

Exploring the sustainability of firms in Global Value Chains: A Bibliometric Review of SME Participation, Challenges, and Opportunities

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Abstract: The Global Value Chain (GVC) has gained significance due to its potential to improve sustainability in SMEs, prompting numerous studies and growing importance globally. Business leaders and researchers worldwide are increasingly interested in how various value-added activities across industries and countries drive competition and collaboration within the value chain. Sustainability research concerning SMEs in the context of GVC is a specialized field, even though it is extensively discussed in existing literature. To address this gap, we employ systematic and bibliometric analysis in this study, analyzing a collection of 357 articles published in Scopus journals between 2000 and 2025. This review emphasizes the main aspects of research performance, including the most prolific authors and countries, as well as the themes and obstacles that shape the intellectual framework of the field and the groundbreaking discoveries. Future research can be undertaken to create new insights within thematic clusters, including market liberalization, the connection between trade and pollution, the dynamics of the value chain, global value chain restructuring, the role of non-governmental organizations, and multipolar governance. Frameworks have been developed that integrate the current understanding of SMEs in the global value chain for sustainability, accompanied by suggestions for future inquiries.

Keywords: Global value chain participation, Small and medium Enterprises, Sustainability, Bibliometric Analysis, Value Chain Dynamics, Systematic Review

INTRODUCTION

Over the years, Global value chains (GVCs) have become prevalent as businesses have been able to identify and fine-slice their distinctive value-creating activity across the nation (Mudambi, 2008). GVCs refer to “a sequence of steps involved in producing a product or service, where each step contributes to its value and involves at least two stages occurring in separate countries” (World Bank, 2020). Due to rapid economic growth, globalization, technological advancement and macroeconomic shocks, the global value chain (GVC) has undergone extensive and complicated transformations. GVCs are continuously transforming international trade and the global economy as a whole, with profound effects “on employment and gross domestic product (GDP), particularly in developing nations (Fernandez-Stark et al., 2014; Tajoli & Felice, 2018)”.

The foundation blocks of international trade date back to the Absolute advantage theory (Smith, 1776) and the Law of comparative advantage given by Ricardo in 1817 in his seminal work ‘Principles of Political Economy and Taxation’. However, the international trade pattern has evolved substantially and is presently dominated by GVCs, becoming the pervasive global trade paradigm over the past three decades. The expansion of GVC can be traced back to Piero Sraffa's “Theory of Value in his book Production

of Commodities by Means of Commodities” (Sraffa, 1961, n.d.). Based on his work, (Hopkins & Wallerstein, 1977) conceptualized commodity chains as inputs required to deliver the final goods to consumers. However, Michael Porter introduced the idea of the value chain concept in his book, ‘Competitive Advantage: Creating and sustaining superior performance’ 1985 (Porter, 1985). Porter suggested that companies should concentrate on activities with a comparative advantage and outsource the rest (Baldwin, 2013).

Global value chains developed over time from the concept of global commodity chains (GCCs) (Kano et al., 2020). The critiques of GVCs focus solely on vertical integration while overlooking horizontal integration.

However, (Bolwig et al., 2010; Mitchell & Coles, 2011) discovered that the horizontal integration of the value chain included sustainability as a niche theme. International trade has evolved in the past three decades (Amador & Cabral, 2015). The significant reduction in artificial obstacles due to preferential trade agreements and political growth, driven by the advancement in ICT, has increased the proportion of the global population in the capitalist system (Antràs, 2016).

This has led to using foreign manufacturing parts and

pushing worldwide sales for intermediate goods, previously a challenge to local sales (Antràs & Chor, 2022). With the global pandemic, GVC has faced several shocks, leading to the firm's sustainability problem. Despite the growing interest in sustainability in GVC and its implications for SMEs, a significant gap exists in the literature concerning a comprehensive bibliometric examination. While individual studies have explored various aspects of sustainability in the GVC, there is a lack of systematic analysis and synthesized literature that maps the landscape of research in the domain of SMEs. Nevertheless, this sustainability problem is not limited to the pandemic; over the past decades, there have been multiple issues on sustainability in the pre-pandemic period. The existing reviews often focus on specific aspects or lack a s of the bibliometric approach, thereby limiting the understanding of overarching trends, influential research streams and emerging topics.

To contribute to the existing literature, a significant level of work on the sustainability of SMEs within the Global value chains (GVC) reveals a growing interest in the topic across various research fields (Jacob et al., 2023). Research emphasizes the significance of sustainable development in SMEs, emphasising the need for structured approaches to promote sustainability and address practical issues within the GVC (Kassab et al., 2022; Kustiningsih et al., 2023; Matic & Sunjka, 2022). Nevertheless, due to the swift growth, it is increasingly challenging to comprehend the current and future research perspectives on the sustainability of SMEs in GVC.

This review study maps the sustainability practices of small and medium-sized enterprises (SMEs) within GVCs using a novel bibliometric technique. This sector is frequently overlooked in favour of larger multinational organizations. This study uses sophisticated bibliometric approaches to map and systematically review the research on SME sustainability in GVCs. This method provides a comprehensive picture of how SMEs negotiate sustainability across global networks by identifying important trends, prominent publications, and gaps in the existing body of information.

A bibliometric analysis of literature that has already been published could help researchers, academics, and stakeholders understand the current trends and paths in the global value chain. This bibliometric review intends to first address the lack of understanding regarding the sustainability of small firms in the GVC, an area that has been predominantly overlooked in favour of large firms. By employing advanced bibliometric techniques, this paper maps the evolution and current stage of research on SME sustainability, providing a comprehensive overview of key trends, influential publications and emerging research areas.

Second, the study offers a comprehensive understanding of the elements affecting SME sustainability in GVCs by integrating multidisciplinary viewpoints and referencing management, economics, and environmental research. This method not only improves our comprehension of the

particular difficulties and possibilities that SMEs encounter, but it also draws attention to the distinctive tactics that they use to negotiate the intricacies of international marketplaces.

Finally, policymakers and practitioners can benefit from the practical implications of this paper's results. This research offers practical suggestions that can guide policymakers and assist the development of frameworks meant to improve the involvement and sustainability of SMEs in GVCs by identifying best practices and possible obstacles to SME sustainability. This contribution is essential to creating global value chains that are more robust and inclusive.

Broadly, the proposed study aims to comprehend the literature around the selected keywords, and precisely to begin with, researchers working on small firms' sustainability can utilize this article to understand the trends and patterns in the literature that has already been published on small firms' sustainability in the GVC and the significant contributions that have been made in these aspects, helping to stimulate their work. Although researchers have examined the sustainability of these firms in GVC, there is a lack of conclusive work.

The rest of the paper is organized as below. Section 2 describes the theoretical framework. Section 3 highlights the research questions. In Section 4, we describe the data sources and methods of analysis. This is followed by the analysis of documents, characteristics, and science mapping of the extant literature on the sustainability of SMEs in GVC, with the help of bibliometric analysis and reflection on the areas lacking investigation and potential pathways in section 5. In the final section, we summarise this review's key research outcomes and theoretical implications in section 6.

Theoretical Underpinning

The resource-based view (RBV) hypothesis states that the research-based viewpoint was employed in the 1980s and 1990s to determine the strategic resources that a firm may utilize to obtain a long-term competitive advantage. (Barney, 1991; Conner & Prahalad, 1996). The advocates of RBV argue that it is much more feasible to capitalize on external opportunities by using the existing resources creatively rather than acquiring new skills for every opportunity. Based on this, SMEs can achieve sustainability by leveraging their unique resource and capabilities, focusing on core competencies and innovating existing resources to gain a competitive edge (Jacob et al., 2023). SME integration in GVCs can help them access new technologies, tap into the global market, and enhance their operational efficiencies, thereby reinforcing their sustainability.

This is followed by the stakeholder theory, which examines how business entities, such as suppliers, creditors, communities, customers, etc., influence organisational management and business ethics. It delves into the ethics and values involved in organisational management, addressing the elements of market economy, social contract

theory and corporate social responsibility that are extensively covered (Antràs, 2016; Freeman & McVea, 2005). SMEs that engage in sustainable practices can build stronger relationships and enhance their reputation, strengthening SMEs' position in GVCs (Suchek et al., 2023).

According to (Teece et al., 1998), the third theory is the dynamic theory, which describes “the firm's ability to integrate, build, and reconfigure internal and external competencies to address a rapidly changing environment”. In the dynamic environment of the GVC, this flexibility is essential to SMEs' viability (Kano et al., 2020). This theory discusses the significance of a firm’s capacity to adapt, integrate, and reorganize both internal and external resources, which is crucial, according to the dynamic capabilities framework. This idea emphasises how important it is for SMEs in GVC to have dynamic characteristics, including creativity, adaptability and strategic partnership. These skills guarantee SMEs’ long-term viability in the global market by enabling them to react quickly to market changes, technological advances, and consumer tastes.

Fourth is the institutional theory, which examines the

institutional environment of the economy, including cultural-cognitive elements, norms, regulations, and the influence of the sustainability practices of SMEs. Compliance with environmental regulations and adopting sustainability practices can enhance an SME's legitimacy and long-term viability in the GVCs (De Marchi & Gereffi, 2023).

Research Questions

We examine regional, national, organizational and individual-level contributions using the bibliometric data to emphasize the concept of sustainability of small businesses in the GVC by addressing the following research questions (RQs):

- RQ1. What are the production trends of publications based on the sustainability of SMEs in the GVC?
- RQ2. Who and where are the major constituents of research based on the selected keywords?
- RQ3. What are SMEs' major keyword clustering and social structure trends in GVC?
- RQ4. What are the niche topics for future research in GVC for SMEs' long-term sustainability?

DATA AND METHODOLOGY

Selecting the appropriate dataset is the most crucial aspect of bibliometric analysis. Researchers commonly utilize databases such as Scopus and Google Scholar (Farrukh et al., 2020; Vinkler, n.d.). These databases vary in terms of data quantity, quality and functionality. Web of Science (WoS) covers citations from the 1900s and covers 22,209 major journals, books and conference proceedings worldwide. However, the number of journals and publishers included is lower compared to Scopus, which can lead to biases when using bibliometric software (Wang & Gu, 2022).

While Google Scholar offers an extensive range of literature, its data download format is intricate and lacks structural stability, making it unsuitable for bibliometric analysis software. In contrast to WOS and Google Scholar, Scopus contains 70 million records, including peer-reviewed journals, conference proceedings, and book chapters sourced from more than 5,000 publishers worldwide, making it the largest database of abstracts and citations. It provides detailed citation analysis and metrics, with strong coverage, rigorous quality control, and detailed analysis across science, technology, medicine, and social science. Hence, this research utilizes the Scopus core collection database, recognised for having the most journals and superior data quality, as its data source. Several previous studies have also employed bibliometric analyses in their research (Gao et al., 2021; Imran Ahmed Shahzad et al., 2021; Wang & Gu, 2022).

In recent years, the value chain has become a prominent subject in global value chain-related research, encompassing extensive and complex disciplinary knowledge and continuing to expand within interdisciplinary research contexts. Creating new theories and methods increases complexity in clearly delineating its fields. Consequently, this research will locate the relevant literature using subject retrieval based on the pertinent research. This paper aims to examine the effect of the global value chain on the field of economics, so the chosen discipline is economics. To narrow the research timeframe to the last twenty years, the study specifically focuses on 2000 to 2025. To ensure the accuracy of the sources, only English-language literature that has been published is included in this paper. The data selection process is based on Boolean operators, which use logical operators to combine or exclude specific data based on the defined criteria outlined in Table 1.

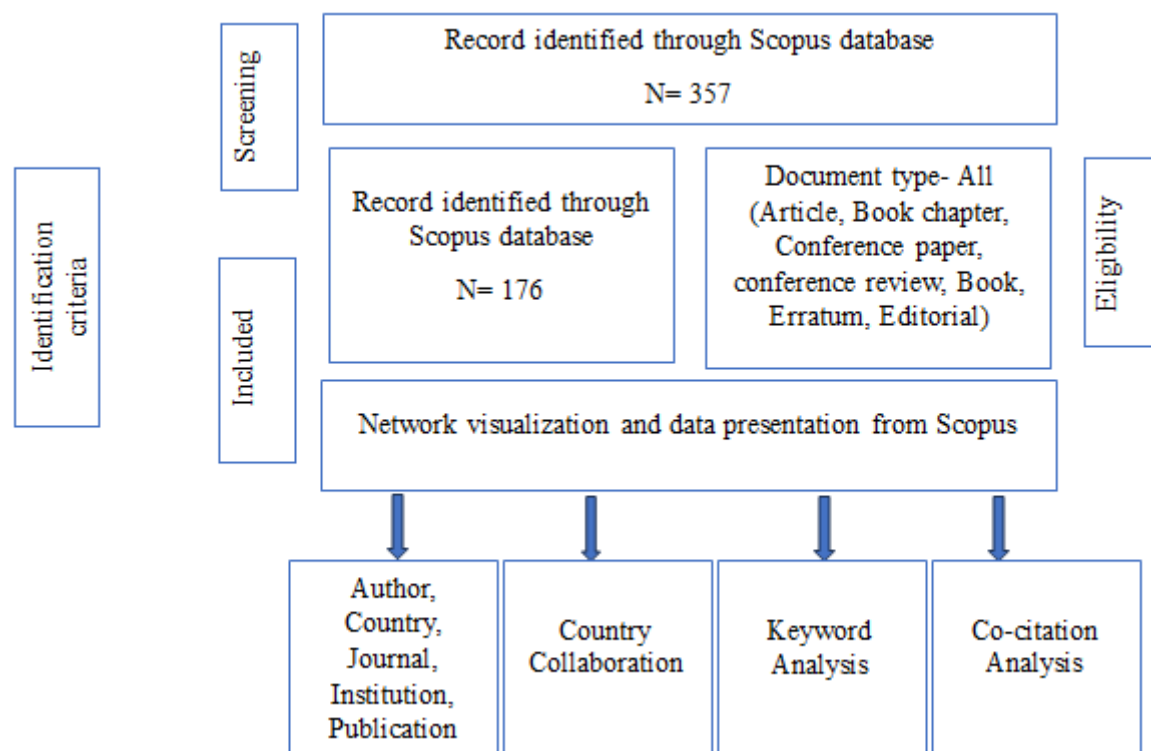
“GVC-related keyword”	“Sustainability-related keywords”	SMEs-related keywords
“Value chain”	Social	Small firms
Global value chain	Governance	Small and Medium firms
Global Manufacturing	Sustainability	SMEs
Global Industry	ESG	MSMEs
Global offshoring	Climate footprint	
Global production network	Ecological footprint	
	GHG	
	Environment	

Source: author’s own based on Jacob et al., 2023

The "AND" and "OR" Boolean operators were employed to ensure the chosen document address. Moreover, the search is as follows: (TITLE-ABS-KEY("value chain" OR "Global value chain" OR "global manufacturing" OR "global industry" OR "global offshoring" OR "global production network" AND "social" OR "governance" OR "sustainability" OR "ESG" OR "climate footprint" OR "ecological footprint" OR "GHG" OR "environment" AND "Small and medium firms" OR "small firms" OR "SMEs" OR "Medium small and micro enterprises") AND (LIMIT-TO (LANGUAGE,"English")) AND (LIMIT-TO (PUBSTAGE,"final")) AND (LIMIT-TO (SUBJAREA,"ECON") OR LIMIT-TO (SUBJAREA,"BUSI"))).

Furthermore, this paper employs R-Studio, an integrated development environment (IDE) for R that is typically utilized for executing code directly and plotting, managing history and overseeing the workspace. The study primarily utilizes the biblioshiny subprogram to represent the bibliometric analysis visually. It generates visualised images and tables of data from the Scopus corpus. Through a search on 'essential string sustainability of SMEs in the Global value chain' on Google Scholar, which encompasses a variety of literature (papers, reports, news, and articles), we discovered approximately 17,600 results spanning the past two decades. However, to perform the bibliometric analysis, this study utilised the Scopus database, where a corpus of 357 documents was identified, which was subsequently screened down to 176 based on the criteria presented in Figure 1.

Figure 1: Procedure for selecting the records from the Scopus-listed corpus



Source: Author’s own, based on (Jacob et al., 2023)

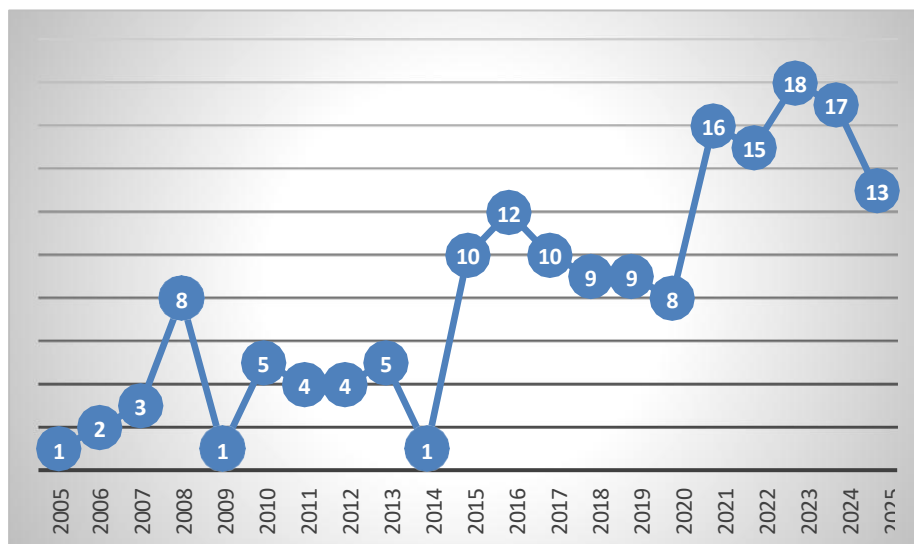
The review identified studies focusing on SMEs' sustainable participation in GVC, considering only the Scopus database. Previous studies have investigated the role of sustainability in GVC (Berthet & Fusacchia, 2024; Blumenschein et al., n.d.; Golgeci et al., 2021; Jacob et al., 2023; Siewers et al., 2024). Nevertheless, it is important to look specifically into SMEs' sustainability.

SMEs are vital to the economic structure of numerous countries globally, representing approximately 90% of the economic landscape in most regions (Kuzmisiin & Kuzmisiinova, 2017). They play a crucial role in achieving socio-economic goals such as promoting exports, fostering entrepreneurship, job creation, and driving industrial growth ("Chege & Wang, 2020; Nyeko et al., 2013). The role of SMEs in driving economic development is especially significant in developing nations, as they encourage innovation and support specific changes in the market structure (Singh et al., 2021)". As global value chains (GVCs) emerge as a prominent model of business organization influencing various industry operations, there is increasing interest in how SMEs can be integrated into GVCs and the potential positive impacts their participation can have on domestic companies and economies (Kuzmisiin & Kuzmisiinova, 2017; Tajoli & Felice, 2018).

RESULT AND DISCUSSION

This analysis includes the annual scientific production, author and author citation analysis, country analysis, publication trends and journal analysis. It will provide a glance at the subject area and a detailed analysis.

Figure 2: Annual Scientific Production



Source: Author’s own bases on Bibliometric analysis

Figure 2 illustrates the findings related to the first research question (RQ1), specifically the publication trends of studies concerning the sustainability of SMEs in the GVC. Beginning in 2004, there were no published articles; however, research began to surface in 2005, the research study emerged, but it was relatively low. From 2010 onwards, especially after 2015, when the Sustainable Development Goals were adopted by the United Nations in the United Nations General Assembly (UNGA), it is evident that the publication has increased.

The implementation of the SDGs has increased the enthusiasm of scholars and researchers regarding this subject. Worldwide commitment to tackle public goods, including clean air, water, and climate stability, is reflected in the rise in scholarly interest and publications, and it is evident that the Paris Agreement 2016 has also created consciousness and has been a game-changer. This has created an institutional shift to the framework that impacts sustainable development.

Emerging Areas of Research-Based Author’s Interest

Table 2 highlights the emerging research areas that various researchers are conducting; the recent areas of interest are innovation, crowdfunding, technological capabilities, investment, tourism, and the digital economy, Industry 4.0, among others. This shows that coordinating investment and trade flows across borders, where innovation and new technologies within GVCs can be crucial in integrating and improving efficiency and competitiveness. Research has shown increasing interest in the supply chain disruptions that have affected the availability and cost of raw materials and finished goods. However, embracing innovation and new technologies can allow firms to integrate, develop, and restructure their internal and external competencies by focusing on their dynamic capabilities.

A game-changing alternative to conventional financing, crowdfunding empowers business owners to develop cutting-edge products and services. Research in this field makes it easier to understand how CSR, sustainability, and crowdfunding can help entrepreneurs fill their financial gaps and promote innovation. Crowding platforms can reduce information asymmetry and help them focus on the functioning of the capital market and investment making.

Additionally, it is important to mention the challenges that SMEs face in arranging the resources to invest in sustainability practices. Research focusing on the accessibility of resources for adopting sustainable practices and sustainable investment that can drive economic growth while promoting environmental and social well-being. Hence, they are crucial for achieving global sustainability goals.

The results suggest the importance of the digital economy, innovation, business environment and SMEs, specifically in developing and emerging nations. previously researches were more focused on large firms in the developed nations. Nevertheless, in recent years, SMEs in the developing countries have highlighted the dynamic diversification, growth and investment in R&D, innovation, which not only opens opportunities for the SMEs in the global trade but also helps these firms to sustain in the international market in the long run, and eventually developing comparative advantage over the firms that are not integrated in the global market.

Table 2: Emerging Areas of Research Based on Work by Most Relevant Authors

“Author & Year	Title	Keywords	Focus (Country)	Total Citations	TC per Year
Simeon Nichter, Lara Goldmark;	Small Firm Growth in Developing Countries	Microenterprise, Small Firm, Entrepreneur,	Developing Countries	384	22.59

2009		Growth, Value Chains, Business Environment			
"Cristina Chaminade, Jan Vang"; 2008	"Globalisation of knowledge production and regional innovation policy: Supporting specialized hubs in the Bangalore software industry"	"Regional innovation systems, Evolution, Globalization of innovation, Software industry, Bangalore"	Bangalore	201	11.17
"Morteza Ghobakhloo; Mohammad Iranmanesh; Mantas Vilkas; Andrius Grybauskas; Azlan Amran; 2022"	"Drivers and barriers of Industry 4.0 technology adoption among manufacturing SMEs: a systematic review and transformation roadmap"	Information "technology, Digitization, Technological innovation, Technology implementation, Small and medium-sized enterprises, Industry 4.0"	<i>Not mentioned</i>	183	45.75
Peter Lund-Thomsen; Khalid Nadvi; 2010	"Clusters, Chains and Compliance: Corporate Social Responsibility and Governance in Football Manufacturing in South Asia"	"Corporate Social Responsibility, Global Value Chains, Industrial Clusters, South Asia"	South Asia	140	8.75
"Prasanta Kumar Dey; Chrisovalantis Malesios; Debashree De; Soumyadeb Chowdhury; Fouad Ben Abdelaziz; 2019"	"Could lean practices and process innovation enhance supply chain sustainability of small and medium-sized enterprises?"	Lean Practice, Process Innovation, Supply Chain, Sustainability, SMEs	Midlands, United Kingdom	218	19.86
Hui Han; Silvana Trimi; 2022	"Towards a data science platform for improving SME collaboration through Industry 4.0 technologies"	Industry 4.0, SME, Data science, Collaboration, TrustCloud, computing	SMEs (Case-study from Greece)	127	31.75
Daniela Ortiz; Sven Kühne; 2008	Implementing Responsible Business Behavior from a Strategic Management Perspective: Developing a Framework for Austrian SMEs	Value Chain Analysis, Austria, CSR, SMEs, Responsible Business Behavior, Competitive Advantage	Austrian SMEs	115	6.39
Allan Lerberg Jorgensen; Jette Steen Knudsen; 2006	Sustainable Competitiveness in Global Value Chains: How Do Small Danish Firms Behave?	Corporate social responsibility, Sustainable development, Supply chain management, Outsourcing, Small to medium-sized enterprises, Denmark	Denmark	110	5.5
Carmel Joe; Pak Yoong; Kapila Patel; 2013	Knowledge loss when older experts leave knowledge-intensive organisations.	Small to medium sized enterprises, Knowledge intensive organisations, older experts	New Zealand	104	8
Christopher Foster; Mark Graham; Laura Mann; Timothy Waema; Nicolas Friederici; 2018	Digital Control in Value Chains: Challenges of Connectivity for East African Firms	Internet, Global Value Chains, Connectivity, East Africa, Development	East Africa	88	11
Tod Rutherford; John Holmes; 2008	'The flea on the tail of the dog': power in global production networks and the restructuring of Canadian automotive clusters	Global Production Networks, Transnational Corporation, Actor Network Theory, Canadian Automotive Industry	Canada	82	4.56
Ashish Malik; Piyush Sharma;	Circular economy adoption by SMEs in emerging markets:	Circular Economy, Change Management,	India	79	19.75

Piyush Sharma; Ajayan Vinu; Ajay Karakoti; Kamalpreet Kaur; Harpreet Singh Gujral; Surender Munjal; Benjamin Laker; 2022	Towards a multilevel conceptual framework	India, SMEs, Theory-building			
Isidoro Romero; Pilar Tejada; 2011	A multi-level approach to the study of production chains in the tourism sector	Input–output, Global Value Chain, SME, Tour operator, Travel agency, Hotel, Governance, Upgrading	Andalusia (Spain)	68	4.53
Nilmini Wickramasinghe; Sushil K. Sharma; 2005	Key Factors that Hinder SMEs in Succeeding in Today's Knowledge-based Economy	Information Age, SMEs, Knowledge Assets, Digital Economy, Value Proposition, Knowledge-based Economy, Small and Medium-sized Enterprises, Intellectual Capital, Knowledge Sharing, Value Chain Restructuring, Virtual Marketplace, Critical Success Factors, Critical Failure Factors	<i>Not mentioned</i>	67	3.19
Thanh Tiep Le; Abhishek Behl; Vijay Pereira; 2024	Establishing linkages between circular economy practices and sustainable performance: the moderating role of circular economy entrepreneurship	Circular Economy Practices, Circular Entrepreneurship, Sustainable Supply Chain Management, Sustainable Performance, Emerging Market	Emerging Economy	65	32.5
Heiko Gebauer; Marco Paiola; Bo Edvardsson; 2010	Service business development in small and medium capital goods manufacturing companies	Small to medium-sized enterprises, Manufacturing industries, Business development, Italy, Sweden, Switzerland	Italy, Sweden and Switzerland	57	3.56
Sameh M Saad; Ramin Bahadori; Hamidreza Jafarnejad; 2021	The smart SME technology readiness assessment methodology in the context of industry 4.0	Industry 4.0, Smart product design, Maturity model, SMEs, Assessment methodology	<i>Not mentioned</i>	56	11.2
George Saridakis; Yanqing Lai; Anne-Marie Mohammed; Jared M. Hansen; 2018	Industry characteristics, stages of E-commerce communications, and entrepreneurs and SMEs revenue growth	Entrepreneurial strategy, Small and medium-sized enterprises (SMEs), E-commerce development stages, Social media revenue, Third-party websites, Industry	United Kingdom	56	7
Noemi Sinkovics; Rudolf R Sinkovics; Jason Archie-Acheampong; 2021	The Business Responsibility Matrix: A Diagnostic Tool to Aid the Design of Better Interventions for Achieving the SDGs	Corporate Social Responsibility (CSR), Multinational Enterprise (MNE), Responsibility Matrix, Responsible Business, Sustainable Development Goals (SDGs), Small and Medium-sized Enterprise (SME), Suppliers	<i>Not mentioned</i>	49	9.8

Daiane Pereira De Souza; Everton Vogel; Carla Eloize Carducci; Clandio Favarini Ruviano; 2020	CIRCULAR ECONOMY IN AGRICULTURE: HOW DOES IT HAPPEN IN PRACTICE?	Industrial symbiosis, Sustainability, Production, Green Economy, Life Cycle Assessment, Value chain	<i>Not mentioned (Literature Review)</i>	47	7.83
Muyanja Ssenyonga; Muhammad Shafiullah; 2021	Imperatives for post COVID-19 recovery of Indonesia's education, labor, and SME sectors	COVID-19 Pandemic, GVCs, SMEs, Economic Zones, Industrial parks, Flipped classroom, Product complexity, Labor Relations	Indonesia	45	9
Isidoro Romero; Pilar Tejada; 2020	Tourism intermediaries and innovation in the hotel industry	SMEs, Innovation, Tour Operator, OTA, Global Value Chain	Spain	45	7.5
Eeva Jernström; Vesa Karvonen; Tuomo Kässi; Andrzej Kraslawski; Jukka Hallikas; 2017	The main factors affecting the entry of SMEs into bio-based industry	Bio-refining, Bio-based products, SME, Competence, Value chain, Collaboration	South-East Finland	45	5
Ángel Díaz-Chao; Jorge Sainz-González; Joan Torrent-Sellens; 2016	The competitiveness of small network-firm: A practical tool	Global knowledge economy, Value chain, small network-firm, Firm competitiveness, Information management	<i>Not mentioned</i>	42	4.2"

Source: Author's own bases on Bibliometric analysis

Most Cited Countries

Following the top relevant authors, this study also focuses on the countries with the most cited research based on these keywords. Table 3 presents the country with the highest citation count based on the bibliometric analysis conducted. The table shows that Denmark is the country with the most published papers (297), followed by the United Kingdom (275 publications) and Sweden (212 publications); on the contrary, Pakistan, Peru, Tanzania, Saudi Arabia and Nigeria have only one publication each, showing that developed countries have more Publication and are more focused on SMEs sustainability in comparison to developing countries. It is evident that integrating into global markets and investment competitiveness significantly propelled the remarkable growth of several economies, notably China, India, Indonesia, Singapore and others. Despite this, numerous developing countries have not been able to fully harness their economic capabilities or position themselves as competitive participant on the international stage (World bank, 2019). Initially, developing countries were seen as significant exporters of primary goods. Nevertheless, this perception has changed, with evidence indicating that by 2002, 60% of their exports were manufactured products (Eifert et al., 2005; Fernandez-Stark et al., 2014).

Table 3: Most cited country (Top 20)

Country	TC
Denmark	297
United Kingdom	275
Sweden	212
Spain	207
New Zealand	193
Switzerland	192
Germany	185
Lithuania	183
USA	117
Austria	115
Australia	103
India	99
Finland	86
China	60
Indonesia	58
Italy	50
Korea	41
Brazil	39

Malaysia	37
Portugal	35

Source: Author’s own bases on Bibliometric analysis

Keyword Clustering and Social Structure Trends

To answer research question 3, which enquires about keyword clustering and social structure trends, the study considers the word cloud and co-occurrence network as a visual output to understand the significant keywords used in the extant research. Figure 3 highlights the word cloud that indicates SMEs, value chain, sustainability, global value chain, industry 4.0, Corporate social responsibility, innovation, digitalization, internationalization and sustainable innovation are the major keywords around which the present researches revolve. This emphasized the vital role of SMEs in the global world, particularly in driving innovation and economic growth. It is demonstrated that these topics are not isolated but rather part of a larger, integrated discourse on how businesses can sustainably thrive in a globally connected, technologically advanced, and socially responsible environment.

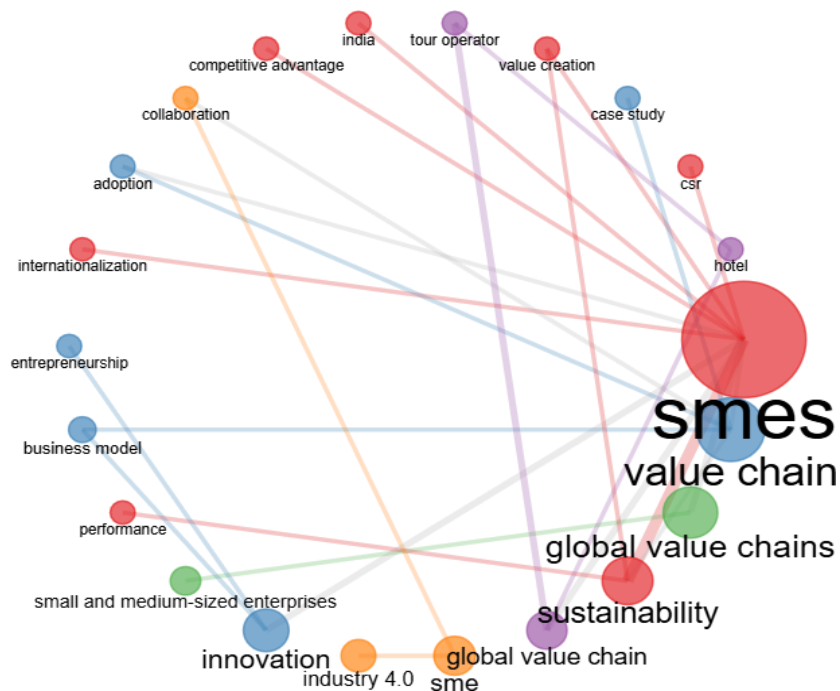
Furthermore, to emphasize the relationship among these keywords, this study examines the co-occurrence networks for the keywords. Additionally, the co-occurrence network of the keywords and their presence in the extant research is illustrated in Figure 4.

Figure 3: Word Cloud



Source: Author’s own bases on Bibliometric analysis

Figure 4: Co-occurrence network of the Keywords



Source: Author’s own bases on Bibliometric analysis

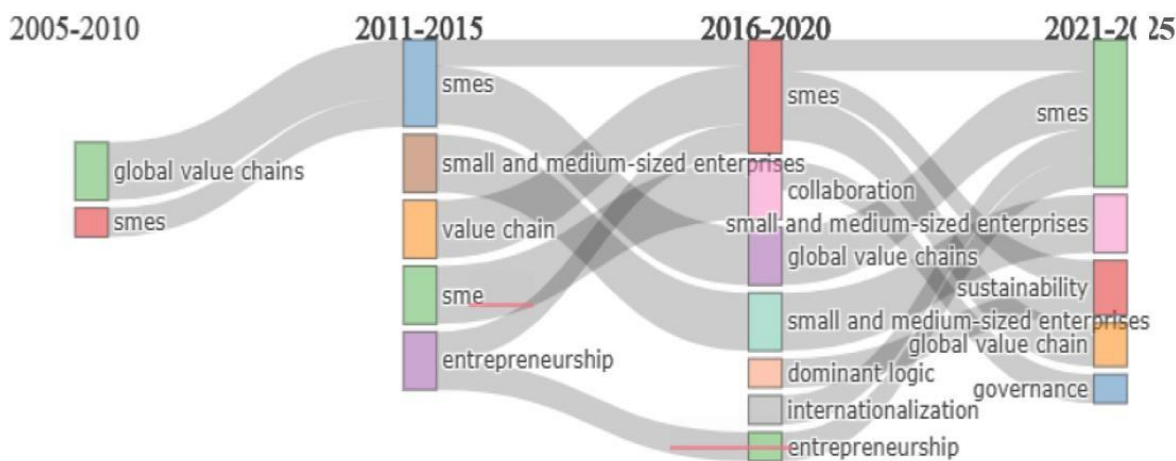
Understand the Niche Area of Research

This section answers the fourth research 4 (RQ4). A bibliometric analysis of the sustainability of SMEs in global value chains has been undertaken under this review. This research provides the degree of production trends, major publishers and cited countries and keyword clustering. The publication trends, authors, and country show the performance, while co-occurrence analysis and keywords analysis show the intellectual structure of the subject.

This research offers a summary of the factors influencing the sustainability of SMEs. However, undoubtedly, an in-depth study on the subject stands in progress and is excluded from the body of work the authors have taken in this paper. This review has considered the Scopus database as it has high journal coverage and quality and is one of the best databases.

Moreover, this study also highlights the emerging areas of interest for research through the word cloud and the thematic map, as shown in Figure 5. Additionally, the thematic evolution with the time-cutting point in 2005, 2010, 2015, and 2020 in Figure 6 shows the time period slicing over the span of 5 years and highlights the evolving terminologies for SMEs in the GVC. From 2005 onwards, it can be seen that GVC and SMEs are the keywords that the studies revolve around; however, entrepreneurship emerged as an addition, followed by collaborations, dominant logic, and internationalization in 2016. The term sustainability was introduced in 2020, which shows that the sustainability of SMEs in GVC is an emerging theme to investigate, followed by governance, as shown in Figure 6.

Figure 6: Thematic evolution with time cutting point at 2005,2010,2015,2020



Source: Author’s own bases on Bibliometric analysis

Theoretical Implications

A bibliometric investigation of small businesses' sustainability within Global Value Chains (GVCs) has broad theoretical ramifications that cut across many academic fields. The main theoretical ramifications are as follows:

Integrating interdisciplinary Perspectives

It is evident from the above word cloud that sustainability and GVCs are intrinsically multidisciplinary, encompassing sociology, environmental science, business management, and economics. The bibliometric analysis provides a thorough insight that goes beyond conventional academic boundaries by mapping these domains and highlighting the ways in which these disparate topics connect and intersect. By adding diverse perspectives and methods, this intersectional approach enhances theoretical frameworks.

Advancing theories of Sustainability.

The bibliometric analysis enhances sustainability theories by pinpointing the distinct strategies and practices that small firms utilize within global value chains (GVCs). Traditional Conventional sustainability frameworks typically emphasize large companies, overlooking the unique challenges and advantages faced by SMEs. This analysis provides a more detailed perspective on how small firms adopt sustainable practices, thus expanding the understanding of sustainability theories to incorporate various organizational contexts.

Advancement of Innovation and Diffusion Theories

Innovation and diffusion theories are enriched by examining how SMEs implement and disseminate sustainable practices within global value chains (GVCs). The study uncovers patterns in how innovations are embraced and emphasizes the importance of technological capabilities, providing a clearer understanding of how new concepts and technologies are disseminated across global networks. This is crucial during the era of Industry 4.0 and digital transformation, where the swift uptake of new technologies is essential for achieving sustainability.

Evolutionary Economic Geography and Path Dependency

This bibliometric study is also linked to theories of evolutionary economic geography and path dependency, which examine the impact of historical and geographic elements on economic activities. By tracing the development of sustainability practices, the study offers insights into how the sustainability trajectories of SMEs are influenced by their historical settings and geographical factors. This enhances theoretical frameworks by integrating spatial and temporal aspects into the examination of GVCs and sustainability.

Contribution to Resource-Based View and Dynamic Capabilities

The results enhance the Resource-Based View (RBV) and Dynamic Capabilities frameworks by illustrating how small and medium-sized enterprises (SMEs) utilize their distinctive resources and skills to maintain sustainability within global value chains (GVCs). As per

the RBV, firms gain a competitive edge by leveraging their distinct resources and competencies, whereas the Dynamic Capabilities framework focuses on the capacity to adapt and innovate amidst evolving conditions. This examination reveals that SMEs can efficiently harness their flexibility, creativity, and specialized expertise to thrive in international markets, thus bolstering and expanding these theoretical frameworks.

CONCLUSION

This study reviews a corpus of 357 documents to establish the performance of research constituents and the intellectual framework that supports the sustainability of SMEs within GVC. This research offers a comprehensive overview of the essential trends, topics, and leading authors from top countries in the field, which can assist other researchers aiming to explore this area further.

The results of the bibliometric analysis show the underlying trends and topics with the top countries, major authors and their significant contributions in the field that can help other researchers to pursue their research interests in this field. The analysis of publication trends indicates a rise in the volume of publications starting in 2019, following a steady rise that gained momentum in 2016 with the COP 21 event related to the Paris Agreement, which was then succeeded by the adoption of the SDGs. Nevertheless, the adoption of SDGs has also played a significant role in boosting the publications.

In the country-wise publication, we observe that Denmark and the United States stood as the hubs amongst the other nations, which were majorly developed nations. Showing that more research is needed in developing countries to contribute towards the literature. Also, Gereffi G, Kaplinsky R, Nichter, 2009, Koopman R, Humphrey J, Ponte S, Bair J, among others. Their significant works address upgrading, which ought to be broadened as it includes both economic and social aspects to capture a more effective link in the GVC, upgrading and the function of CSR (Gereffi & Lee, 2016).

Traditionally, GVC was a topic under supply chains and operations, but over time, with the gained significance and intrigue in the field of economics, it progressed. However, the co-citation and keyword analyses identified key research themes within the literature reviewed in this assessment. The conceptual framework highlights that the research on GVC for sustainability has evolved from solely examining commodity chains and production networks to exploring networks that are more inclusive and gender-neutral. Recently, there has been an increased emphasis on topics such as labour regulations, workforce development, and environmental sustainability. A recent piece in the Financial Express stated that Micro, Small, and Medium Enterprises (MSMEs) in India could grow if they participate in the global value chain, which entails adding value to the business at every stage. (Epede & Wang, 2022; Jacob et al., 2023) also emphasize that adequate conditions, resources, and strategies are essential to ensure these SMEs can successfully integrate and advance (upgrade) within GVCs.

The Cluster offers researchers and policymakers a new perspective for their upcoming initiatives. As the workforce becomes more globalized, it is increasingly crucial to examine how participation in the global value chain influences carbon emissions concentrations. The keyword analysis investigates this connection between trade and pollution. Varied types of demand (Liu & Zhao, 2020) indicate that being part of the global value chain significantly affects carbon emission intensity more in the context of international export demand compared to local demand.

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