement on this study provide guidance to researchers for future investigation.

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## Appendix A

**Table A1.** The classification of the articles reviewed per industry sector.

Industrial Sector	References
V. Multiple sector	[3,5,7,28,29,40,43,45,73,74,83,86,98,102,103,113–115,120,122,125,136]
C. Manufacturing	[4,34,35,42,53,68,77,84,85,91,97,99,100,112,119,123,129,130]
B. Mining and quarrying	[69,76,90,96]
A. Agriculture, forestry and fishing	[47,89,106]
Q. Human health and social work activities	[82,128]
X. No Specific Sector	[25,71]
D. Electricity, gas, steam and air conditioning supply	[104]
N. Administrative and support service activities	[107]
G. Wholesale and retail trade; repair of motor vehicles and motorcycles	[75]
E. Water supply; sewerage, waste management and remediation activities	[105]
F. Construction	[101]

## Appendix B

**Table A2.** Distribution of articles reviewed per methodology.

Methodology	References
Structural Equation Modeling (SEM)	[40,45,73,89,90,103,113,120,125]
Data Analysis	[5,69,76,82,104,114,123,130,136]
Partial Least Squares (PLS)	[4,40,90,113,119]
Best-Worst method (BWM)	[96–98,115]
Content analysis	[25,47,91,105]
Decision Making Trial and Evaluation Laboratory (DEMATEL)	[53,84,85]
Fuzzy Analytical Hierarchy Process (AHP)	[29,112,119]
Interpretive Structural Modelling (ISM)	[35,99,100]
MICMAC analysis	[35,99,100]
Multiple regression analysis/Regression analysis/ MULTI linear regression analysis	[3,7,74]
Statistical Analysis	[43,75,112]
Covariance Based Structural Equation Modeling (CB-SEM)	[83,86]
Confirmatory factor analysis (CFA)	[114,125]
Exploratory factor analysis (EFA)	[29,114]
Life Cycle Analysis (LCA)	[101,106]
Theoretical mathematical modeling	[68,128]
Descriptive analysis	[25,101]
Cooperative game theory	[77]
Data envelopment analysis (DEA)	[42]
frequency and contingency analyses	[71]
Fuzzy cognitive map (FCM)	[42]
Fuzzy-Multi Criteria Decision Making (Fuzzy-MCDM)	[102]
Grey Method	[34]
Holonic approach analysis	[129]
Resource dependence theory (RDT)	[74]
SCOR	[122]
Value chain analysis	[75]

## References

1. Gualandris, J.; Klassen, R.D.; Vachon, S.; Kalchschmidt, M. Sustainable evaluation and verification in supply chains: Aligning and leveraging accountability to stakeholders. *J. Oper. Manag.* **2015**, *38*, 1–13. [[CrossRef](#)]
2. Luthra, S.; Garg, D.; Haleem, A. Empirical Analysis of Green Supply Chain Management Practices in Indian Automobile Industry. *J. Inst. Eng. Ser. C* **2014**, *95*, 119–126. [[CrossRef](#)]
3. Zailani, S.; Jeyaraman, K.; Vengadasan, G.; Premkumar, R. Sustainable supply chain management (SSCM) in Malaysia: A survey. *Int. J. Prod. Econ.* **2012**, *140*, 330–340. [[CrossRef](#)]
4. Roy, V.; Silvestre, B.S.; Singh, S. Reactive and proactive pathways to sustainable apparel supply chains: Manufacturer's perspective on stakeholder salience and organizational learning toward responsible management. *Int. J. Prod. Econ.* **2020**, *227*, 107672. [[CrossRef](#)]
5. Mani, V.; Gunasekaran, A.; Papadopoulos, T.; Hazen, B.; Dubey, R. Supply chain social sustainability for developing nations: Evidence from India. *Resour. Conserv. Recycl.* **2016**, *111*, 42–52. [[CrossRef](#)]
6. Marshall, D.; McCarthy, L.; Heavey, C.; McGrath, P. Environmental and social supply chain management sustainability practices: Construct development and measurement. *Prod. Plan. Control.* **2015**, *26*, 673–690. [[CrossRef](#)]
7. Ali, S.S.; Kaur, R.; Ersöz, F.; Altaf, B.; Basu, A.; Weber, G.-W. Measuring carbon performance for sustainable green supply chain practices: A developing country scenario. *Cent. Eur. J. Oper. Res.* **2020**. [[CrossRef](#)]
8. Tonelli, F.; Evans, S.; Taticchi, P. Industrial Sustainability: Challenges, perspectives, actions. *Int. J. Bus. Innov. Res.* **2013**, *7*, 143–163. [[CrossRef](#)]
9. Carter, C.R.; Washispack, S. Mapping the Path Forward for Sustainable Supply Chain Management: A Review of Reviews. *J. Bus. Logist.* **2018**, *39*, 242–247. [[CrossRef](#)]
10. Roy, V.; Schoenherr, T.; Charan, P. The thematic landscape of literature in sustainable supply chain management (SSCM): A review of the principal facets in SSCM development. *Int. J. Oper. Prod. Manag.* **2018**, *38*, 1091–1124. [[CrossRef](#)]
11. Barbosa-Póvoa, A.P.; da Silva, C.; Carvalho, A. Opportunities and challenges in sustainable supply chain: An operations research perspective. *Eur. J. Oper. Res.* **2018**, *268*, 399–431. [[CrossRef](#)]
12. Motevali Haghighi, S.; Torabi, S.A.; Ghasemi, R. An integrated approach for performance evaluation in sustainable supply chain networks (with a case study). *J. Clean Prod.* **2016**, *137*, 579–597. [[CrossRef](#)]
13. Esfahbodi, A.; Zhang, Y.; Watson, G.; Zhang, T. Governance pressures and performance outcomes of sustainable supply chain management—An empirical analysis of UK manufacturing industry. *J. Clean Prod.* **2017**, *155*, 66–78. [[CrossRef](#)]
14. Carter, C.R.; Rogers, D.S. A framework of sustainable supply chain management: Moving toward new theory. *Int. J. Phys. Distrib. Logist. Manag.* **2008**, *38*, 360–387. [[CrossRef](#)]
15. Seuring, S.; Müller, M. From a literature review to a conceptual framework for sustainable supply chain management. *J. Clean Prod.* **2008**, *16*, 1699–1710. [[CrossRef](#)]
16. Ahi, P.; Searcy, C. A comparative literature analysis of definitions for green and sustainable supply chain management. *J. Clean Prod.* **2013**, *52*, 329–341. [[CrossRef](#)]
17. Gopal, P.R.C.; Thakkar, J. Sustainable supply chain practices: An empirical investigation on Indian automobile industry. *Prod. Plan. Control.* **2016**, *27*, 49–64. [[CrossRef](#)]
18. Kashmanian, R.M. Building a Sustainable Supply Chain: Key Elements. *Environ. Qual. Manag.* **2015**, *24*, 17–41. [[CrossRef](#)]
19. Tseng, M.-L.; Islam, M.S.; Karia, N.; Fauzi, F.A.; Afrin, S. A literature review on green supply chain management: Trends and future challenges. *Resour. Conserv. Recycl.* **2019**, *141*, 145–162. [[CrossRef](#)]
20. Engert, S.; Rauter, R.; Baumgartner, R.J. Exploring the integration of corporate sustainability into strategic management: A literature review. *J. Clean Prod.* **2016**, *112*, 2833–2850. [[CrossRef](#)]
21. Ansari, Z.N.; Kant, R. A state-of-art literature review reflecting 15 years of focus on sustainable supply chain management. *J. Clean Prod.* **2017**, *142*, 2524–2543. [[CrossRef](#)]
22. Tebaldi, L.; Bigliardi, B.; Bottani, E. Sustainable Supply Chain and Innovation: A Review of the Recent Literature. *Sustainability* **2018**, *10*, 3946. [[CrossRef](#)]
23. Rajeev, A.; Pati, R.K.; Padhi, S.S.; Govindan, K. Evolution of sustainability in supply chain management: A literature review. *J. Clean Prod.* **2017**, *162*, 299–314. [[CrossRef](#)]

24. Jayaram, J.; Avittathur, B. Green supply chains: A perspective from an emerging economy. *Int. J. Prod. Econ.* **2015**, *164*, 234–244. [[CrossRef](#)]
25. Jia, F.; Zuluaga-Cardona, L.; Bailey, A.; Rueda, X. Sustainable supply chain management in developing countries: An analysis of the literature. *J. Clean Prod.* **2018**, *189*, 263–278. [[CrossRef](#)]
26. Geng, R.; Mansouri, S.A.; Aktas, E. The relationship between green supply chain management and performance: A meta-analysis of empirical evidences in Asian emerging economies. *Int. J. Prod. Econ.* **2017**, *183*, 245–258. [[CrossRef](#)]
27. Campos, J.K.; Straube, F.; Wutke, S.; Cardoso, P.A. Creating Value by Sustainable Manufacturing and Supply Chain Management Practices—A Cross-Country Comparison. *Procedia Manuf.* **2017**, *8*, 686–690. [[CrossRef](#)]
28. Moreno-Camacho, C.A.; Montoya-Torres, J.R.; Jaegler, A.; Gondran, N. Sustainability metrics for real case applications of the supply chain network design problem: A systematic literature review. *J. Clean Prod.* **2019**, *231*, 600–618. [[CrossRef](#)]
29. Luthra, S.; Mangla, S.K. Evaluating challenges to Industry 4.0 initiatives for supply chain sustainability in emerging economies. *Process. Saf. Environ. Prot.* **2018**, *117*, 168–179. [[CrossRef](#)]
30. Koberg, E.; Longoni, A. A systematic review of sustainable supply chain management in global supply chains. *J. Clean Prod.* **2019**, *207*, 1084–1098. [[CrossRef](#)]
31. Sarkis, J. Sustainable and green supply chains: Advancement through Resources, Conservation and Recycling. *Resour. Conserv. Recycl.* **2018**, *134*, A1–A3. [[CrossRef](#)]
32. Govindan, K.; Seuring, S.; Zhu, Q.; Azevedo, S.G. Accelerating the transition towards sustainability dynamics into supply chain relationship management and governance structures. *J. Clean Prod.* **2016**, *112*, 1813–1823. [[CrossRef](#)]
33. Gimenez, C.; Tachizawa Elcio, M. Extending sustainability to suppliers: A systematic literature review. *Supply Chain Manag. Int. J.* **2012**, *17*, 531–543. [[CrossRef](#)]
34. Kazancoglu, Y.; Ozkan-Ozen, Y.D.; Ozbiltekin, M. Minimizing losses in milk supply chain with sustainability: An example from an emerging economy. *Resour. Conserv. Recycl.* **2018**, *139*, 270–279. [[CrossRef](#)]
35. Luthra, S.; Mangla, S.K. When strategies matter: Adoption of sustainable supply chain management practices in an emerging economy's context. *Resour. Conserv. Recycl.* **2018**, *138*, 194–206. [[CrossRef](#)]
36. Report of the World Commission on Environment and Development: Our Common Future. Available online: <http://www.ask-force.org/web/Sustainability/Brundtland-Our-Common-Future-1987-2008.pdf> (accessed on 1 February 2020).
37. Council of Supply Chain Management Professionals. Available online: [https://cscmp.org/CSCMP/Educate/SCM\\_Definitions\\_and\\_Glossary\\_of\\_Terms/CSCMP/Educate/SCM\\_Definitions\\_and\\_Glossary\\_of\\_Terms.aspx?hkey=60879588-f65f-4ab5-8c4b-6878815ef921](https://cscmp.org/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms.aspx?hkey=60879588-f65f-4ab5-8c4b-6878815ef921) (accessed on 30 January 2020).
38. Paulraj, A. Understanding the relationships between internal resources and capabilities, sustainable supply management and organizational sustainability. *J. Supply Chain Manag.* **2011**, *47*, 19–37. [[CrossRef](#)]
39. Bateh, J.; Heaton, C.; Arbogast, G.W.; Broadbent, A. Defining Sustainability in the Business Setting. *Am. J. Bus. Educ.* **2013**, *6*, 397–400. [[CrossRef](#)]
40. Thong, K.-C.; Wong, W.P. Pathways for Sustainable Supply Chain Performance—Evidence from a Developing Country, Malaysia. *Sustainability* **2018**, *10*, 2781. [[CrossRef](#)]
41. Callado, A.; Fensterseifer, J.E. Corporate Sustainability Measure From An Integrated Perspective: The Corporate Sustainability Grid (CSG). *Int. J. Bus. Insights Transform.* **2011**, *3*, 44–53.
42. Roy, S.; Das, M.; Ali, S.M.; Raihan, A.S.; Paul, S.K.; Kabir, G. Evaluating strategies for environmental sustainability in a supply chain of an emerging economy. *J. Clean Prod.* **2020**, *262*, 121389. [[CrossRef](#)]
43. Morais, D.O.C.; Silvestre, B.S. Advancing social sustainability in supply chain management: Lessons from multiple case studies in an emerging economy. *J. Clean Prod.* **2018**, *199*, 222–235. [[CrossRef](#)]
44. Sloan, T.W. Measuring the Sustainability of Global Supply Chains: Current Practices and Future Directions. *J. Glob. Bus. Manag.* **2010**, *6*, 92–107.
45. Ilyas, S.; Hu, Z.; Wiwattanakornwong, K. Unleashing the role of top management and government support in green supply chain management and sustainable development goals. *Environ. Sci. Pollut. Res.* **2020**, *27*, 8210–8223. [[CrossRef](#)] [[PubMed](#)]
46. Sarkis, J.; Zhu, Q.; Lai, K.H. An organizational theoretic review of green supply chain management literature. *Int. J. Prod. Econ.* **2011**, *130*, 1–15. [[CrossRef](#)]
47. Gold, S.; Hahn, R.; Seuring, S. Sustainable supply chain management in “Base of the Pyramid” food projects—A path to triple bottom line approaches for multinationals? *Int. Bus. Rev.* **2013**, *22*, 784–799. [[CrossRef](#)]

48. Yu, V.F.; Tseng, L.-C. Measuring social compliance performance in the global sustainable supply chain: An AHP approach. *J. Inf. Optim. Sci.* **2014**, *35*, 47–72. [[CrossRef](#)]
49. Reefke, H.; Sundaram, D. Key themes and research opportunities in sustainable supply chain management—Identification and evaluation. *Omega* **2017**, *66*, 195–211. [[CrossRef](#)]
50. Closs, D.J.; Speier, C.; Meacham, N. Sustainability to support end-to-end value chains: The role of supply chain management. *J. Acad. Mark. Sci.* **2011**, *39*, 101–116. [[CrossRef](#)]
51. Liu, W.; Bai, E.; Liu, L.; Wei, W. A Framework of Sustainable Service Supply Chain Management: A Literature Review and Research Agenda. *Sustainability* **2017**, *9*, 421. [[CrossRef](#)]
52. Köksal, D.; Strähle, J.; Müller, M.; Freise, M. Social Sustainable Supply Chain Management in the Textile and Apparel Industry—A Literature Review. *Sustainability* **2017**, *9*, 100. [[CrossRef](#)]
53. Moktadir, M.A.; Ali, S.M.; Rajesh, R.; Paul, S.K. Modeling the interrelationships among barriers to sustainable supply chain management in leather industry. *J. Clean Prod.* **2018**, *181*, 631–651. [[CrossRef](#)]
54. Kim, K.; Jeong, B.; Jung, H. Supply chain surplus: Comparing conventional and sustainable supply chains. *Flex. Serv. Manuf. J.* **2014**, *26*, 5–23. [[CrossRef](#)]
55. Ansari, Z.N.; Qureshi, M.N. Sustainability in Supply Chain Management: An Overview. *IUP J. Supply Chain Manag.* **2015**, *12*, 24–46.
56. Beske-Janssen, P.; Johnson, M.P.; Schaltegger, S. 20 years of performance measurement in sustainable supply chain management—What has been achieved? *Supply Chain Manag. Int. J.* **2015**, *20*, 664–680. [[CrossRef](#)]
57. Varsei, M. Sustainable supply chain management: A brief literature review. *J. Dev. Areas* **2016**, *50*, 411–419. [[CrossRef](#)]
58. Wolf, J. Sustainable Supply Chain Management Integration: A Qualitative Analysis of the German Manufacturing Industry. *J. Bus. Ethics* **2011**, *102*, 221–235. [[CrossRef](#)]
59. Wittstruck, D.; Teuteberg, F. Understanding the Success Factors of Sustainable Supply Chain Management: Empirical Evidence from the Electrics and Electronics Industry. *Corp. Soc. Responsib. Environ. Manag.* **2012**, *19*, 141–158. [[CrossRef](#)]
60. Pagell, M.; Shevchenko, A. Why Research in Sustainable Supply Chain Management Should Have no Future. *J. Supply Chain Manag.* **2014**, *50*, 44–55. [[CrossRef](#)]
61. Taticchi, P.; Tonelli, F.; Pasqualino, R. Performance measurement of sustainable supply chains: A literature review and a research agenda. *Int. J. Product. Perform. Manag.* **2013**, *62*, 782–804. [[CrossRef](#)]
62. Gold, S.; Schleper, M.C. A pathway towards true sustainability: A recognition foundation of sustainable supply chain management. *Eur. Manag. J.* **2017**, *35*, 425–429. [[CrossRef](#)]
63. Roztock, N.; Weistroffer, H.R. Information technology success factors and models in developing and emerging economies. *Inf. Technol. Dev.* **2011**, *17*, 163–167. [[CrossRef](#)]
64. InvestingAnswers. Emerging Market Economy. Available online: <https://investinganswers.com/dictionary/e/emerging-market-economy> (accessed on 3 July 2020).
65. Fantom, N.; Serajuddin, U. The World Bank’s Classification of Countries by Income. Available online: <http://documents1.worldbank.org/curated/en/408581467988942234/pdf/WPS7528.pdf> (accessed on 3 July 2020).
66. De Abreu, M.C.S.; de Castro, F.; de Assis Soares, F.; da Silva Filho, J.C.L. A comparative understanding of corporate social responsibility of textile firms in Brazil and China. *J. Clean Prod.* **2012**, *20*, 119–126. [[CrossRef](#)]
67. Tang, C.S. Socially responsible supply chains in emerging markets: Some research opportunities. *J. Oper. Manag.* **2018**, *57*, 1–10. [[CrossRef](#)]
68. Choi, T.-M.; Luo, S. Data quality challenges for sustainable fashion supply chain operations in emerging markets: Roles of blockchain, government sponsors and environment taxes. *Transp. Res. Part E Logist. Transp. Rev.* **2019**, *131*, 139–152. [[CrossRef](#)]
69. Silvestre, B.S. Sustainable supply chain management in emerging economies: Environmental turbulence, institutional voids and sustainability trajectories. *Int. J. Prod. Econ.* **2015**, *167*, 156–169. [[CrossRef](#)]
70. Khalid Raja, U.; Seuring, S.; Beske, P.; Land, A.; Yawar Sadaat, A.; Wagner, R. Putting sustainable supply chain management into base of the pyramid research. *Supply Chain Manag. Int. J.* **2015**, *20*, 681–696. [[CrossRef](#)]
71. Khalid, R.U.; Seuring, S. Analyzing Base-of-the-Pyramid Research from a (Sustainable) Supply Chain Perspective. *J. Bus. Ethics* **2019**, *155*, 663–686. [[CrossRef](#)]
72. Tong, X.; Lai, K.H.; Zhu, Q.; Zhao, S.; Chen, J.; Cheng, T.C.E. Multinational enterprise buyers’ choices for extending corporate social responsibility practices to suppliers in emerging countries: A multi-method study. *J. Oper. Manag.* **2018**, *63*, 25–43. [[CrossRef](#)]

73. Wu, J.; Zhang, X.; Lu, J. Empirical Research on Influencing Factors of Sustainable Supply Chain Management—Evidence from Beijing, China. *Sustainability* **2018**, *10*, 1595. [CrossRef]
74. Esfahbodi, A.; Zhang, Y.; Watson, G. Sustainable supply chain management in emerging economies: Trade-offs between environmental and cost performance. *Int. J. Prod. Econ.* **2016**, *181*, 350–366. [CrossRef]
75. Gómez-Luciano, C.A.; Rondón Domínguez, F.R.; González-Andrés, F.; Urbano López De Meneses, B. Sustainable supply chain management: Contributions of supplies markets. *J. Clean Prod.* **2018**, *184*, 311–320. [CrossRef]
76. Silvestre, B.S. A hard nut to crack! Implementing supply chain sustainability in an emerging economy. *J. Clean Prod.* **2015**, *96*, 171–181. [CrossRef]
77. Asian, S.; Hafezalkotob, A.; John, J.J. Sharing economy in organic food supply chains: A pathway to sustainable development. *Int. J. Prod. Econ.* **2019**, *218*, 322–338. [CrossRef]
78. Masoumi, S.M.; Kazemi, N.; Abdul-Rashid, S.H. Sustainable Supply Chain Management in the Automotive Industry: A Process-Oriented Review. *Sustainability* **2019**, *11*, 3945. [CrossRef]
79. United, N. International Standard Industrial Classification of All Industrial Activities (ISIC), Rev.4. Available online: [https://unstats.un.org/unsd/publication/seriesM/seriesm\\_4rev4e.pdf](https://unstats.un.org/unsd/publication/seriesM/seriesm_4rev4e.pdf) (accessed on 2 April 2020).
80. Gao, D.; Xu, Z.; Ruan, Y.Z.; Lu, H. From a systematic literature review to integrated definition for sustainable supply chain innovation (SSCI). *J. Clean Prod.* **2017**, *142*, 1518–1538. [CrossRef]
81. Brandenburg, M.; Hahn, G.J.; Rebs, T. Sustainable Supply Chains: Recent Developments and Future Trends. In *Social and Environmental Dimensions of Organizations and Supply Chains*; Brandenburg, M., Hahn, G.J., Rebs, T., Eds.; Springer: Cham, Switzerland, 2018; Volume 5. [CrossRef]
82. Scavarda, A.; Daú, G.L.; Scavarda, L.F.; Korzenowski, A.L. A proposed healthcare supply chain management framework in the emerging economies with the sustainable lenses: The theory, the practice, and the policy. *Resour. Conserv. Recycl.* **2019**, *141*, 418–430. [CrossRef]
83. Mani, V.; Jabbour, C.J.C.; Mani, K.T.N. Supply chain social sustainability in small and medium manufacturing enterprises and firms' performance: Empirical evidence from an emerging Asian economy. *Int. J. Prod. Econ.* **2020**, *227*, 107656. [CrossRef]
84. Li, Y.; Mathiyazhagan, K. Application of DEMATEL approach to identify the influential indicators towards sustainable supply chain adoption in the auto components manufacturing sector. *J. Clean Prod.* **2018**, *172*, 2931–2941. [CrossRef]
85. Mathivathanan, D.; Kannan, D.; Haq, A.N. Sustainable supply chain management practices in Indian automotive industry: A multi-stakeholder view. *Resour. Conserv. Recycl.* **2018**, *128*, 284–305. [CrossRef]
86. Mani, V.; Gunasekaran, A.; Delgado, C. Enhancing supply chain performance through supplier social sustainability: An emerging economy perspective. *Int. J. Prod. Econ.* **2018**, *195*, 259–272. [CrossRef]
87. Bastas, A.; Liyanage, K. Sustainable supply chain quality management: A systematic review. *J. Clean Prod.* **2018**, *181*, 726–744. [CrossRef]
88. Schöggel, J.-P.; Fritz, M.M.C.; Baumgartner, R.J. Toward supply chain-wide sustainability assessment: A conceptual framework and an aggregation method to assess supply chain performance. *J. Clean Prod.* **2016**, *131*, 822–835. [CrossRef]
89. Akhtar, P.; Tse, Y.K.; Khan, Z.; Rao-Nicholson, R. Data-driven and adaptive leadership contributing to sustainability: Global agri-food supply chains connected with emerging markets. *Int. J. Prod. Econ.* **2016**, *181*, 392–401. [CrossRef]
90. Bag, S.; Wood, L.C.; Xu, L.; Dhamija, P.; Kayikci, Y. Big data analytics as an operational excellence approach to enhance sustainable supply chain performance. *Resour. Conserv. Recycl.* **2020**, *153*, 104559. [CrossRef]
91. de Vargas Mores, G.; Finocchio, C.P.S.; Barichello, R.; Pedrozo, E.A. Sustainability and innovation in the Brazilian supply chain of green plastic. *J. Clean Prod.* **2018**, *177*, 12–18. [CrossRef]
92. Turker, D.; Altuntas, C. Sustainable supply chain management in the fast fashion industry: An analysis of corporate reports. *Eur. Manag. J.* **2014**, *32*, 837–849. [CrossRef]
93. Liu, S.; Kasturiratne, D.; Moizer, J. A hub-and-spoke model for multi-dimensional integration of green marketing and sustainable supply chain management. *Ind. Mark. Manag.* **2012**, *41*, 581–588. [CrossRef]
94. Fleury, A.-M.; Davies, B. Sustainable supply chains—Minerals and sustainable development, going beyond the mine. *Resour. Policy* **2012**, *37*, 175–178. [CrossRef]
95. Morali, O.; Searcy, C. A Review of Sustainable Supply Chain Management Practices in Canada. *J. Bus. Ethics* **2013**, *117*, 635–658. [CrossRef]

96. Wan Ahmad, W.N.K.; Rezaei, J.; Sadaghiani, S.; Tavasszy, L.A. Evaluation of the external forces affecting the sustainability of oil and gas supply chain using Best Worst Method. *J. Clean Prod.* **2017**, *153*, 242–252. [[CrossRef](#)]
97. Munny, A.A.; Ali, S.M.; Kabir, G.; Moktadir, M.A.; Rahman, T.; Mahtab, Z. Enablers of social sustainability in the supply chain: An example of footwear industry from an emerging economy. *Sustain. Prod. Consum.* **2019**, *20*, 230–242. [[CrossRef](#)]
98. Suhi, S.A.; Enayet, R.; Haque, T.; Ali, S.M.; Moktadir, M.A.; Paul, S.K. Environmental sustainability assessment in supply chain: An emerging economy context. *Environ. Impact Assess. Rev.* **2019**, *79*, 106306. [[CrossRef](#)]
99. Diabat, A.; Kannan, D.; Mathiyazhagan, K. Analysis of enablers for implementation of sustainable supply chain management—A textile case. *J. Clean Prod.* **2014**, *83*, 391–403. [[CrossRef](#)]
100. Mani, V.; Agrawal, R.; Sharma, V. Impediments to Social Sustainability Adoption in the Supply Chain: An ISM and MICMAC Analysis in Indian Manufacturing Industries. *Glob. J. Flex. Syst. Manag.* **2016**, *17*, 135–156. [[CrossRef](#)]
101. Marzuki, P.F.; Abduh, M.; Driejana, R. The Sustainable Infrastructure through the Construction Supply Chain Carbon Footprint Approach. *Procedia Eng.* **2017**, *171*, 312–322. [[CrossRef](#)]
102. Padhi, S.S.; Pati, R.K.; Rajeev, A. Framework for selecting sustainable supply chain processes and industries using an integrated approach. *J. Clean Prod.* **2018**, *184*, 969–984. [[CrossRef](#)]
103. Jakhar, S.K.; Rathore, H.; Mangla, S.K. Is lean synergistic with sustainable supply chain? An empirical investigation from emerging economy. *Resour. Conserv. Recycl.* **2018**, *139*, 262–269. [[CrossRef](#)]
104. Ding, H.; Huang, H.; Tang, O. Sustainable supply chain collaboration with outsourcing pollutant-reduction service in power industry. *J. Clean Prod.* **2018**, *186*, 215–228. [[CrossRef](#)]
105. Azevedo, B.D.; Scavarda, L.F.; Caiado, R.G.G. Urban solid waste management in developing countries from the sustainable supply chain management perspective: A case study of Brazil's largest slum. *J. Clean Prod.* **2019**, *233*, 1377–1386. [[CrossRef](#)]
106. Krishnan, R.; Agarwal, R.; Bajada, C.; Arshinder, K. Redesigning a food supply chain for environmental sustainability—An analysis of resource use and recovery. *J. Clean Prod.* **2020**, *242*, 118374. [[CrossRef](#)]
107. Delmonico, D.; Jabbour, C.J.C.; Pereira, S.C.F.; de Sousa Jabbour, A.B.L.; Renwick, D.W.S.; Thomé, A.M.T. Unveiling barriers to sustainable public procurement in emerging economies: Evidence from a leading sustainable supply chain initiative in Latin America. *Resour. Conserv. Recycl.* **2018**, *134*, 70–79. [[CrossRef](#)]
108. Ding, H.; Zhao, Q.; An, Z.; Xu, J.; Liu, Q. Pricing strategy of environmental sustainable supply chain with internalizing externalities. *Int. J. Prod. Econ.* **2015**, *170 Pt B*, 563–575. [[CrossRef](#)]
109. Zhang, Q.; Shah, N.; Wassick, J.; Helling, R.; van Egerschot, P. Sustainable supply chain optimisation: An industrial case study. *Comput. Ind. Eng.* **2014**, *74*, 68–83. [[CrossRef](#)]
110. Ding, H.; Liu, Q.; Zheng, L. Assessing the economic performance of an environmental sustainable supply chain in reducing environmental externalities. *Eur. J. Oper. Res.* **2016**, *255*, 463–480. [[CrossRef](#)]
111. Ding, H.; Zhao, Q.; An, Z.; Tang, O. Collaborative mechanism of a sustainable supply chain with environmental constraints and carbon caps. *Int. J. Prod. Econ.* **2016**, *181 Pt A*, 191–207. [[CrossRef](#)]
112. Kumar, A.; Moktadir, A.; Liman, Z.R.; Gunasekaran, A.; Hegemann, K.; Rehman Khan, S.A. Evaluating sustainable drivers for social responsibility in the context of ready-made garments supply chain. *J. Clean Prod.* **2020**, *248*, 119231. [[CrossRef](#)]
113. Chacón Vargas, J.R.; Moreno Mantilla, C.E.; de Sousa Jabbour, A.B.L. Enablers of sustainable supply chain management and its effect on competitive advantage in the Colombian context. *Resour. Conserv. Recycl.* **2018**, *139*, 237–250. [[CrossRef](#)]
114. Mani, V.; Agarwal, R.; Gunasekaran, A.; Papadopoulos, T.; Dubey, R.; Childe, S.J. Social sustainability in the supply chain: Construct development and measurement validation. *Ecol. Indic.* **2016**, *71*, 270–279. [[CrossRef](#)]
115. Badri Ahmadi, H.; Kusi-Sarpong, S.; Rezaei, J. Assessing the social sustainability of supply chains using Best Worst Method. *Resour. Conserv. Recycl.* **2017**, *126*, 99–106. [[CrossRef](#)]
116. Yawar, S.A.; Seuring, S. Management of Social Issues in Supply Chains: A Literature Review Exploring Social Issues, Actions and Performance Outcomes. *J. Bus. Ethics* **2017**, *141*, 621–643. [[CrossRef](#)]
117. Tajbakhsh, A.; Hassini, E. A data envelopment analysis approach to evaluate sustainability in supply chain networks. *J. Clean Prod.* **2015**, *105*, 74–85. [[CrossRef](#)]
118. Beske, P.; Seuring, S. Putting sustainability into supply chain management. *Supply Chain Manag. Int. J.* **2014**, *19*, 322–331. [[CrossRef](#)]

119. Katiyar, R.; Meena, P.L.; Barua, M.K.; Tibrewala, R.; Kumar, G. Impact of sustainability and manufacturing practices on supply chain performance: Findings from an emerging economy. *Int. J. Prod. Econ.* **2018**, *197*, 303–316. [[CrossRef](#)]
120. Hong, J.; Zhang, Y.; Ding, M. Sustainable supply chain management practices, supply chain dynamic capabilities, and enterprise performance. *J. Clean Prod.* **2018**, *172*, 3508–3519. [[CrossRef](#)]
121. Chardine-Baumann, E.; Botta-Genoulaz, V. A framework for sustainable performance assessment of supply chain management practices. *Comput. Ind. Eng.* **2014**, *76*, 138–147. [[CrossRef](#)]
122. Bendul, J.C.; Rosca, E.; Pivovarov, D. Sustainable supply chain models for base of the pyramid. *J. Clean Prod.* **2017**, *162*, 107–120. [[CrossRef](#)]
123. Nayak, R.; Akbari, M.; Maleki Far, S. Recent sustainable trends in Vietnam’s fashion supply chain. *J. Clean Prod.* **2019**, *225*, 291–303. [[CrossRef](#)]
124. Govindan, K.; Cheng, T.C.E. Sustainable supply chain management: Advances in operations research perspective. *Comput. Oper. Res.* **2015**, *54*, 177–179. [[CrossRef](#)]
125. Mani, V.; Gunasekaran, A. Four forces of supply chain social sustainability adoption in emerging economies. *Int. J. Prod. Econ.* **2018**, *199*, 150–161. [[CrossRef](#)]
126. Zeng, H.; Chen, X.; Xiao, X.; Zhou, Z. Institutional pressures, sustainable supply chain management, and circular economy capability: Empirical evidence from Chinese eco-industrial park firms. *J. Clean Prod.* **2017**, *155*, 54–65. [[CrossRef](#)]
127. Paulraj, A.; Chen, I.J.; Blome, C. Motives and Performance Outcomes of Sustainable Supply Chain Management Practices: A Multi-theoretical Perspective. *J. Bus. Ethics* **2017**, *145*, 239–258. [[CrossRef](#)]
128. Subramanian, L.; Alexiou, C.; Nellis, J.G.; Steele, P.; Tolani, F. Developing a sustainability index for public health supply chains. *Sustain. Futures* **2020**, *2*, 100019. [[CrossRef](#)]
129. Martín-Gómez, A.; Aguayo-González, F.; Luque, A. A holonic framework for managing the sustainable supply chain in emerging economies with smart connected metabolism. *Resour. Conserv. Recycl.* **2019**, *141*, 219–232. [[CrossRef](#)]
130. Silvestre, B.S.; Monteiro, M.S.; Viana, F.L.E.; de Sousa-Filho, J.M. Challenges for sustainable supply chain management: When stakeholder collaboration becomes conducive to corruption. *J. Clean Prod.* **2018**, *194*, 766–776. [[CrossRef](#)]
131. Gunasekaran, A.; Jabbour, C.J.C.; Jabbour, A.B.L.d.S. Managing organizations for sustainable development in emerging countries: An introduction. *Int. J. Sustain. Dev. World Ecol.* **2014**, *21*, 195–197. [[CrossRef](#)]
132. Silva, G.M.; Gomes, P.J.; Sarkis, J. The role of innovation in the implementation of green supply chain management practices. *Bus. Strategy Environ.* **2019**, *28*, 819–832. [[CrossRef](#)]
133. Mangla, S.K.; Kumar, P.; Barua, M.K. Prioritizing the responses to manage risks in green supply chain: An Indian plastic manufacturer perspective. *Sustain. Prod. Consum.* **2015**, *1*, 67–86. [[CrossRef](#)]
134. Mangla, S.K.; Govindan, K.; Luthra, S. Prioritizing the barriers to achieve sustainable consumption and production trends in supply chains using fuzzy Analytical Hierarchy Process. *J. Clean Prod.* **2017**, *151*, 509–525. [[CrossRef](#)]
135. Tumpa, T.J.; Ali, S.M.; Rahman, M.H.; Paul, S.K.; Chowdhury, P.; Rehman Khan, S.A. Barriers to green supply chain management: An emerging economy context. *J. Clean Prod.* **2019**, *236*, 117617. [[CrossRef](#)]
136. Jia, F.; Gong, Y.; Brown, S. Multi-tier sustainable supply chain management: The role of supply chain leadership. *Int. J. Prod. Econ.* **2019**, *217*, 44–63. [[CrossRef](#)]
137. Tseng, M.; Lim, M.; Wong, W.P. Sustainable supply chain management: A closed-loop network hierarchical approach. *Ind. Manag. Data Syst.* **2015**, *115*, 436–461. [[CrossRef](#)]

