# Bibliometric Analysis of Governance in Sustainable Supply Chains: Contributions to Research and Managerial Practice

*Juvan Reis Nogueira*[1*], *Rogério Tadeu de Oliveira Lacerda*[1]

**Abstract**

This study addresses the fragmented understanding of the role of governance structures and mechanisms in fostering sustainability within supply chains. It seeks to investigate how governance contributes to the development of Sustainable Supply Chains (SSCs), aiming to identify key authors, influential journals, and prevailing research themes, while highlighting both theoretical and managerial gaps in the literature. A bibliometric analysis was conducted based on articles indexed in the Scopus database between 2014 and 2024, employing the ProKnow-C methodology. This involved a multi-stage selection process comprising citation analysis, content alignment, and relevance assessment, culminating in a final portfolio of 30 rigorously selected articles. The analysis revealed the prominence of author Kannan Govindan, alongside the *Journal of Cleaner Production* and the *International Journal of Production Research* as the leading publication venues. Frequently recurring keywords such as "Supply Chain Management," "Sustainable Development," and "Sustainability" underscore the centrality of collaborative and sustainability-oriented approaches within SSC research. The findings contribute to the theoretical consolidation of SSC governance by categorizing governance structures and mechanisms applicable to sustainable supply chains. From a managerial standpoint, the study offers actionable insights to inform the design and implementation of governance strategies that foster sustainability across supply networks. Additionally, it outlines future research avenues to support interdisciplinary inquiry into governance and sustainability integration.

**Keywords:** Governance, Sustainability, Sustainable Supply Chains, Supply Chain Management, Bibliometrics.

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## 1. Introduction

Climate change has intensified the demand for innovative approaches to sustainable development, particularly those that consider the complex interactions between environmental, social, and economic systems through dynamic and adaptive management processes (Makiya & Fraisse, 2015). Sustainability, in this context, is defined as the development of products and services that meet current needs without compromising the ability of future generations to meet theirs (Li et al., 2014). This perspective is rooted in the Triple Bottom Line theory (Elkington, 2004), which asserts that social and environmental capital should be valued as equally important as financial capital.

This concept has been incorporated into Supply Chains, evolving into the theory and practice of Sustainable Supply Chain Management (SSCM), which encompasses activities aimed at reducing the carbon footprint of products and enhancing ecological, environmental, and social well-being (Dubey et al., 2017). SSCM calls for focal firms to achieve sustainable business development while overseeing governance mechanisms throughout all levels of the supply chain (Tachizawa & Wong, 2015; Gong et al., 2023).

Institutional pressures play a critical role in facilitating the adoption of sustainable supply chain practices through governance mechanisms (Jimenez-Castillo et al., 2023). While SSCM initially addressed environmental and social concerns, its long-term implementation can yield significant competitive advantages (Mathivathanan et al., 2017). Firms have thus shifted toward broader governance strategies, encompassing outer tiers of the supply chain, revealing a positive correlation between sustainability performance and financial outcomes (Jamalnia et al., 2023; Sachin & Rajesh, 2022).

Given the importance of governance structures and mechanisms, it is essential to investigate their role in enhancing the effectiveness and efficiency of SSCM (Govindan et al., 2016). These governance elements should be emergent, adaptable (Huq et al., 2014), capable of reconciling divergent interests (Soundararajan et al., 2021), and oriented toward creative, innovative, and mutually beneficial solutions (Soundararajan et al., 2019; 2021).

Well-structured governance can foster social and intellectual capital across stakeholders, facilitate less adversarial negotiations, and promote generous knowledge sharing (Benito et al., 2019). This reinforces the importance of collaborative models that prioritize trust and relationship-based governance rather than relying solely on formal certifications and controls (Formentini & Taticchi, 2016).

Despite the growing body of SSCM literature, empirical and systematic studies specifically addressing the role of governance in advancing sustainable supply chains remain limited. This study responds to this gap by aiming to expand both scientific and managerial understanding of governance's contribution to SSC development through a comprehensive bibliometric analysis. It has two specific objectives: (a) to identify the most relevant bibliographic references on governance in SSCs, and (b) to analyze these works with emphasis on their academic and managerial contributions.

(1) Federal University of Santa Catarina, Florianópolis – Brasil
*Corresponding author: juvanbc@ufam.edu.br

To guide this investigation, the study addresses the following research questions: Who are the leading authors and journals in the field of SSC governance? What governance mechanisms and structures are most frequently discussed in the literature? And what are the main trends and research gaps in this field?

## 2. Literature Review

### 2.1 Governance in Sustainable Supply Chains

Sustainability has been widely conceptualized as the ability to meet present needs without compromising the capacity of future generations to fulfill theirs (Li et al., 2014), a principle grounded in the Triple Bottom Line framework (Elkington, 2004), which emphasizes the equal importance of social, environmental, and economic capital. This concept has progressively permeated supply chain literature, evolving into the field of Sustainable Supply Chain Management (SSCM), which encompasses all activities aimed at reducing carbon footprints and enhancing social and environmental well-being (Dubey et al., 2017).

To fulfill the triple sustainability objective—social, environmental, and economic—governance emerges as a critical enabler. Governance comprises formal and informal mechanisms through which organizations seek to influence external outcomes, particularly in addressing stakeholder-driven environmental, social, and governance (ESG) demands (Sodhi & Tang, 2018). Well-designed governance strategies can mitigate opportunism and resolve conflicts, thereby enhancing sustainable performance (Govindan et al., 2016).

Focal firms, traditionally focused on economic performance (Xiao et al., 2019), have increasingly embraced governance arrangements in response to stakeholder pressures, particularly from consumers (Gardner et al., 2019). These firms are now held accountable not only for their internal operations but also for the environmental and social performance of their upstream suppliers (Koberg & Longoni, 2019). Consequently, they are expected to inspire and align suppliers with long-term sustainability goals (Gong et al., 2023). Governance in SSCs is thus shaped by the interaction of internal drivers and external pressures (Li et al., 2014).

However, downstream pressure can produce both positive effects, such as facilitating access to high-value markets, and negative outcomes, including the exacerbation of inequalities and resistance from suppliers or governments (Gardner et al., 2019). While transparency is generally associated with democratized governance, it may also reinforce power asymmetries (Egels-Zandén et al., 2015; Mol, 2015).

Therefore, effective governance strategies are essential for the smooth transition toward sustainability-driven, disruptive technologies, while also fostering inclusive decision-making among stakeholders (Luthra et al., 2020). Governance functions as a virtual organization that brings together multiple actors and depends on a balance between collaboration, shared objectives, and transparent communication (Li et al., 2014).

Scholars have outlined several key challenges in SSC governance, such as (Gardner et al., 2019): (a) navigating the complexity of global supply chains and identifying starting points for sustainability interventions; (b) managing risks tied to unsustainable practices; (c) improving on-the-ground conditions; and (d) measuring progress and evaluating the transformative potential of sustainability interventions.

The role of governance structures is therefore pivotal in integrating sustainability initiatives. Proactive leadership and strategic oversight are vital to incorporating emerging technologies into sustainable supply chains (Luthra et al., 2020). Focal firms typically develop tailored institutional arrangements and governance mechanisms to coordinate relationships and maximize sustainability outcomes (Li et al., 2014).

The literature presents a wide array of governance structures and mechanisms that organizations have employed to balance the triple bottom line. These are summarized in Tables 1 and 2, including direct, indirect, third-party, and relational mechanisms (Tachizawa & Wong, 2014; Sancha et al., 2016; Meinlschmidt et al., 2018; Alexander, 2020), as well as governance structures ranging from modular to hierarchical and from formal to informal networks (Powell, 1990, Jones et al., 1997; Gereffi et al., 2005; Blome et al., 2013; Mena et al., 2013, Huang et al., 2014; Gong et al., 2018).

**Table 1.** Governance Mechanisms for Sustainability in Supply Chains

| Governance Type | Mechanism | Description | Reference |
|---|---|---|---|
| **Direct** | Direct | The focal firm works directly with second-tier or higher-tier suppliers, bypassing first-tier ones. | Tachizawa & Wong (2014) |
| | Holistic Direct | The focal firm monitors all supply chain tiers, requiring high resource investment. | Meinlschmidt et al. (2018) |
| | Product-Specific Direct | Focuses on suppliers of high-risk products, even if located in lower tiers. | Meinlschmidt et al. (2018) |
| | Region-Specific Direct | Targets suppliers in regions with a history of socio-environmental violations. | Meinlschmidt et al. (2018) |
| | Event-Specific Direct | Reactive strategy triggered by environmental or social incidents involving lower-tier suppliers. | Meinlschmidt et al. (2018) |
| **Indirect** | Indirect | The focal firm relies on first-tier suppliers to monitor sustainability practices in lower tiers. | Tachizawa & Wong (2014) |
| | Multiplier-Based Indirect | First-tier suppliers are trained and held accountable for spreading sustainable practices. | Meinlschmidt et al. (2018) |
| | Alliance-Based Indirect | The focal firm engages in associations or consortia for audits and certifications. | Meinlschmidt et al. (2018) |
| | Compliance-Based Indirect | First-tier suppliers are formally required to transmit sustainability standards downstream. | Meinlschmidt et al. (2018) |
| **Third-Party** | Third-Party Governance | Responsibility is delegated to NGOs, certifiers, or external partners. | Tachizawa & Wong (2014) |
| **Negligent / Passive** | "No Concern" | No engagement with distant, complex, or opaque supply chain partners. | Tachizawa & Wong (2014) |
| | First-Tier Negligence | Monitoring is limited to first-tier suppliers, neglecting others. | Meinlschmidt et al. (2018) |
| **Formal (Explicit)** | Transactional | Governance based on formal contracts with explicit environmental clauses. | Sancha et al. (2016) |
| **Informal (Implicit)** | Relational | Based on mutual trust and shared environmental understanding. | Sancha et al. (2016) |
| **Hierarchical** | Hierarchical | Vertical integration of suppliers by the focal firm for direct control. | Alexander (2020) |
| **Compliance-Oriented** | Compliance | Sets standards and enforces them through incentives or penalties. | Alexander (2020) |
| **Support and Capability** | Support Services | Provides training, workshops, or financial aid for sustainable implementation. | Alexander (2020) |
| **Collaborative** | Partnership | Joint efforts with all supply chain tiers to address sustainability collaboratively. | Alexander (2020) |
| **Voluntary Stimulation** | Voluntary Change Promotion | Encourages sustainable practices through campaigns or flexible implementation by suppliers. | Alexander (2020) |

Source: Authors, based on Tachizawa & Wong (2014), Sancha et al. (2016), Meinlschmidt et al. (2018) and Alexander (2020).

**Table 2**. Governance Structures in Supply Chains

| Structure Type | Description | Reference |
|---|---|---|
| **Market** | Simplest form of governance, based on spot transactions in open markets. Requires adequate information, simple transactions, and suppliers with high service capabilities. | Li et al. (2014) |
| **Modular** | Based on codified, standardized specifications; requires minimal collaboration and offers low switching costs. | Gereffi et al. (2005); Li et al. (2014) |
| **Relational** | Characterized by mutual trust, long-term relationships, and extensive knowledge sharing. | Gereffi et al. (2005); Li et al. (2014) |
| **Captive** | The supplier is highly dependent on the lead firm, with limited autonomy and high switching costs. | Gereffi et al. (2005); Li et al. (2014) |
| **Hierarchical** | Most integrated and controlled form, with transactions conducted internally through vertical integration. Evolves from the captive structure toward greater managerial control. | Li et al. (2014) |
| **Monitoring** | Structure influenced by external agents such as governments, NGOs, and consumers. Public policies, oversight, and social demands shape the behavior of supply chain members. | Li et al. (2014) |
| **Formal** | Uses explicit mechanisms such as contracts and bureaucratic procedures to regulate member behavior. | Blome et al. (2013); Huang et al. (2014) |
| **Informal** | Relies on trust, social norms, and relational control without formal rules or contracts. | Blome et al. (2013); Huang et al. (2014); Jones et al. (1997); Powell (1990) |
| **Open Triadic** | Traditional linear structure where the buyer has no direct contact with second-tier suppliers. | Mena et al. (2013) |
| **Closed Triadic** | The buyer establishes direct connections with second-tier suppliers, creating a more integrated network. | Mena et al. (2013) |
| **Transitional Triadic** | Intermediate structure where the buyer initiates contact with second-tier suppliers to move toward a closed structure. | Mena et al. (2013) |
| **Closed Triadic Plus** | The buyer builds relationships with new lower-tier suppliers and connects them to first-tier suppliers. | Gong et al. (2018) |

Source: Authors, based on Powell (1990), Jones et al. (1997), Gereffi et al. (2005), Mena et al. (2013), Blome et al. (2013), Huang et al. (2014) and Gong et al. (2018).

Despite the increasing interest in SSC governance, the literature remains fragmented in terms of systematically identifying the mechanisms and structures that have proven most effective across different contexts. There is a particular scarcity of bibliometric studies that map the academic landscape concerning governance in sustainable supply chains. Most existing research focuses on case-based or conceptual approaches, lacking a consolidated overview of trends, key contributors, and research gaps.

This study addresses this gap by conducting a bibliometric analysis aimed at systematizing the current body of knowledge on governance in SSCs. It identifies influential authors, journals, and recurring themes, while also revealing gaps that can guide future interdisciplinary research and practical applications.

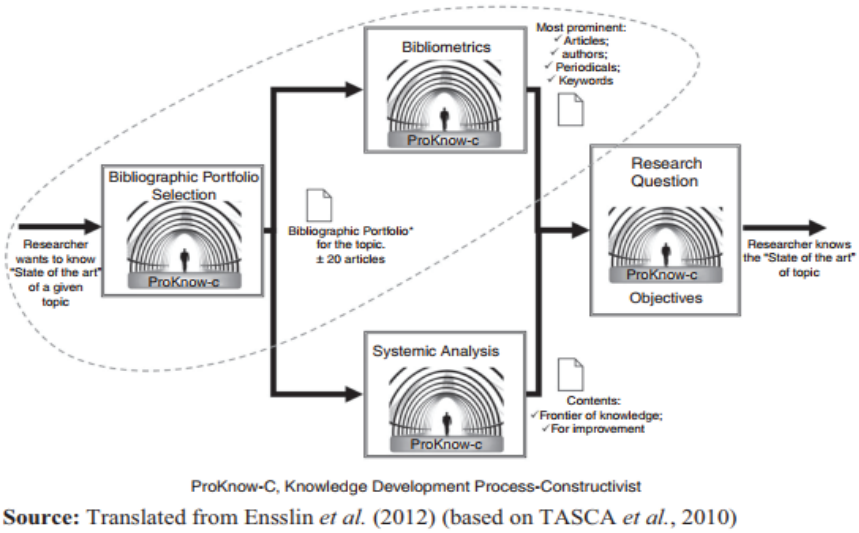
## Methodology

### 3.1 Research Design

This study adopts a quantitative bibliometric analysis approach, which involves the statistical evaluation of a specific set of scientific articles—referred to as the Bibliographic Portfolio (BP)—to manage information and scientific knowledge on a given topic through document counting and classification (Lacerda et al., 2012). This method has gained popularity in recent years due to the growing availability of specialized databases and analytical tools that facilitate the retrieval and evaluation of large volumes of scientific publications (Lima et al., 2023; Becker et al., 2022; Donthu et al., 2021).

To guide the research process, the ProKnow-C (Knowledge Development Process – Constructivist) methodology was employed. This method is designed to construct scientific knowledge based on the researcher's interests and constraints, aligning with a constructivist perspective (Ensslin et al., 2015). ProKnow-C is structured around four macroprocesses (Figure 1). In this study, macroprocesses 1 and 2 were applied in order to: (i) select relevant scientific articles to build a theoretical foundation on the topic of governance in sustainable supply chains, and (ii) conduct a bibliometric analysis of the selected portfolio.

**Figure 1.** Macroprocesses of the Knowledge Development Process – Constructivist (ProKnow-C).




**Source:** Translated from Ensslin *et al.* (2012) (based on TASCA *et al.*, 2010)

**Source:** Dutra et al. (2015)

This methodological delimitation is justified as the process supports researchers in the early stages of academic investigation, when a topic is defined but a deeper understanding of the scientific landscape is still needed (Dienstmann et al., 2014). The detailed procedures carried out at each stage are presented in the following sections.

### 3.2 Selection of the Raw Articles Database

The first step of the ProKnow-C methodology, referred to as the "*Selection of Raw Articles Bank*," corresponds to the initial filtering process for selecting scientific articles. At the outset, the researchers defined two main research axes and selected keywords for each axis. These keywords were then combined and used to query the selected scientific database.

For this study, the authors chose the Scopus database, due to its status as one of the largest and most comprehensive multidisciplinary databases worldwide. Scopus covers diverse fields such as social sciences and engineering and is complemented by the Scirus search engine, developed by Elsevier, which is designed to retrieve scientifically reliable content (Mesquita et al., 2006). These databases offer the advantage of aligning the research theme with existing scientific publications and ensuring full access to bibliographic data required

for analysis (Martins et al., 2013). Additionally, Scopus is particularly useful for including a wide range of non-Anglo-Saxon sources, thus enabling the identification of studies developed in countries where English is not the primary language (Pranckutė, 2021).

Once the database was defined, the two central themes for this bibliometric study were established as:

- Axis 1: "Sustainable supply chain";
- Axis 2: "Governance"

These axes guided the selection and combination of keywords used in the search queries. The keywords were required to be present in the title, keywords, or abstract fields of the indexed articles. The search was conducted between March and April 2024, covering a 10-year publication period, from 2014 to 2024.

Given the interdisciplinary nature of the research topic, the study was limited to the following subject areas within Scopus:

- Business, Management and Accounting;
- Social Sciences;
- Engineering;
- Economics, Econometrics and Finance.

As a result, the search returned a total of 3,288 documents, as shown in Table 3.

**Table 3.** Initial Selection of the Bibliographic Portfolio: Raw Articles Database.

| Axis 1 | Axis 2 | Results in Scopus |
|---|---|---|
| "Supply chain management" OR "Supply chain" | Governance | 1,593 |
| "Supply chain management" OR "Supply chain" | Transparency | 1,173 |
| "Supply chain management" OR "Supply chain" | Accountability | 249 |
| "Sustainable supply chain" | Governance | 113 |
| "Sustainable supply chain" | Transparency | 82 |
| "Sustainable supply chain" | Accountability | 14 |
| "Green supply chain" | Governance | 46 |
| "Green supply chain" | Transparency | 15 |
| "Green supply chain" | Accountability | 3 |
| **Total** | | **3,288** |

**Source:** Authors.

This *Raw Articles Database*, composed of the total search results obtained from Scopus, served as the foundation for the subsequent stages of analysis and article selection, which aimed to build the theoretical framework for the research on governance in sustainable supply chains.

### 3.3 Selection of the Bibliographic Portfolio (BP)

To manage the Raw Articles Database more efficiently, all references were imported into Mendeley reference management software. At this stage, only peer-reviewed scientific articles were considered, as these documents generally undergo rigorous evaluation processes before publication, thereby ensuring greater reliability of the final portfolio. After removing duplicates, the dataset was reduced to 2,804 unique articles.

Continuing with the ProKnow-C method, the titles of all articles were screened to assess their alignment with the research topic. As a result, 2,026 misaligned articles were excluded.

The next step involved evaluating scientific recognition, based on the number of citations per article. The remaining 578 articles, which appeared relevant by title, were analyzed using Google Scholar (2024) to obtain citation counts. The articles were then ranked in descending order by number of citations, and a cutoff point representing 80% of the total citations was determined. Articles with 55 or more citations were retained, resulting in a total of 132 articles, accounting for 27,100 out of 33,543 citations (i.e., 80.79% of the total citation volume).

These 132 articles underwent a second round of screening to assess the alignment of abstracts with the research themes. In this phase, 98 articles were excluded for misalignment, leaving 41 articles that were considered scientifically relevant due to their high citation counts and alignment with the study objectives.

Importantly, low-citation articles should not be disregarded, as some may gain relevance over time (Sanders, 1987). This is particularly true for recent publications or for articles authored by researchers already present in the selected group. Therefore, an additional review was conducted on the less-cited articles, according to the following ProKnow-C criteria (Lima et al., 2023):

a) Recent articles (published within the last two years, i.e., 2023–2024) were all reviewed due to their limited time to accumulate citations.

b) Older articles (published before 2023) were reviewed if they were authored by researchers from the initially selected group of 41 articles.

Based on these two conditions, 160 low-citation articles were re-evaluated:

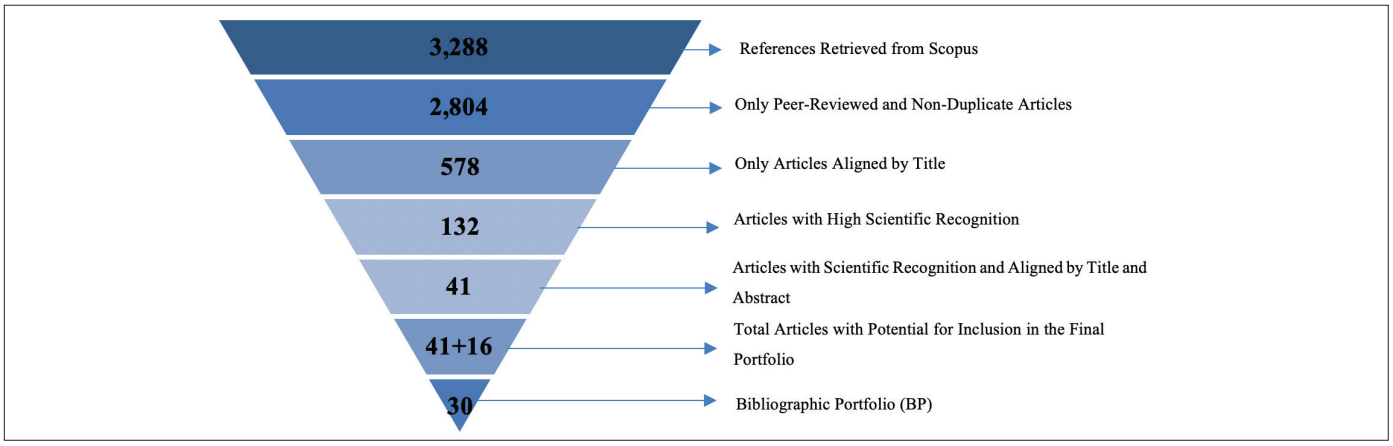
- 104 recent articles (2023–2024)
- 9 older articles by authors already present in the selected portfolio

After abstract alignment screening, 144 articles were excluded, and 16 additional articles were included in the final portfolio.

These 16, added to the previous 41, resulted in a total of 57 articles, which were subjected to a full-text reading to assess their theoretical contribution to the research theme.

This comprehensive review was carried out in April 2024. During this final validation step, 25 articles were eliminated based on the authors' judgment that they did not adhere sufficiently to the study's focus. The remaining 30 articles were finalized as the Bibliographic Portfolio (BP). The article selection process is illustrated in Figure 2, and the final portfolio is presented in Table 4.

**Figure 2.** Article Selection Stages. Source: Authors.




**Source:** Authors.

**Table 4.** Final Bibliographic Portfolio (BP).

| # | *Title* | *Year* | *Citations* |
|---|---|---|---|
| 1 | Transparency and sustainability in global commodity supply chains | 2019 | 453 |
| 2 | Corporate sustainability approaches and governance mechanisms in sustainable supply chain management | 2016 | 428 |
| 3 | Sustainable evaluation and verification in supply chains: Aligning and leveraging accountability to stakeholders | 2015 | 351 |
| 4 | Industry 4.0 as an enabler of sustainability diffusion in supply chain: an analysis of influential strength of drivers in an emerging economy | 2020 | 333 |
| 5 | Governance of sustainable supply chains in the fast fashion industry | 2014 | 318 |
| 6 | Social sustainability tensions in multi-tier supply chain: A systematic literature review towards conceptual framework development | 2021 | 293 |
| 7 | Supply chain learning of sustainability in multi-tier supply chains: A resource orchestration perspective | 2018 | 255 |
| 8 | Sustainability governance of chains and networks: A review and future outlook | 2015 | 252 |
| 9 | Linking sustainability-oriented innovation to supply chain relationship integration | 2018 | 226 |
| 10 | Accelerating the transition towards sustainability dynamics into supply chain relationship management and governance structures | 2016 | 223 |
| 11 | The Performance of Green Supply Chain Management Governance Mechanisms: A Supply Network and Complexity Perspective | 2015 | 218 |
| 12 | Sustainable collaboration: The impact of governance and institutions on sustainable performance | 2017 | 213 |
| 13 | Governance pressures and performance outcomes of sustainable supply chain management – An empirical analysis of UK manufacturing industry | 2017 | 203 |
| 14 | Corporate social sustainability in supply chains: a thematic analysis of the literature | 2018 | 175 |
| 15 | Selected sustainability aspects for supply chain data exchange: Towards a supply chain-wide sustainability assessment | 2017 | 158 |
| 16 | Governing interfirm relationships for social sustainability: The relationship between governance mechanisms, sustainable collaboration, and cultural intelligence | 2018 | 138 |
| 17 | Self-governance for sustainable global supply chains: Can it deliver the impacts needed? | 2015 | 128 |
| 18 | Supply chain sustainability practices and governance for mitigating sustainability risk and improving market performance: A dynamic capability perspective | 2021 | 125 |
| 19 | The impact of corporate governance on sustainability performance | 2014 | 122 |
| 20 | Improving reverse supply chain performance: The role of supply chain leadership and governance mechanisms | 2019 | 105 |
| 21 | Developing sustainable supply chain management: The interplay of institutional pressures and sustainability capabilities | 2021 | 96 |
| 22 | Boosting sustainability and financial performance: the role of supply chain controversies | 2019 | 87 |
| 23 | Which governance structures drive economic, environmental, and social upgrading? A quantitative analysis in the assembly industries | 2018 | 72 |
| 24 | An empirical study of supply chain sustainability with financial performances of Indian firms | 2022 | 70 |
| 25 | Multinational enterprises and the governance of sustainability practices in emerging market supply chains: An agile governance perspective | 2021 | 67 |
| 26 | Making supply networks more sustainable 'together': the role of meta-organisations | 2019 | 57 |
| 27 | Multiple multi-tier sustainable supply chain management: a social system theory perspective | 2023 | 30 |
| 28 | A decision support system for selection and risk management of sustainability governance approaches in multi-tier supply chain | 2023 | 6 |
| 29 | Opportunism in supply chains: Dynamically building governance mechanisms to address sustainability-related challenges | 2023 | 3 |
| 30 | Blockchain-based governance implications for ecologically sustainable supply chain management | 2024 | 0 |

**Source:** Authors.

The elaboration of this Bibliographic Portfolio (BP), which serves as the theoretical foundation for analyzing the role of governance in the development of sustainable supply chains, concludes the first macroprocess of the ProKnow-C method and fulfills the first research objective of the study. The next section presents the bibliometric analysis derived from the second macroprocess of ProKnow-C.

## Results

### 4.1 Bibliometric Analysis of the Bibliographic Portfolio (BP) and Its References

The bibliometric analysis was conducted on both the articles within the Bibliographic Portfolio (BP) and their cited references, focusing on authorship, journals, keywords, and citation frequency. A comparative analysis was performed between the articles in the BP and the references cited within them.

Beginning with the analysis of authors, it was observed that one of the most scientifically recognized contributors (Table 4) also appeared most frequently in the BP: Kannan Govindan, with three contributions. Three other authors—Stefan Seuring, Robert D. Klassen, and Sachin Kumar Mangla—also stood out, each with two contributions. When analyzing the references cited in the BP, Kannan Govindan again emerged as a key figure, with 37 referenced articles, as presented in Table 5:

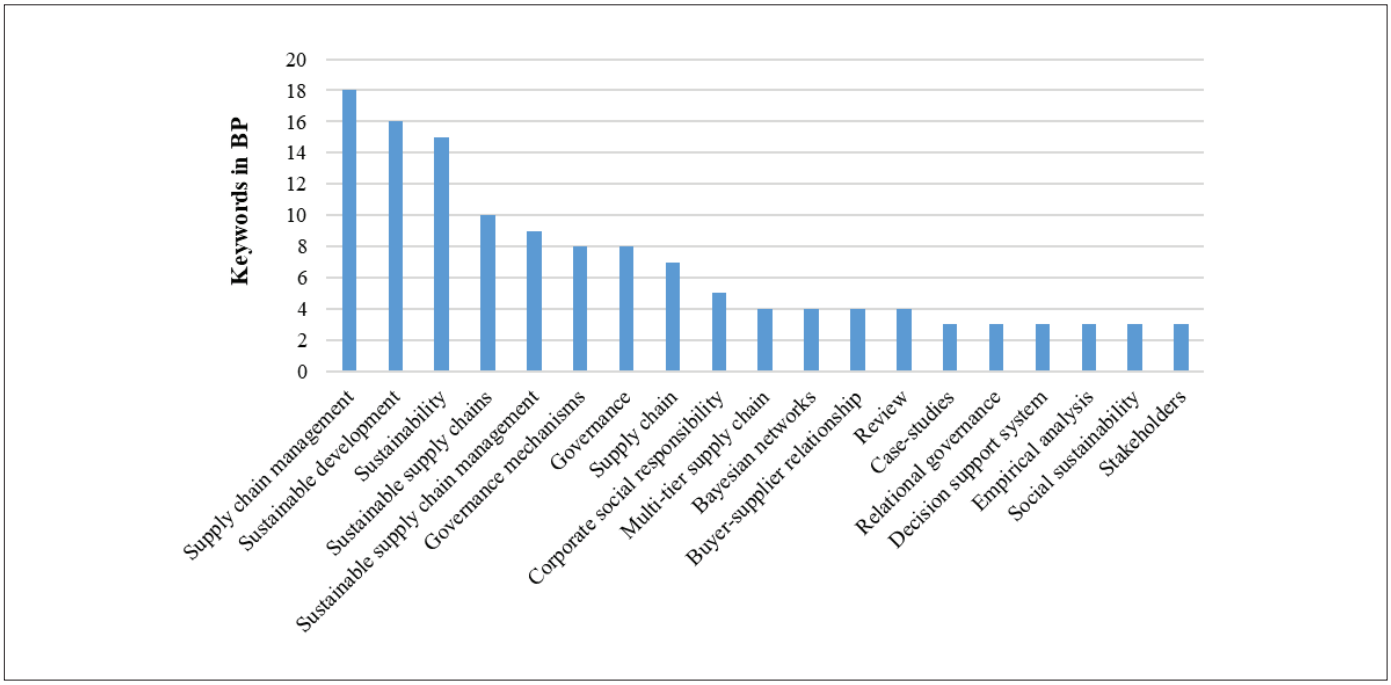
**Table 5.** Most Prominent Authors in the BP and Its References.

| Authors | Appearances in BP References | Appearances in BP |
|---|---|---|
| Sarkis, J | 45 | 1 |
| Govindan, K | 37 | 3 |
| Zhu, Q | 24 | 1 |
| Seuring, S | 21 | 2 |
| Klassen, R D | 20 | 2 |
| Mol, A P J | 11 | 1 |
| Luthra, S | 9 | 1 |
| Vachon, S | 9 | 1 |
| Mangla, S K | 8 | 2 |
| Tang, C S | 7 | 1 |

**Source:** Scopus and Authors.

With regard to keywords, the most frequently used terms in the BP were "Supply Chain Management", "Sustainable Development", and "Sustainability", as shown in Figure 3. Together, these three terms account for 12% of the total 412 keywords found in the portfolio.

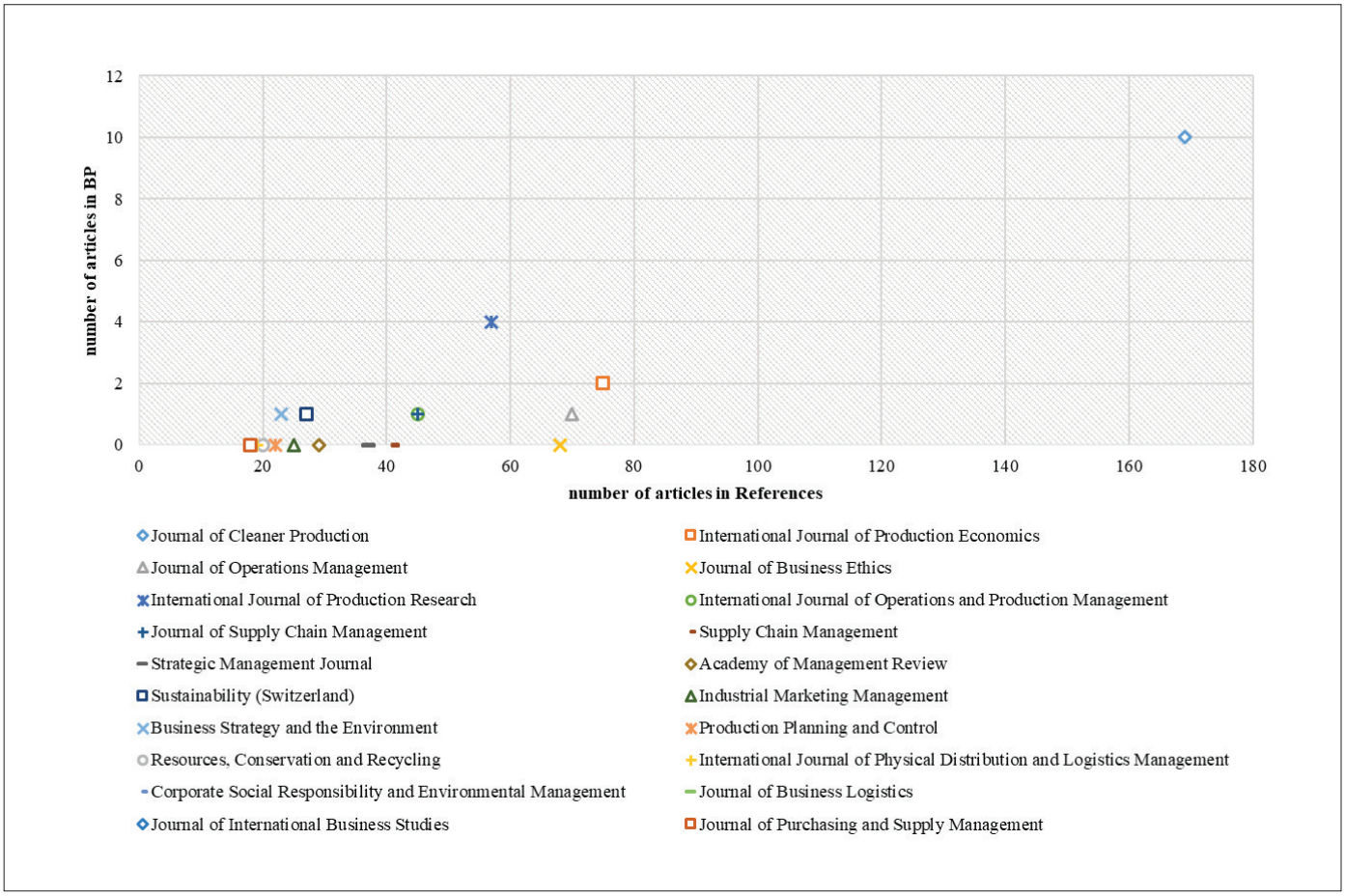
**Figure 3.** Most Frequent Keywords in BP Articles.




**Source:** Authors.

The topic of governance contributions to sustainable supply chains is most frequently discussed in the *Journal of Cleaner Production* and the *International Journal of Production Research*, both of which appear in Quadrant A of the journal relevance analysis (Figure 4). These are followed by *International Journal of Production Economics*, *Journal of Operations Management*, and *Journal of Business Ethics*, which are prominent within the BP references and represented in Quadrant D.

**Figure 4.** Leading Journals in the BP and Its References.

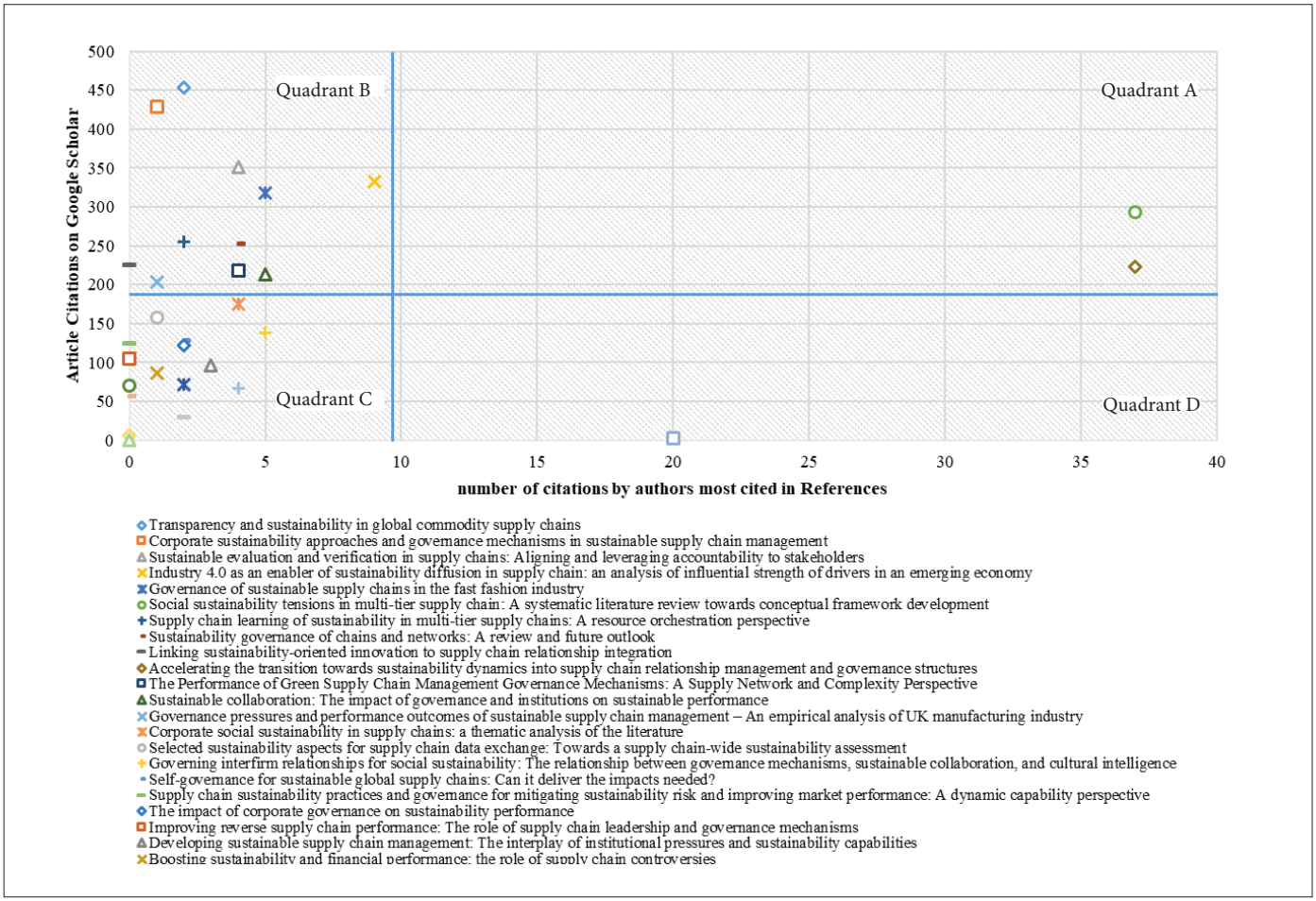



**Source:** Authors.

Finally, Figure 5 presents a quadrant-based categorization of the most academically relevant articles in the BP, based on their presence and prominence in reference networks. Quadrant A includes the most influential articles in terms of research contribution to the topic, particularly:

- *"Social sustainability tensions in multi-tier supply chain: A systematic literature review towards conceptual framework development"* (Govindan et al., 2021), and
- *"Accelerating the transition towards sustainability dynamics into supply chain relationship management and governance structures"* (Govindan et al., 2016).

**Figure 5.** Most Influential Articles and Authors in the BP.




**Source:** Authors.

The first highlighted article, *"Social sustainability tensions in multi-tier supply chain..."*, explores the growing importance of social sustainability in supply chains, identifying drivers, barriers, tensions, and associated practices. Drawing upon stakeholder theory and institutional theory, the study analyzes different governance structures (open, closed, and transitional) to address social sustainability concerns. The article emphasizes the need for collaboration among companies, governments, NGOs, and financial institutions to effectively develop and implement models for social sustainability in supply chains.

The second article, *"Accelerating the transition towards sustainability dynamics..."*, discusses corporate sustainability as a mechanism to balance economic, environmental, and social dimensions. The paper views Sustainable Supply Chain Management (SSCM) as a process involving the flow of materials, information, and capital, encouraging interorganizational cooperation in line with Sustainable Development Goals (SDGs). It highlights the essential role of governance and innovation in implementing SSCM processes and argues that effective governance mechanisms and innovative strategies are key to managing sustainable supply chains.

Thus, the Bibliographic Portfolio developed in this study includes highly relevant and influential articles within the scientific field, underscoring the significance of governance studies for improving structures and mechanisms that support sustainable supply chains across various organizational contexts.

## 5. Discussion

### 5.1 Comparison with Previous Studies

The findings of this study deepen and expand the consolidated understanding in the literature regarding the importance of governance for sustainability in supply chains. While earlier studies, such as Govindan et al. (2016) and Seuring and Müller (2007), have already emphasized the strategic role of governance mechanisms, this bibliometric analysis reveals a significant conceptual advancement by integrating perspectives that conceptualize governance as a dynamic, multiscalar, and institutionally sensitive process (Bush et al., 2015; Soundararajan et al., 2021; Gardner et al., 2019).

There is a notable maturation in the way governance is theorized—no longer perceived merely as a set of formal control instruments, but rather as an adaptive and interactive system capable of orchestrating knowledge (Gong et al., 2018), mitigating risk (Chowdhury & Quaddus, 2021), facilitating collective learning (Govindan et al., 2021), and promoting coordination in complex environments (Tachizawa & Wong, 2015; Klassen et al., 2023). Furthermore, various influential factors—such as collaboration, formalization (Gong et al., 2023; Govindan et al., 2021; Formentini & Taticchi, 2016), transparency (Luthra et al., 2020; Gardner et al., 2019), public policy (Esfahbodi et al., 2017; Luthra et al., 2020; Shrivastava & Addas, 2014), leadership, power and trust (Mokhtar et al., 2019), technical capacity (Dai et al., 2021), supply chain density and complexity, focal firm centrality (Li et al., 2014), contingencies (Jamalnia et al., 2023), cultural intelligence (Awan et al., 2018), and technological innovations (Luthra et al., 2020; Jimenez-Castillo et al., 2024; Govindan et al., 2016)—are strategically considered in the design of governance mechanisms and structures for developing Sustainable Supply Chains (SSC).

The study also broadens the geographical and sectoral scope of the discussion, highlighting contributions from emerging contexts such as India (Sachin & Rajesh, 2022), Bangladesh (Chowdhury & Quaddus, 2021), and China (Luthra et al., 2020), and from diverse sectors including fast fashion (Li et al., 2014) and Industry 4.0 (Luthra et al., 2020; Carmagnac & Carbone, 2019; Jamalnia et al., 2023), demonstrating that governance challenges and solutions are highly contingent.

Finally, the identification of prominent journals, such as *Journal of Cleaner Production and International Journal of Production Research,* reflects the consolidation of a robust theoretical corpus while also highlighting opportunities to expand thematic coverage on sustainable governance in academic forums—particularly in regions like Latin America and the Caribbean.

**5.2 Theoretical and Practical Implications**

From a theoretical standpoint, the findings significantly contribute to the consolidation of the governance field within Sustainable Supply Chains (SSC) by integrating multiple analytical perspectives: transaction cost economics (Awan et al., 2018), institutional theory (Niesten et al., 2017; Dai et al., 2021), resource- and capability-based theories (Chowdhury & Quaddus, 2021; Dai et al., 2021), social systems theory (Gong et al., 2023), and multistakeholder approaches (Gardner et al., 2019; Li et al., 2014; Fritz et al., 2017; Bush et al., 2015). Governance is framed not only as a control mechanism, but also as a platform for adaptive coordination (Soundararajan et al., 2021; Gong et al., 2023), capable of responding to dynamic environments (Li et al., 2014), mitigating power asymmetries (Bush et al., 2015), and fostering interorganizational innovation (Govindan et al., 2016; Carmagnac & Carbone, 2019).

Typological classifications—such as relational versus transactional governance (Formentini & Taticchi, 2016; Niesten et al., 2017; Golini et al., 2018; Klassen et al., 2023), relational and captive governance structures (Golini et al., 2018), transformative transparency (Gardner et al., 2019), and the role of meta-organizations (Carmagnac & Carbone, 2019)—expand the conceptual repertoire of the field and refine the analysis of interactions among public, private, and civil society actors. Additionally, emerging topics such as cultural intelligence (Awan et al., 2018), technological integration via blockchain (Jimenez-Castillo et al., 2024), IoT and automation (Luthra et al., 2020), and multistakeholder qualitative evaluation (Fritz et al., 2017) open new avenues for future research, particularly in global, multicultural, and decentralized supply chains.

From a practical perspective, the implications are equally relevant. Managers are encouraged to adopt governance mechanisms that are:

- **Adaptive** to different supply chain structures (multi-tier, fragmented, regional) (Gong et al., 2023; Jamalnia et al., 2023);
- **Contingent**, tailoring styles (collaborative, transactional, hybrid) based on supplier maturity and complexity (Klassen et al., 2023; Gong et al., 2018);
- **Technologically integrated**, leveraging traceability, automation, and interorganizational data for control and transparency (Luthra et al., 2020; Jimenez-Castillo et al., 2024);
- **Values-driven**, promoting trust, inclusion, and alignment with multiple stakeholders (Niesten et al., 2017; Gualandris et al., 2015).

For public policymakers, the results point to the urgency of:

- Developing flexible regulatory instruments that foster accountability without stifling innovation (Esfahbodi et al., 2017; Dai et al., 2021);
- Supporting collaborative models and institutional ecosystems, such as multistakeholder networks and meta-organizations (Carmagnac & Carbone, 2019; Govindan et al., 2021);
- Investing in institutional and technical infrastructure, especially for small-scale suppliers and peripheral regions (Govindan et al., 2021; Chowdhury & Quaddus, 2021);
- Establishing harmonized ESG metrics, particularly for subjective themes such as labor rights and social justice (Fritz et al., 2017; Gardner et al., 2019).

In summary, governance in SSCs should be understood as a strategic capability that cuts across cultural, technical, institutional, and relational dimensions, requiring coordinated action by companies, governments, and civil society to generate shared value and systemic resilience.

**5.3 Limitations**

Despite its theoretical and practical contributions, this study has several limitations that should be acknowledged. First, the analysis is limited to documents indexed exclusively in the Scopus database.

While this choice is methodologically justified due to Scopus's broad coverage and academic rigor, it may have excluded relevant publications found in other databases such as Web of Science, Dimensions, or Google Scholar, as well as regional repositories and grey literature. Additionally, the ten-year time frame (2014–2024) may have constrained the inclusion of earlier foundational studies that contributed to the conceptual development of governance in sustainable supply chains, particularly those published before sustainability became a central concern in global supply chain strategies. Although the selected period reflects recent developments in the field, it potentially underrepresents seminal works or classical theoretical contributions.

Another important limitation arises from the use of the ProKnow-C methodology, which, despite its recognized rigor in constructing bibliographic portfolios aligned with the researcher's objectives, may introduce selection bias due to subjective judgments made during the filtering and thematic alignment processes. The method's emphasis on citation-based scientific relevance and content alignment may favor well-established authors and approaches while overlooking emerging or interdisciplinary perspectives.

Furthermore, the disciplinary scope of the study was restricted to the fields of Business, Social Sciences, Engineering, and Economics, which may have limited engagement with insights from other domains such as Law, Environmental Studies, or Political Science—fields that also address regulatory, institutional, and normative aspects of supply chain governance.

These limitations do not undermine the validity of the findings but rather highlight opportunities for future research to broaden methodological, theoretical, and empirical scopes—particularly by integrating additional databases, interdisciplinary frameworks, and longer temporal horizons.

### 5.4 Future Recommendations

Based on the limitations and theoretical implications identified in this study, future research should consider expanding the investigative scope in several directions. First, it is recommended to diversify the databases used by incorporating other platforms or regional repositories. This would allow the inclusion of potentially relevant studies that were not captured by the Scopus database, thereby enhancing the thematic, regional, and linguistic representativeness of the analyzed literature.

Second, extending the temporal scope beyond the ten-year period covered in this study could enable the inclusion of foundational and historical works that contributed to the conceptual development of governance in Sustainable Supply Chains (SSC). A longitudinal bibliometric analysis could reveal how theoretical frameworks and governance mechanisms have evolved in response to socio-environmental and technological transformations over time.

Third, although this study employed a quantitative bibliometric approach (ProKnow-C), future investigations could benefit from the application of qualitative or mixed methods. Systematic literature reviews, content analysis, or comparative case studies could deepen the understanding of governance typologies, particularly by accounting for factors such as power asymmetries, stakeholder engagement, and institutional dynamics—elements that are often overlooked in purely quantitative analyses.

Moreover, the increasing complexity and interdependence of global supply chains calls for the development of interdisciplinary frameworks that incorporate insights from Political Science, Law, Sociology, and Environmental Governance. These perspectives can be particularly valuable for evaluating the effectiveness of governance mechanisms in addressing contemporary challenges such as climate risk, biodiversity loss, and technological disruption.

Finally, there is a pressing need to deepen the debate on the regional contextualization of governance mechanisms, with particular emphasis on Latin America and the Caribbean. Comparative analyses across regions may uncover how institutional, cultural, and regulatory factors shape the adoption, design, and performance of sustainable governance strategies in supply chains.

## Conclusion

### 6.1 Summary of Findings

This study aimed to identify and analyze the theoretical foundations related to governance in sustainable supply chains, employing the ProKnow-C methodology for the construction of a Bibliographic Portfolio (BP) and its subsequent bibliometric analysis. From an initial dataset of 3,288 scientific publications, 30 articles were selected as highly relevant based on alignment and citation criteria.

Key findings highlighted the prominence of the *Journal of Cleaner Production* and the *International Journal of Production Research* as the most influential journals, and identified Kannan Govindan as the leading author in the field. In addition, the study mapped the most frequent keywords and thematic clusters related to SSC governance.

### 6.2 Relevance and Contribution

The results contribute to the theoretical advancement of governance in SSCs and offer a structured overview of the field for both academics and practitioners. The study supports decision-makers in identifying governance structures and institutional arrangements that foster sustainability across complex and globalized supply chains.

By addressing a literature gap through a systematic bibliometric approach, this research sets a foundation for future studies and encourages the development of governance strategies that integrate social, environmental, and economic objectives. Ultimately, it strengthens the bridge between academic research and practical application in the pursuit of sustainable organizational practices.

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