Print ISSN: 1738-3110 / Online ISSN 2093-7717
JDS website: http://www.jds.or.kr/
http://dx.doi.org/10.15722/jds.20.07.202207.47

How Research in Sustainable Energy Supply Chain Distribution Is Evolving: Bibliometric Review

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Received: March 14, 2022. Revised: April 16, 2022. Accepted: July 05, 2022.

Abstract

Purpose: As the need to transition into the distribution of cleaner energy has garnered corporate and scholarly interests, this study aims to track the research trends in sustainable energy supply chains for five years before 2021. **Research methodology:** This study was conducted by a bibliometric literature review and analysis to map the field's evolution between 2016 and 2020. Out of an initial title search result of 2,484 papers from the Scopus engine, filtering led to 180 documents obtained. The data was exported in excel format (CSV) to VOSviewer software to generate and analyze network visualization of sustainable energy supply chain trends. **Results:** The results revealed China's the highest publishing country, with 36 research papers. The Journal of Cleaner Production was the top publishing source, with 22 papers per year. These findings showed five clusters formed in the bibliographic coupling of countries. Circular Economy and Green Supply Chain Management represent the current hot topics. Research gaps identified in the field included limited cross-industry testing and modifying sustainable supply chain models. **Conclusion:** This paper contributes to the sustainability literature on supply chains by providing an overview of trends and research directions for scholars' and practitioners' consideration in future research.

Keywords : Sustainable Energy Supply Chain, Sustainable Supply Chain, Distribution Chain, Bibliometric Literature Review

JEL Classification Code : M11, M16, O32

1. Introduction

Sustainability is becoming a term well recognized in many social circles in this day and age. According to the preceding millennium Goals set by the United Nations, 17 Sustainable Development Goals are set to be attained before the end of 2030, including sustainable cities and communities, reduced inequality, responsible consumption and production, and climate action. Since then, the Sustainable Development field has been generating a lot of interest among scholars, researchers, businesses, governments, and regulatory institutions. Its main aim is to ensure that the satisfaction of current needs does not negatively affect future generations' ability to satisfy their needs (Geissdoerfer, Morioka, de Carvalho, & Evans, 2018).

* Acknowledgements (if any): The author expresses gratitude to researchers who have contributed towards the sustainability literature of distribution energy supply chains.

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As a result, the call to action to achieve Sustainability Development Goals is pushing businesses to re-evaluate the impact of their business practices on the environment. Customers are also becoming increasingly aware of and demand eco-friendly products and business practices (Rauter, Globocnik, Perl-Vorbach, & Baumgartner, 2019). Due to these changes, businesses and practitioners are becoming more aware and interested in shaping their role toward sustainability. Furthermore, numerous researches indicate that entrepreneurial sustainability and environmental sustainability are well-linked to solid organizational performance. For instance, (Roxas, Ashill, & Chadee, 2017) demonstrate a positive link between sustainability and firm performance in a study of 197 Small Medium Enterprises in the Philippines. The study elaborates that firms can develop superior results when incorporating sustainability practices in their strategic framework. Sensemaking can as well be applied to solidify team work and sustainable performance enhanced by interactive capability with a focus on sustainable practices (Qamari, Shaikh, & Udin, 2019).

Sustainable supply chain management refers to the control of material, information, and flow of capital and teamwork between firms in a supply chain while considering the aims of sustainable development (Carter & Rogers, 2008). According to (Cucchiella & D'Adamo, 2013), Sustainable Supply Chain Management (SSCM) is a concept that aims to create a resolution between economic, social, and environmental aspects. To promote renewable energy production, distribution, and deployment, leading to commercialization, companies need to revolutionize their supply chains from traditional ones to sustainable ones. Research on this concept has been commanding the attention of scholars in the previous decades. For example, (Carter & Easton, 2011) explores sustainable supply chain management from the 2000s to 2010. By applying a systematic literature review approach, researchers found that in the past 20 years, environmental parts of the supply had the top focus in the field. However, more recent articles showed a relative shift of focus to Social Responsibility (SR) or Sustainability. Secondly, the consumer product and distribution industries had the most significant emphasis on the industry aspect among other sectors. The theories adopted to explain sustainability pre-2010 included stakeholder theory, resource-based view, and natural resource-based view. In this connection, this study will be beneficial to unearth topics of high interest within the field and map out current literature on sustainability in distribution chains between 2016 and 2020. The research will be highly beneficial to distribution managers and CEOs in shaping up-to-date supply chain strategies, while also governments and institutions in shaping sustainability policies in supply circles.

This study will therefore be classified into six sections. The introduction is the first section, whereas the literature review will come in the second category. In the third section, the study unveils the research methodology. Following this section are results and discussion categories. The study's implications are present in the fifth classification, while the conclusion and recommendations precede references in the second-last section of the study.

2. Literature Review

2.1. Sustainable Energy Sources

Sustainable energy is a type of energy that is derived from the repetitive and persistent energy flows that occur in the natural setting of the environment locally (Qazi, Hussain, Rahim, Hardaker, Alghazzawi, Shaban, & Haruna, 2019). An example of renewable sources includes solar, hydropower, and geothermal. On the other hand, non-renewable energy refers to the static sources of energy that are only released when human interaction is involved and whose previous isolated energy potential is tapped into by external forces or action. Non-renewable energy resources include fossil fuels like coal and nuclear fuels.

2.2. Solar

Solar energy originates from the heat and radiant light harnessed from the sun and then converted into electric power. This type of energy has wide usage in tropical regions and countries with a lot of radiant heat. In terms of its flexibility index, solar energy performs better relative to other types of renewable energy sources and can also power various portable electric devices (Wee, Yang, Chou, & Padilan, 2012).

2.3. Biomass

Biomass refers to a renewable organic material from plants and animals (Güney & Kantar, 2020). In the mid-1800s, Biomass was widely used within America, and it is famous for generating heat for cooking. It is more commonly used in the recent era to tackle carbon emissions and has become an important renewable energy source in powering transportation, especially in developed countries. The origins of biomass energy include wood, crops, biogenic materials, and animal manure.

2.4. Geothermal Energy

According to (Moya, Aldás, & Kaparaju, 2018), Geothermal energy generation comes from the sub-surface

of the earth. It can be utilized for different purposes depending on its characteristics, such as heating, cooling, or generating clean electricity. In nations like Iceland, El Salvador, New Zealand, Kenya, and the Philippines, geothermal energy accounts for a more significant chunk of their electricity demand. The collection and storage of geothermal energy usually require a lot of financial and technological investments. Moreover, geothermal energy acquisition is limited to particular regions to maximize its efficiency.

2.5. Wind Energy

One of the main benefits of wind energy is that it safeguards economies from exposure to the volatility of fuel prices. As industrialized companies and states have been growing dependent on fuel importation from politically unstable states, a shift to wind energy provides a better alternative (Martin & Ramsey, 2009). In wind energy generation, wind turbines are utilized to create electric power. Wind energy, being widely used, has enabled the pumping of water in farming areas for some years. Smaller wind turbines are installed in urban areas to generate energy (Sahu, 2018). Although wind strength can vary from time to time and place, wind energy can be used to balance different energy demand periods.

2.6. Hydropower

Seawater, as well as rain, is vital for different uses. Electric power can be generated from the flow of water by turbines and mills, whose applications have been valuable in industrial, residential, and agricultural settings. In the research (Yüksel, 2010), the researcher highlights why hydropower is a renewable source of energy requiring more excellent international support. Furthermore, Yuksel outlines that hydropower creates energy security and price stability, contributes to the storage of fresh water, and supports the development of other renewables. In addition, it helps fight climate change, improves the quality of the air we breathe, and improves the stability and reliability of the electric grid as it is the fastest among other renewables when it comes to electricity generation being installed on the grid.

2.7. Sustainable Supply Chain Flows

In likeness to other typical supply chains, the elements that are also part of a renewable supply chain are information flow, physical flow, and financial flow. These three flows represent material, money, and information. Companies' increased supply chain performance from the physical flow in the renewable energy supply chain is enabled through constant awareness of going green manufacturing activities, logistics, and products (Wee et al., 2012). Information flows are typically required and accompanied by physical flows, whereas financial flows stream from stakeholders or business funds, and their importance is for controlling supply chain functions. In addition, some factors are crucial in different parts of the supply chain, as shown in Figure 1. Different energy needs and impacts are identified in each stage, from the supply side to the demand side.

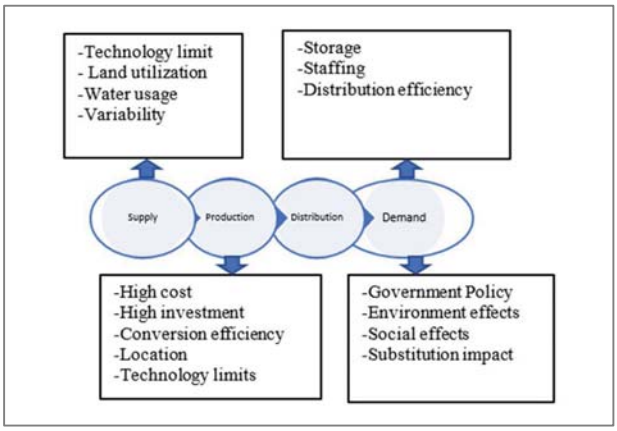

Figure 1: Sustainable Energy Supply Chain Concerns

Therefore, the purpose of this paper is to map out the research trends of sustainable energy supply chain to provide more understanding of the current condition of the field and future research directions. It identifies the most influential countries and journals in the area and the publication output rate from 2016-to 2020. This paper will be divided into sections; section two expounds on the research methodology, whereas section three comprises research findings and discussion. Section four will consist of conclusions followed by references.

3. Research Methods

3.1. Bibliometric Literature Review

Bibliometric review and analysis outline a body of literature by identifying how a field of research has been evolving, areas of high research significance, and future implications (Xu, Chen, Jia, Brown, Gong, & Xu, 2018). Far from literature reviews (Det Udomsap & Hallinger, 2020), bibliometric analysis tools possess powerful capabilities that produce network linkages for different types of analysis like citation and keyword analysis. Quantitative research data utilized for bibliometric analysis are commonly retrieved from indexed publications in reputable sources like Scopus, Web of Sciences, and Google Scholar. However, the Scopus

engine is preferable to other sources because it is the most extensive database of highly peer-reviewed literature (Chicksand, Watson, Walker, Radnor, & Johnston, 2012). Therefore, the study is developed from a strong foundation of knowledge and not expert opinions of groups. The management field essentially utilizes this form of research to enhance the understanding of theoretical framework and trends, for instance, in the management of supply chains, information systems, and operation management (Muñoz-Villamizar, Solano, Quintero-Araujo, & Santos, 2019).

3.2. Search Process

This research study draws and analyses data from scientific articles that have undergone publication from top reputable journals in the Scopus engine, for example, Emerald, Taylor and Francis, Inderscience, and Elsevier. The research collects data from 2016-to 2020 through a systematic process from the Scopus database. Table one showcases the methods utilized and generates the research string from the engine.

Table 1: Adopted Methodology

Item of Analysis	Articles, books, and journals whose research topics are relevant to the global sustainable energy supply chain
Form of Analysis	Quantitative Research
Duration of Analysis	2016-2020
Search Engine	Scopus
Query-String	Title-abs-key (sustainable and energy and supply and chain) and (exclude (pubyear, 2021)) and (limit-to(pubyear,2020) or limit-to (pubyear, 2019) or limit-to (pubyear, 2018) or limit-to (pubyear, 2017) or limit-to (pubyear, 2016)) and (limit-to (subjarea, "busi")) and (limit-to (exactkeyword, "supply chains") or limit-to (exactkeyword, "supply chain management") or limit-to (exactkeyword, "sustainability"))

Source: Ngetich, 2021

According to figure two, the first step of paper selection proceeds after the initial document search of "Sustainable energy supply chain" under the title, abstract, and keywords option. Before paper selection, we gathered 2,484 documents, unfiltered and showcasing publications within the sustainable energy supply chain started in 1993, as illustrated in figure three. We continue to select four document types: articles, book chapters, reviews, and conference papers. Our wide selection enables us to receive sufficient literature for analysis without bias. The period of choice for selecting relevant documents was between 2016 and 2020. Therefore, only recent papers were selected for this study. We do not include 2021 to avoid partial statistics, given that the year is not complete during this research. The following stage was to select all data sources that had either reached the final publication stage or the papers still in press. Keywords filtering in stage five was limited to "sustainable," "energy," and "supply chains," whereas source types were not limited to any particular journals. We finally retrieved 182 documents from the filtering, a total of 2,484 papers.

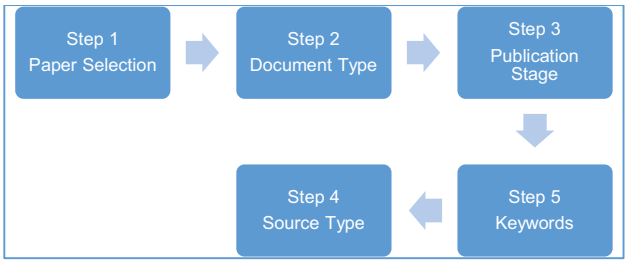

Figure 2: Methodological Steps Followed

3.3. Initial Descriptive Statistics

There were 2,484 documents published under the title "Sustainable Energy Supply Chain" before 2020 as generated from the Scopus engine. These results exclude the year 2021 to avoid including partial statistics. As seen in figure three, it is evident that there is a growing interest in the sustainable energy supply chain field as more research input is made compared to previous years. Just as the work (Carter & Easton, 2011) provided projections on this trend in the 2000s era, the figure below provides an upward trend in this field.

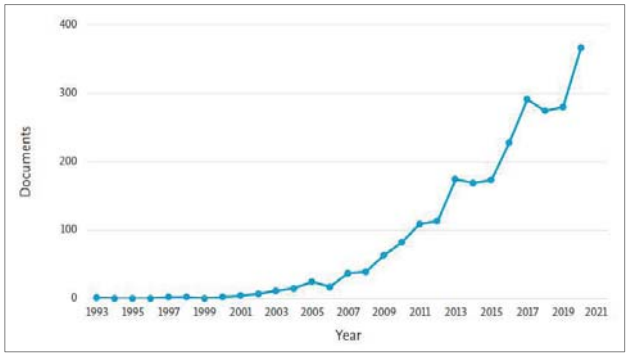

Figure 3: Documents per Year

4. Results and Discussion

4.1. Document Type

Filtering of the documents was conducted in the Scopus database and limited to the number of years of recent

publication (2016-2020), Subject Area (Business, Management, and Accounting), Keywords ("Supply Chains," "Supply chain management" and "Sustainability"), resulting to 180 publications: 7.8 percent of which were review articles, 6.7 percent conference papers, 0.6 percent book chapter and the largest volume of publication was articles with 85.0 percent. In table 2, we see that articles are the most prominent type of publication while book chapters are the least common. This shows that articles provide more research in the field.

Table 2: Document Type

Document Type	Number of Publications	Percentage
Article	153	85.0%
Review Paper	14	7.8%
Conference Paper	12	6.7%
Book Chapter	1	0.6%

Source: Ngetich, 2021

4.2. Subject Areas

Engineering was the top publishing Subject Area in that scope, with 1009 publications between 2016 and 2020. Following close were Energy and Environmental Science with 1003 and 925. The fourth place was the Business, Management and Accounting Area, with 448 publications, while computer science generated 270 publications. Table three shows that the area which receives a lot of focus in this study is engineering. The illustration is true because many research types on sustainability are intertwined with engineering, like in manufacturing industries. For instance, Moktadir from the University of Engineering and Technology authored a highly influential paper on the drivers of sustainable manufacturing practices in Bangladesh (Moktadir, Rahman, Rahman, & Ali, 2017).

Table 3: Top 5 Subject Areas Publications

Subject Area	Number of Publications
Engineering	1009
Energy	1003
Environmental Science	925
Business, Management and Accounting	448
Computer Science	270

Source: Ngetich, 2021

4.3. Geographical Area Distribution

Table four outlines the highest publishing countries within the scope of the sustainable energy supply chain between 2016 and 2020. The highest number of publications (36) originates from China. The government is leading and putting enormous research effort into considering its strong industrial orientation and sustainability needs. Second on the list is the United States, which has produced 27 publications, followed by the United Kingdom, Iran, and India with 25, 19, 15 publications. Italy, France, Germany, Canada, and Brazil close the list of the countries covering the highest volume of publications with 13, 11, 11, 9, and 8 consecutively.

Table 4: Documents by Country

Country	Number of Publications
China	36
USA	27
United Kingdom	25
Iran	19
India	15
Italy	13
France	11
Germany	11
Canada	9
Brazil	8

Source: Ngetich, 2021

4.4 Top Journals

Figure 4 shows several top publishing journals and institutions in the sustainability area of the supply chain. These are Journal of Cleaner Production, International Journal of Production Research, International Journal of Production Economics, Technological Forecasting and Social Change, and Transportation Research Part E and Transportation Review. According to the figure above, the Journal of Cleaner Production is distinctively producing an enormous volume of papers on the scope of Sustainable supply chains compared to other journals that have lower than five research publications yearly from 2017. The journal of Cleaner Production produces an average of 22 papers annually, according to the data drawn from Scopus 2016-2020, making it the most influential journal.

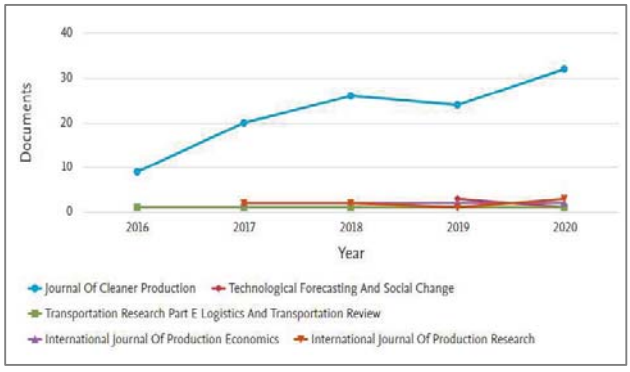

Figure 4: Documents per Year by Source

4.5. Top Institutions

The top publishing institutions in sustainable energy supply chains are outlined in table five. At the top of the list is the Iran University of Science and Technology, which produced six publications; Chongqing University in China and the University of Tehran had a research output of five papers. Shanghai Jiong Tong University had four papers, while the University of Manchester, Hong Kong Polytechnic University, Worcester Polytechnic Institute, University of Derby, Dokuz Eylul University, and Beijing Normal University produced three publications each under the sustainable energy supply chain area.

Table 5: Documents by Affiliation

Institution Name	Number of Publications
Iran University of Science and Technology	6
University of Tehran	5
Chongqing University	5
Shanghai Jiong Tong University	4
The University of Manchester	3
Hong Kong Polytechnic University	3
Worcester Polytechnic Institute	3
University of Derby	3
Dokuz Eylul University	3
Beijing Normal University	3

Source: Ngetich, 2021

4.6. VOSviewer Analysis

The filtered data results from the Scopus engine are exported in an excel format (CSV), which is compatible and accessible by the VOSviewer application. VOSviewer is useful for graphically visualizing results and conducting analyses like keywords, citation analysis, and bibliographic coupling (Odriozola-fernández & Berbegal-mirabent, 2019). The software was created by a research team from Leiden University and is popularly utilized to illustrate bibliographic data (van Eck & Waltman, 2010) and create network maps.

4.6.1. Keyword Analysis

According to (Munawar, Qayyum, Ullah, & Sepasgozar, 2020), analysis of keywords by ranking is done by extracting them from abstracts and titles from the VOSviewer application. Keyword analysis leads to the formation of keywords network maps derived from the study (Feng, Zhu, & Lai, 2017). In the investigation, the study set the minimum number of keyword occurrences to five; therefore, 88 keywords met the threshold. Figure 5 shows keyword linkages and clusters formed after developing the maps using VOSviewer software. The bigger nodes display the highest occurring keywords, comprising "supply chains," "supply chain management," and "sustainable supply chains." Five clusters are formed as depicted by the different colors of the nodes. "Supply Chains" is the most frequently occurring keyword because it is attributed to the initial study title search "Sustainable Energy Supply Chain." "Sustainable Supply Chains" and "Supply Chain Management" are popular keywords in this analysis as businesses and researchers are constantly developing sustainable frameworks, models, and literature for the supply chain management.

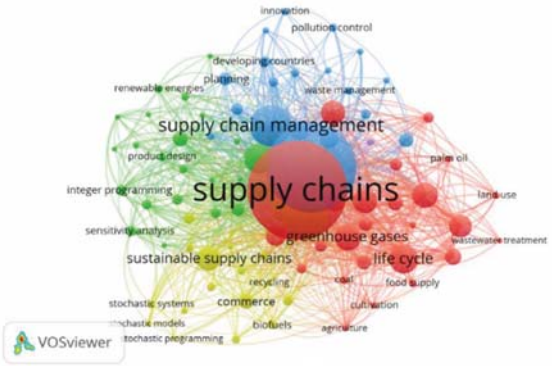

Figure 5: Visualization of Co-occurrence of Keywords

4.6.2. Citation Analysis

In research, citations are used to evaluate the influence of a publication in academia (Feng et al., 2017). Documents with high citations are regarded as most influential in their respective fields. The top ten significant documents in sustainable energy supply chains are displayed in table six. Geissdoerfer's work (Geissdoerfer et al., 2018) is the most influential research in the field, with 169 citations. The study focuses on Circular Economy and develops a framework that assists businesses in connecting circular business models and circular supply chain management. The second most influential publication is (Zhalechian, Tavakkoli-moghaddam, Zahiri, & Mohammadi, 2016), with 144 citations. Zhalechian proposes a new supply chain model for inventories that promotes sustainable practices.

The last three publications with over 100 citations are (Cherrafi et al., 2016; El-Kassar & Singh, 2019; Zhalechian et al., 2016) and focus on current topics including green innovation, lean innovation six sigma, and green supply chain management. The most influential journal in the top publications is the Journal of Cleaner Production, producing six highly cited publications. The only other journal with more than one top document is Transportation Research Part E. These two recognized global and transdisciplinary journals publish highly-quality papers in sustainable development and possess high H-index scores.

Table 6: Most Influential Papers

Rank	Document	Journal	Citations
1	(Geissdoerfer et al., 2018)	Journal of Cleaner Production	169
2	(Zhalechian et al., 2016)	Transportation Research Part E	144
3	(El-Kassar & Singh, 2019)	Technological Forecasting and Social Change	136
4	(Cherrafi et al., 2016)	International Journal of Production Research	115
5	(Hafezalkotob, 2017)	Transportation Research Part E	102
6	(Moktadir et al., 2017)	Journal of Cleaner Production	97
7	(Sala et al., 2016)	Journal of Cleaner Production	97
8	(Nurul, Wan, Rezaei, Sadaghiani, & Tavasszy, 2017)	Journal of Cleaner Production	91
9	(Leising, Quist, & Bocken, 2017)	Journal of Cleaner Production	90
10	(Tang, Mak, & Zhao, 2016)	Journal of Cleaner Production	80

Source: Ngetich, 2021

4.7 Bibliographic Coupling

Bibliographic coupling is vital for identifying research fronts, and emerging fields complement citation analysis (Zupic & Čater, 2015). To conduct bibliographic coupling in the VOSviewer application, we restrict the publication volume threshold to a minimum of 5 documents per country to obtain a result of 18 countries out of an initial 52 countries. Four Clusters are formed, as depicted in figure five. The same-colored nodes illustrate members of the same cluster, for instance, the United States, Brazil, and Colombia. The size of the circles relates to the number of publications produced by researchers or countries (Munawar et al., 2020). Therefore, China, the USA, and the UK have the most extensive research output and influence in the field. In addition, these countries are connected to other countries on different continents, thereby confirming that collaboration networks build power in sustainability. The notion is supported by (de Lange, Busch, & Delgado-Ceballos, 2012), who find a positive relation between Research and Development and internationalization to create and enhance sustainable practices. On the other hand (Lin, 2012), finds out that companies who form alliances with cross-sector partners are likely to undertake proactive environmental strategies. These researches on larger contexts show that the proactivity of sustainability initiatives could be enhanced through stronger country-to-country and sector-to-sector partnerships.

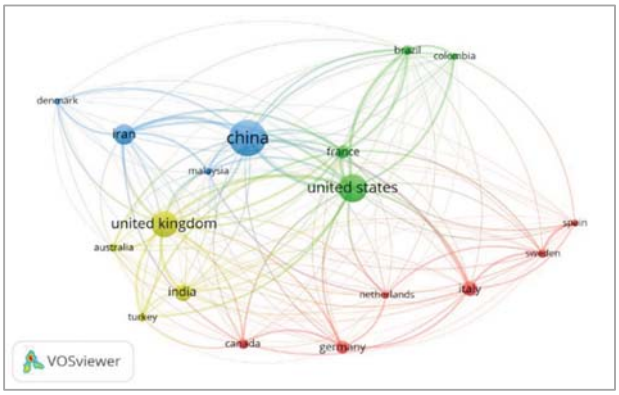

Figure 6: Bibliographic Coupling of Countries

5. Implications and Future Research

The field of sustainability encompasses different subject areas. In supply chain management, sustainability development, implementation, and challenges are being addressed every time, considering the rising attention on the area. To effectively map out this topic's implications and future research directions, we conducted a content analysis of the top 15 influential papers. We presented three important sub-categories for discussion in table seven: Focus, Contribution, and Research Gaps.

Regarding the research focus of the highly influential publications between 2016-2020, the top trending current topic is green supply chains, as identified in six papers. The decline of natural resources has prompted society and regulators to advocate for green practices. Therefore, businesses have been pushed to adopt green supply chain management, and researchers are central to enhancing literature and practical contribution to the field. The second most common research focus is Circular Economy appearing in three top publications. Circular Economy is part and parcel of sustainability, and as it provides solutions to some of the Sustainable Development Goals, it has received a lot of traction among scholars.

Considering the novelty of the highly influential publications, we note that most of the papers propose either frameworks, models, or tools for sustainable development solutions of supply chains. As more than 15 papers like this are presented in the table, it gives the idea that the field needs more practical implementation to enhance sustainability solutions for supply chains. It is expected that the same trend goes on, and more researchers should develop useful tools and methods of implementing sustainability in business supply chains.

On the other hand, the content analysis of the papers reveals some common research gaps among different areas of sustainable energy supply chain research. Given that most

of the studies involved developing models, tools, and frameworks for sustainability solutions for particular businesses, the data is limited and cannot be generalized to other industries. Therefore, wider business involvement in the testing and application models needs to be part of future research. Furthermore, other countries and geographical regions need to research and apply the frameworks to determine whether the outcomes will be the same. Lastly, different extensions and modifications of the proposed models are required to fulfill and enhance the success of sustainability solutions.

Table 7: Research Directions

Rank	Document	Focus	Contribution	Research Gaps	Citations
1	(Geissdoerfer et al., 2018)	Circular Economy	Integration framework for circular business models and circular supply chain management	Limited case studies & data collection	169
2	(Zhalechian et al., 2016)	Supply Chain Network Sustainability	Proposes a new sustainable closed-loop location-routing-inventory model	Different meta-heuristic algorithms needed for network design	144
3	(El-Kassar & Singh, 2019)	Green innovation	Proposes a model linking green innovation, its drivers and organization performance	Mixed method approach required to test the model	136
4	(Cherrafi et al., 2016)	Green & Lean six sigma	Proposes an integration framework for Green & Lean Six Sigma	Multi-factory & Supply chain levels' framework extension	115
5	(Hafezalkotob, 2017)	Green Supply Chain	Proposes cooperation and price-energy-saving models	Limited industrial GCS studied	102
6	(Moktadir et al., 2017)	Sustainable Manufacturing & Circular Economy	Ranks drivers for sustainable manufacturing practices	Limited to one industry (Textiles)	97
7	(Sala et al., 2016)	Food Supply Chains	Presents a volume for Life Cycle Thinking and Life Cycle Assessment for Sustainable food solutions	Expand systematic boundaries, functional units, and new technologies	97
8	(Nurul et al., 2017)	Oil & Gas Supply Chain Sustainability	Builds knowledge of Sustainable Supply Chain Management contexts and implementation strategies	Lack of case studies' analysis after Best Worst Method application	91
9	(Leising et al., 2017)	Circular Economy in Construction	Provides a collaboration tool for circular buildings and their supply chain collaborations	Deepened research on building blocks and application of the tool	90
10	(Tang et al., 2016)	Sustainability in Additive Manufacturing(AM)	Provides a design optimization framework based on Life Cycle Assessment	Future Modification extensions for AM	80
11	(Rehman Khan et al., 2018)	Green Supply Chain Management	Reveals energy demand relationship with logistics, economic growth and sustainability	Self-selection countries' biases	77
12	(Rueda, Garrett, & Lambin, 2017)	Supply Chain Sustainability	Proposes a supply chain framework for selecting sustainability instruments	Framework application in other industries apart from Agri-food ones	77
13	(Ahmed & Sarkar, 2018)	Sustainable Supply Chain Management	Proposes a cost-effective supply chain model for Second Generation Biofuel (SGB)	Creating a multi-objective decision model for SGBSC	75
14	(Wu & Sun, 2018)	Green Scheduling	Proposes a job shop scheduling model for energy consumption and Algorithm	Exploring new energy-saving assessments	70
15	(Song, Fisher, & Kwoh, 2018)	Green Innovation & Sustainable Resource Management	Provides an overview of a special volume on sustainable development (SD)	Limited literature on solving challenges in SD	66

Source: Ngetich, 2021

6. Conclusions

This study is based on a bibliometric literature analysis to investigate the evolution of research in sustainable energy distribution chains and provide research gaps and future research directions. As seen from the research findings, there is a growing interest in sustainability and supply chains. The top subject area leading with publications is Engineering, followed by Energy, Environmental Science, and Business Management and Accounting. In terms of the country's leading publications and contributions to the field, China, the United States of America, and the United Kingdom. The top publishing journal is the Journal of Cleaner Production, while the Iran University of Science and Technology is the most influential university contributing the most significant number of documents. Citation analysis shows that only five papers have more than 100 citations in the study led by Geissdoerfer's publication.

On the other hand, the researchers find out that Circular Economy and green supply chain management are influential topics for future research consideration in the field. Furthermore, future researchers and practitioners should test and develop more sustainable supply chain, management models. Concerning this study, a few gaps are noted for further future research. Including more databases like Web of Sciences and Google Scholar will provide more rich content for analysis. In addition, other visualization software like HistCite and CitNetExplorer could provide a deeper network analysis of publications.

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