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Sustainability Governance in Agribusiness SMEs: A Bibliometric Analysis

Qalbin Salim Fazli [1], Ghalieb Mutig Idroes [2], Mussa Isaack Delya [3], Erick Hironimus Kihwili [4], Jackson Bulili Machibya [5] and Fazli Syam BZ [6,*]

[1] Department of Plant Protection, Faculty of Agriculture, IPB University, Bogor, 16680, Indonesia; qalbinsf@gmail.com (Q.S.F)
[2] Energy and Green Economics Unit, Graha Primera Saintifika, Aceh Besar 23371, Indonesia; ghaliebidroes@outlook.com (G.M.I.)
[3] Tanzania Agricultural Research Institute (TARI) - Kihinga Center, Kigoma P.O. Box 132, Tanzania; imussa2016@gmail.com (M.I.D)
[4] Tanzania Agricultural Research Institute (TARI) - Tumbi, Tabora P.O. Box 306, Tanzania; erickkihwili@gmail.com (E.H.K)
[5] Institute of Rural Development Planning, P.O.Box 138, Dodoma, Tanzania; bulili.jackson1@gmail.com (J.B.M)
[6] Department of Accounting, Faculty of Economics and Business, Universitas Syiah Kuala, Banda Aceh 23111, Indonesia; fazlisyambz@feb.usk.ac.id (F.S.B)

***** Correspondence: fazlisyambz@feb.usk.ac.id

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Abstract

The growing global emphasis on ESG practices, resilient food systems, and sustainable development has intensified scholarly attention toward sustainability-related governance in agri-food enterprises. This study examines the intellectual structure, thematic evolution, and research trends of sustainability governance research within agribusiness small and medium-sized enterprises (SMEs) through a comprehensive bibliometric analysis. Bibliographic data were retrieved from the Scopus database using a PRISMA-based screening procedure, resulting in 116 English-language journal articles published between 2005 and 2025. The analysis was conducted using VOSviewer and Biblioshiny to evaluate publication trends, collaboration networks, thematic structures, and influential publications. The findings reveal a substantial increase in scientific production after 2019, indicating growing academic interest in sustainable supply chains, resilience, digitalization, and governance-oriented business transformation. Thematic evolution analysis demonstrates a transition from conventional discussions on local food systems and operational sustainability toward more integrated themes involving circular economy, blockchain, ICT adoption, and adaptive resilience. The results further highlight the increasing role of technology-enabled governance mechanisms and interdisciplinary collaboration in strengthening sustainable agri-food ecosystems. However, geographical disparities and limited integration across sustainability dimensions remain evident, particularly in developing economies. This study contributes by positioning sustainability governance in agribusiness SMEs as an emerging interdisciplinary research domain and provides insights for future research and sustainable agri-food policy development.

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1. Introduction

The global transition toward sustainable development has substantially transformed the strategic orientation of agribusiness systems worldwide [1, 2]. Increasing concerns regarding climate change [3, 4], environmental degradation [5, 6], food insecurity [7, 8], and resource scarcity [9, 10] have intensified demands for more sustainable, resilient, and accountable agricultural production systems [11, 12]. Simultaneously, the growing prominence of environmental, social, and governance

(ESG) principles has expanded sustainability expectations beyond environmental performance toward broader issues of accountability, transparency, and governance quality [13]. These developments have become particularly significant within agribusiness sectors, where sustainability challenges are closely linked to food system resilience, supply chain stability, and long-term economic development [14, 15].

Within this context, agribusiness small and medium-sized enterprises (SMEs) play a strategically important role. SMEs account for approximately 90% of businesses globally and contribute substantially to employment generation and economic growth, particularly in developing economies [16, 17]. In agribusiness systems, SMEs are actively involved in agricultural production, processing, distribution, logistics, and agri-food value chains. Consequently, the sustainability performance of agribusiness SMEs significantly influences broader sustainable development objectives, including food security, rural livelihoods, and environmental sustainability. However, agribusiness SMEs also face complex operational and environmental challenges, including climate variability, pest outbreaks, market uncertainty, resource limitations, and increasing pressure to comply with sustainability standards and ESG-oriented governance mechanisms [18–20].

The growing integration of sustainability and governance concerns has intensified scholarly attention toward sustainability governance in agribusiness SMEs. In this context, governance extends beyond traditional corporate governance mechanisms and includes broader dimensions such as stakeholder accountability, sustainable supply chain governance, ESG integration, traceability systems, environmental management practices, and sustainability-oriented innovation [21–23]. Governance mechanisms are increasingly important because they influence how agribusiness SMEs respond to sustainability pressures, manage environmental risks, maintain legitimacy, and strengthen organizational resilience within increasingly sustainability-sensitive markets [24–26].

Nevertheless, implementing sustainability governance remains particularly challenging for agribusiness SMEs. Most sustainability and ESG frameworks were originally developed for large corporations with stronger financial resources, institutional support, and managerial capabilities [27, 28]. This situation creates a governance paradox in which agribusiness SMEs are increasingly expected to adopt sustainability-oriented practices despite facing significant limitations in finance, technological capability, sustainability expertise, and formal governance structures [29–31]. As a result, the sustainability governance dynamics of agribusiness SMEs differ considerably from those of large corporations and require more context-specific scholarly attention.

The increasing strategic importance of sustainability governance has stimulated rapid growth in research related to agribusiness sustainability, ESG implementation, sustainable supply chains, green innovation, and SME resilience. Existing studies have explored sustainability in agriculture, ESG practices, sustainable entrepreneurship, and sustainability-oriented supply chain management [32–35]. At the same time, bibliometric studies have emerged as an important approach for mapping the intellectual development of sustainability-related research domains [36, 37]. However, existing bibliometric studies largely focus on broad sustainability themes without specifically examining the integrated nexus between sustainability governance and agribusiness SMEs as a distinct interdisciplinary field. Consequently, limited understanding exists regarding how sustainability governance research in agribusiness SMEs has evolved, which conceptual themes dominate the field, how collaborative knowledge networks are structured, and what emerging research directions are shaping future scholarship.

Several bibliometric and review studies have examined sustainability-related research domains, including ESG strategies, sustainable supply chain management, agricultural sustainability, and agri-food innovation [38–42]. However, these studies generally focus on broad sustainability themes, specific technologies, or particular sectors without explicitly examining the intersection of sustainability governance, agribusiness SMEs, and governance-oriented business transformation. Existing reviews also tend to emphasize environmental sustainability or supply chain performance independently, while limited attention has been given to the governance mechanisms through which agribusiness SMEs respond to sustainability pressures, ESG expectations, stakeholder accountability, and resilience challenges. Consequently, the intellectual structure, thematic evolution, and emerging governance paradigms of sustainability governance research within agribusiness SMEs remain fragmented and insufficiently synthesized.

This gap becomes increasingly important in the post-pandemic era, where global food systems face growing pressures associated with supply chain disruption, climate-related risks, ESG investing, and sustainable finance initiatives. The rapid expansion and interdisciplinary fragmentation of sustainability governance literature further justify the need for bibliometric analysis, as conventional narrative reviews

may be insufficient to systematically capture the intellectual structure and thematic evolution of the field. Bibliometric analysis enables researchers to objectively identify publication trends, influential journals, leading authors, collaboration networks, conceptual clusters, and emerging research trajectories within a scientific domain [36, 43–46]. Moreover, from a stakeholder theory perspective, sustainability governance increasingly depends on how organizations balance economic, environmental, and social responsibilities while responding to diverse stakeholder expectations [47–50].

Accordingly, this study aims to conduct a comprehensive bibliometric analysis of scientific publications related to sustainability governance in agribusiness SMEs. Specifically, this study seeks to: (1) analyze publication and citation trends; (2) identify influential journals, authors, countries, and publications; (3) examine collaboration networks among authors and countries; (4) map conceptual structures and thematic clusters through keyword co-occurrence analysis; (5) analyze thematic evolution and emerging sustainability governance paradigms; and (6) synthesize the intellectual contributions of highly cited publications within the field.

This study contributes to the literature in several ways. First, unlike previous bibliometric studies that examined ESG, sustainability, agri-food systems, or supply chain management separately, this study specifically focuses on the emerging nexus of sustainability governance within agribusiness SMEs. Second, it provides a systematic mapping of the intellectual, conceptual, and social structures of the field through publication trends, collaboration networks, keyword co-occurrence, thematic evolution, and influential publications. Third, the study identifies how sustainability governance research has evolved from traditional sustainability and food supply chain concerns toward integrated themes involving ESG implementation, digital transformation, circular economy practices, and organizational resilience. Finally, the study offers evidence-based directions for future research and practical insights for policymakers and practitioners seeking to strengthen sustainable and resilient agribusiness ecosystems.

2. Materials and Methods

This study employed a bibliometric analysis approach to systematically examine the development of sustainability governance research within agribusiness SMEs. Bibliometric analysis enables researchers to quantitatively evaluate the intellectual structure, thematic evolution, collaboration patterns, and scientific performance of a research field through publication metadata and citation information. The method is widely recognized for mapping research trends and identifying influential publications, authors, countries, and thematic areas within a specific domain.

2.1. Data Source and Search Strategy

The bibliographic data analyzed in this study were retrieved from the Scopus database on 24 May 2026. Scopus was selected as the primary data source due to its extensive interdisciplinary coverage, standardized citation metadata, and widespread adoption in bibliometric and science mapping research. Compared with other major databases such as Web of Science (WoS), Scopus indexes a larger volume of publications across sustainability, business, agriculture, supply chain management, and related interdisciplinary fields, thereby providing broader coverage of the research landscape. Although WoS is recognized for its rigorous indexing standards and strong representation of highly cited journals, Scopus offers a more comprehensive collection of peer-reviewed journals, conference proceedings, and international publications relevant to sustainability governance and agribusiness research.

The selection of a single curated database is also consistent with established bibliometric methodological recommendations, as it enhances data consistency, reduces duplication bias, and improves the reproducibility of citation-based analyses. Furthermore, Scopus provides rich bibliographic and citation information that is fully compatible with leading bibliometric software, including VOSviewer and Biblioshiny, facilitating robust network visualization, science mapping, and thematic evolution analyses. Given the multidisciplinary nature of sustainability governance in agribusiness SMEs, which intersects sustainability studies, business and management, agriculture, governance, and supply chain research, Scopus was considered the most appropriate database because it captures a broad and integrated body of literature across these interconnected domains. Nevertheless, it is acknowledged that the inclusion of additional databases, such as WoS, may provide marginally wider coverage and could be considered in future studies for comparative validation.

The search query was designed to capture studies related to SMEs, agribusiness sectors, and sustainability governance dimensions. The query used was:

((SME OR SMEs OR MSME OR MSMEs OR "small and medium enterprise") AND (agribusiness OR agroindustry OR "agricultural business" OR "agri-food" OR "food supply chain") AND (sustainab OR governance OR ESG OR "corporate governance")).

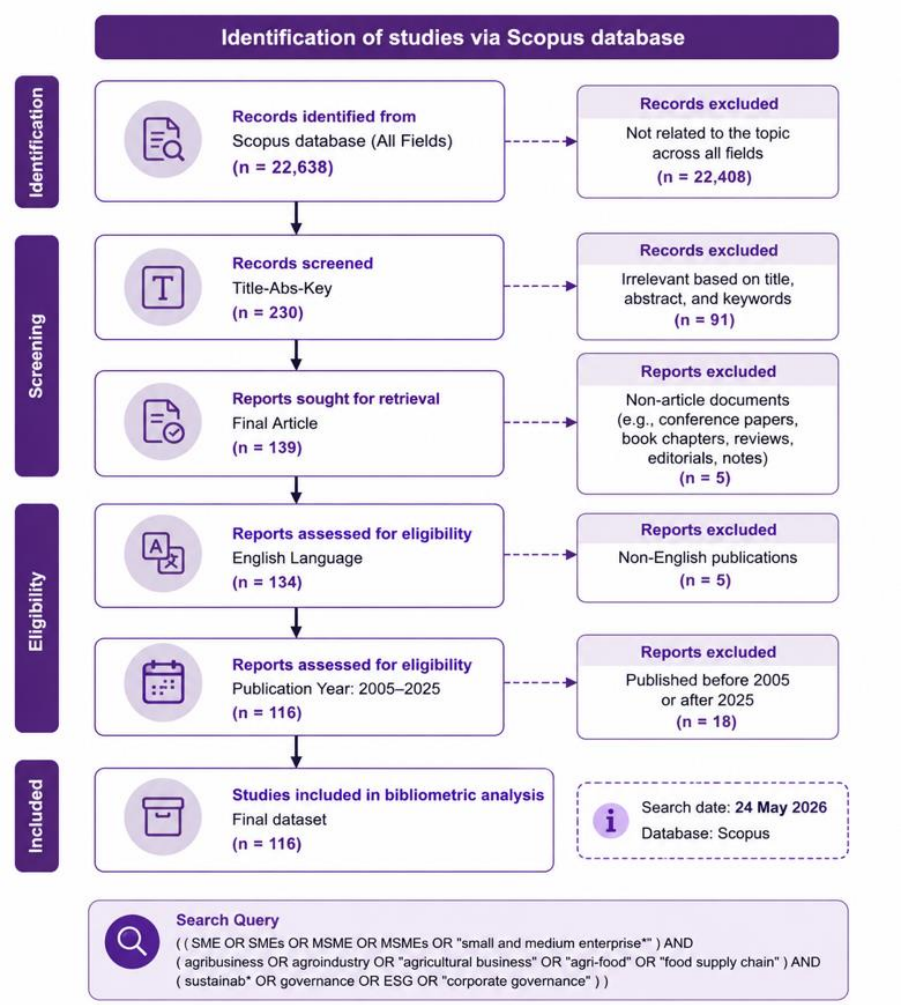


Figure 1. PRISMA-based screening procedure for bibliometric analysis of sustainability governance research on agribusiness SMEs.

The initial search conducted in all database fields identified 22,638 documents. To improve relevance and reduce unrelated records, the search was refined to the Title–Abstract–Keywords (TITLE-ABS-KEY) field, resulting in 230 documents. Several screening criteria were subsequently applied, including: (1) document type restricted to journal articles, (2) publication language limited to English, and (3) publication years limited to 2005–2025. After the screening process, 116 articles were retained as the final dataset for bibliometric analysis. The detailed filtering and screening procedures are illustrated in Figure 1 using the PRISMA framework.

The decision to include only English-language journal articles was intended to ensure consistency in scientific quality, accessibility, and comparability across publications. Meanwhile, the period 2005–2025 was selected because research concerning sustainability governance and agribusiness SMEs began to gain substantial scholarly attention during this timeframe, particularly following the increasing global emphasis on sustainable supply chains, ESG practices, and circular economy initiatives.

2.2. Bibliometric Analysis Procedure

The study adopted a science mapping approach to analyze the intellectual, conceptual, and social structures of the research field. Bibliometric analysis was conducted using three software tools: VOSviewer version 1.6.20, RStudio version 4.5.2 with the Biblioshiny package, and Microsoft Excel.

2.2.1. Publication and Citation Trend Analysis

Publication and citation trends were analyzed using Microsoft Excel to identify the annual development of scientific output and citation growth within the field. This analysis provided an overview of the maturity and research dynamics of sustainability governance studies in agribusiness SMEs from 2005 to 2025.

2.2.2. Scientific Contributor and Collaboration Network Analysis

Collaboration networks among authors and countries were examined using VOSviewer through co-authorship analysis. Two network visualizations were produced: co-

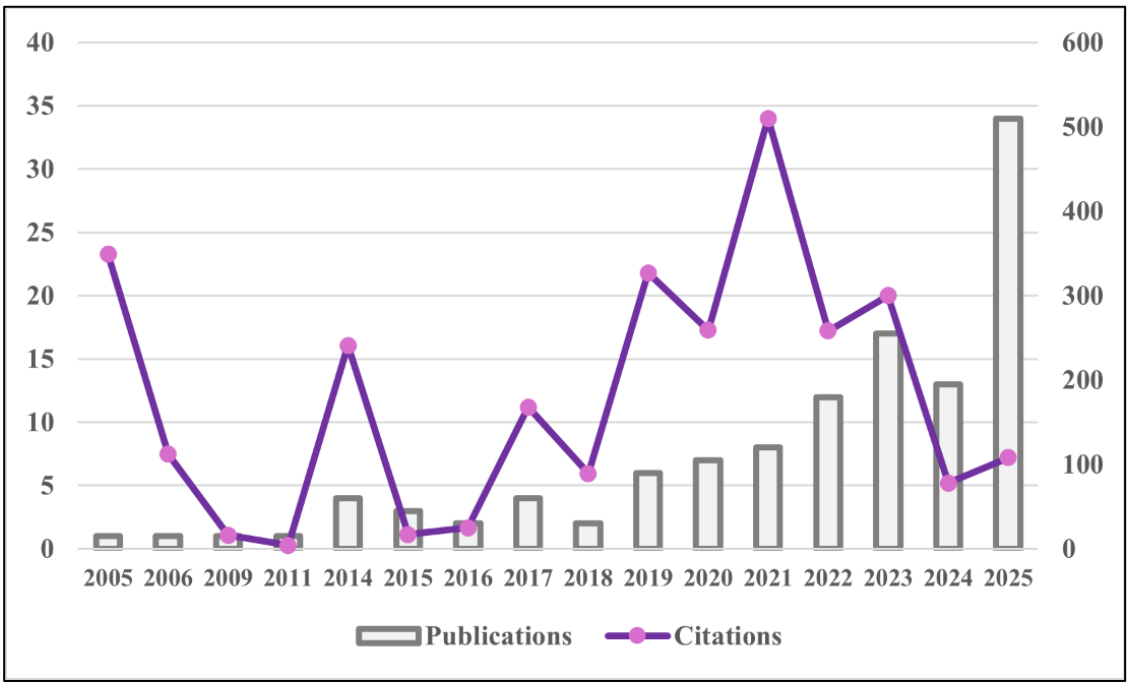


Figure 2. Annual trends in publications and citations on sustainability governance in agribusiness SMEs (2005–2025).

authorship networks among authors and co-authorship networks among countries.

The minimum threshold setting in VOSviewer was applied to maximize network inclusion and capture broader collaborative relationships among contributors [51, 52]. Total Link Strength (TLS) obtained from VOSviewer was used to measure the intensity of collaboration between nodes within the network.

In addition, the study identified major scientific contributors by evaluating publication productivity and citation performance. To provide balanced rankings, normalized indicators were calculated using min–max normalization:

$$N_x = \frac{X_i - X_{\min}}{X_{\max} - X_{\min}}$$

where N_x represents the normalized score, X_i denotes the observed value, and X_{min} and X_{max} indicate the minimum and maximum values within the dataset.

An Overall Score (OS) was subsequently calculated to combine normalized publication, citation, and collaboration performance:

$$OS = \frac{N_{Pub} + N_{Cit} + N_{TLS}}{3}$$

Equal weights were assigned to Publications, Citations, and Total Link Strength (TLS) to ensure a balanced evaluation of productivity, scientific impact, and collaborative influence. The study did not prioritize one dimension over another because each indicator captures a distinct aspect of scholarly contribution. Publications reflect research productivity, citations indicate academic influence, and TLS represents the strength of collaborative networks within the field. Assigning equal weights minimizes subjective bias in determining the relative importance of each indicator and provides a transparent and easily interpretable composite measure. Similar balanced approaches have been adopted in bibliometric assessments where multiple performance dimensions are integrated without a priori theoretical justification for differential weighting.

This composite indicator enabled a more comprehensive assessment of influential sources, authors, and countries by integrating productivity, impact, and collaboration intensity.

2.2.3. Thematic Structure and Evolution Analysis

The conceptual structure of the field was examined using co-occurrence analysis of author keywords in VOSviewer. To improve keyword consistency and reduce duplication caused by synonymous terms, a thesaurus file was applied during the analysis process. The minimum threshold setting was also utilized to capture a wider range of thematic relationships.

Furthermore, thematic evolution analysis was conducted using Biblioshiny in RStudio to identify changes in research themes over time. The analysis employed two temporal cutting points with division years of 2011 and 2020, generating three evolutionary periods: 2005–2011, 2014–2020, and 2021–2025.

Table 1. Top scientific sources based on normalized publication and citation metrics.

Sources	Publications	Citations	N-Pub.	N-Cit.	OS
Sustainability (Switzerland)	16	187	1.000	0.536	0.768
Land Use Policy	1	349	0.000	1.000	0.500
Resources, Conservation and Recycling	2	255	0.067	0.731	0.399
Journal of Cleaner Production	4	188	0.200	0.539	0.369
Technological Forecasting and Social Change	1	246	0.000	0.705	0.352
International Journal of Production Economics	1	187	0.000	0.536	0.268
British Food Journal	4	69	0.200	0.198	0.199
World Development	1	133	0.000	0.381	0.191
Production Planning and Control	2	106	0.067	0.304	0.185
Industrial Management and Data Systems	1	117	0.000	0.335	0.168

Note: Pub = publications; Cit = citations; N-Pub/Cit = normalized values (max = 1.000); OS = Overall Score (composite index).

Table 2. Leading authors based on publication, citation, and collaboration performance.

Authors	Publications	Citations	TLS	N-Pub.	N-Cit.	N-TLS.	OS
Bourlakis, Michael	3	323	10	0.667	0.926	0.909	0.834
Le, Thanh Tiep	4	130	3	1.000	0.372	0.273	0.548
Paoloni, Niccolò	3	66	8	0.667	0.189	0.727	0.528
Aktas, Emel	2	206	7	0.333	0.590	0.636	0.520
Choudhary, Sonal	2	185	7	0.333	0.530	0.636	0.500
Ilbery, Brian	1	349	1	0.000	1.000	0.091	0.364
Maye, Damian	1	349	1	0.000	1.000	0.091	0.364
Albinarrate, Unai	1	25	11	0.000	0.072	1.000	0.357
Esturo, Aintzane	1	25	11	0.000	0.072	1.000	0.357
Ingolfsdottir, Gyda Mjöll	1	25	11	0.000	0.072	1.000	0.357

Note: Pub = publications; Cit = citations; TLS = Total Link Strength; N-Pub/Cit/TLS = normalized values (max = 1.000); OS = Overall Score (composite index).

Thematic evolution mapping enabled the identification of emerging, declining, and continuing research themes in sustainability governance studies related to agribusiness SMEs.

2.3. Intellectual Structure Analysis

To explore the intellectual foundation of the field, highly cited publications were analyzed based on total citation counts retrieved from Scopus. The analysis synthesized influential studies according to their research focus, theoretical contribution, and key findings. This approach helped identify dominant research directions and major scholarly contributions shaping sustainability governance research within agribusiness SMEs.

2.4. Reliability and Methodological Considerations

Several methodological considerations were incorporated to enhance the reliability of the analysis. First, the use of Scopus ensured broad multidisciplinary coverage and standardized metadata quality. Second, the application of PRISMA-based screening improved transparency and reproducibility during article selection. Third, the integration of multiple software tools allowed complementary analyses of publication trends, collaboration networks, thematic structures, and intellectual contributions.

Nevertheless, bibliometric analysis is inherently dependent on database coverage and citation indexing. Although Scopus provides broad multidisciplinary coverage and is widely employed in bibliometric research, the exclusive use of a single database may result in the omission of relevant publications indexed in other sources, particularly Web of Science, Dimensions, or regional databases. Consequently, some influential studies may not have been captured in the final dataset. Future bibliometric studies may benefit from integrating multiple databases to improve coverage, enhance robustness, and provide a more comprehensive representation of sustainability governance research in agribusiness SMEs.

3. Results and Discussion

3.1. Publication and Citation Trends in Sustainability Governance Research on Agribusiness SMEs

Figure 2 illustrates the annual trends of publications and citations related to sustainability governance in agribusiness SMEs from 2005 to 2025. The results indicate that the development of this research field

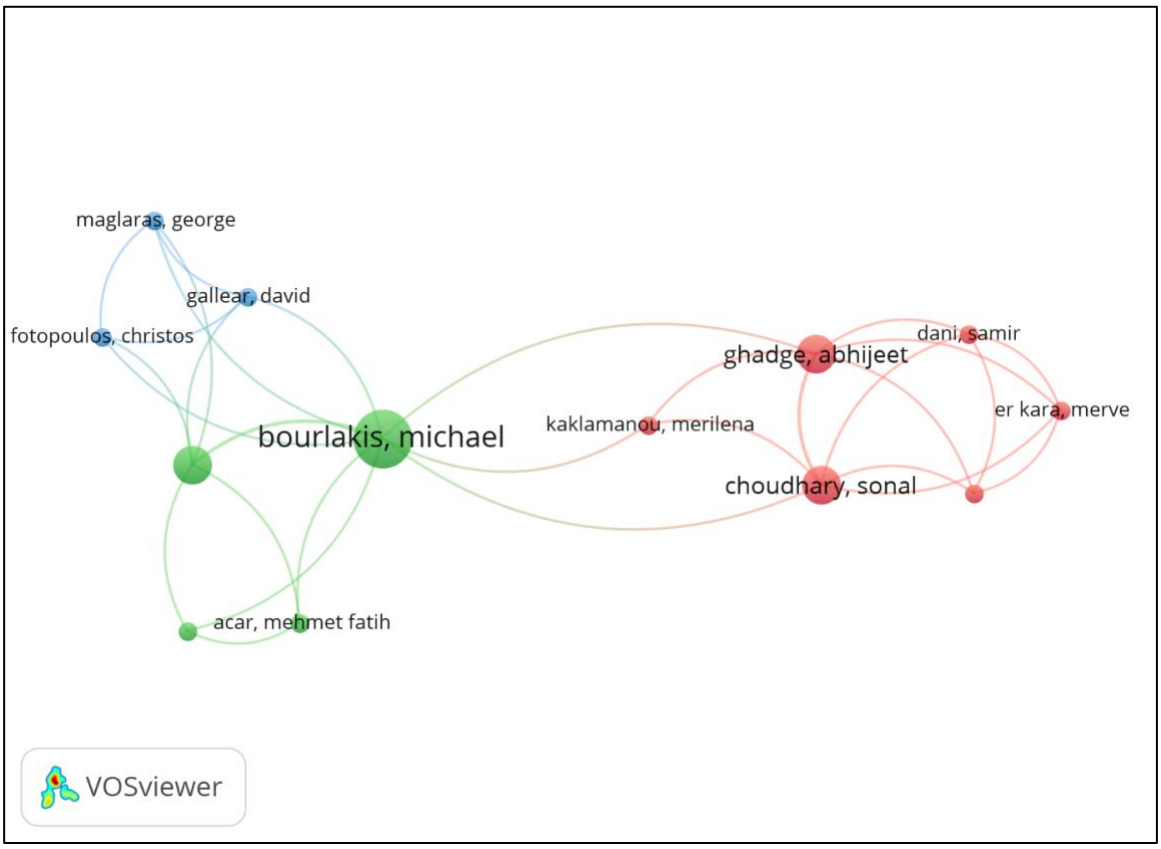


Figure 3. An author collaboration network based on co-authorship analysis.

remained relatively limited during the early period between 2005 and 2018, with annual publications generally ranging from one to four documents. Although publication activity was still low during this phase, several studies produced substantial scholarly impact, as reflected by relatively high citation counts in 2005, 2006, 2014, and 2017. This pattern suggests that early publications in the field served as foundational references shaping subsequent sustainability and governance discourse within agribusiness SMEs.

A more noticeable increase in scientific production began to emerge after 2019. The number of publications increased from six documents in 2019 to eight documents in 2021, followed by a sharper expansion in subsequent years. Publication growth accelerated significantly in 2022 and 2023, reaching 12 and 17 publications, respectively. The highest publication output was recorded in 2025, with 34 publications, indicating growing academic interest in sustainability governance issues within agribusiness SMEs. This upward trend reflects the increasing strategic relevance of sustainability, ESG practices, and governance mechanisms in agribusiness and agri-food systems.

Citation trends also demonstrate the growing intellectual importance of the field. Total citations peaked in 2021 with 510 citations, suggesting that publications produced during and prior to this period gained substantial academic recognition. The sharp increase in citations after 2019 may be associated with the rising global attention toward sustainable food systems, ESG-oriented governance, climate resilience, and post-pandemic supply chain sustainability. Furthermore, the coexistence of increasing publication output and growing citation performance indicates that sustainability governance in agribusiness SMEs has evolved into an emerging and increasingly influential interdisciplinary research domain.

The decline in citation counts observed in 2024 and 2025 is likely attributable to the shorter exposure time of recently published articles, which have not yet accumulated citations at the same rate as earlier publications. Nevertheless, the substantial increase in publication volume in recent years suggests that the field is currently experiencing rapid scientific expansion and may continue to develop as sustainability governance becomes increasingly central to agribusiness transformation and sustainable food system discourse.

3.2. Major Scientific Contributors and Collaboration Networks in Sustainability Governance Research on Agribusiness SMEs

Table 1 presents the leading scientific sources contributing to sustainability governance research in agribusiness SMEs based on publication and citation

Table 3. Leading countries based on publication, citation, and collaboration performance

Countries	Publication	Citations	TLS	N-Pub.	N-Cit.	N-TLS	OS
United Kingdom	14	1483	20	0.591	1.000	1.000	0.864
Italy	23	441	15	1.000	0.297	0.750	0.682
Switzerland	4	184	12	0.136	0.124	0.600	0.287
Germany	5	48	12	0.182	0.032	0.600	0.271
France	6	324	7	0.227	0.218	0.350	0.265
Indonesia	11	24	6	0.455	0.016	0.300	0.257
Netherlands	4	50	12	0.136	0.034	0.600	0.257
India	6	270	7	0.227	0.182	0.350	0.253
Malaysia	4	250	7	0.136	0.169	0.350	0.218
China	8	107	4	0.318	0.072	0.200	0.197

Note: Pub = publications; Cit = citations; TLS = Total Link Strength; N-Pub/Cit/TLS = normalized values (max = 1.000); OS = Overall Score (composite index).

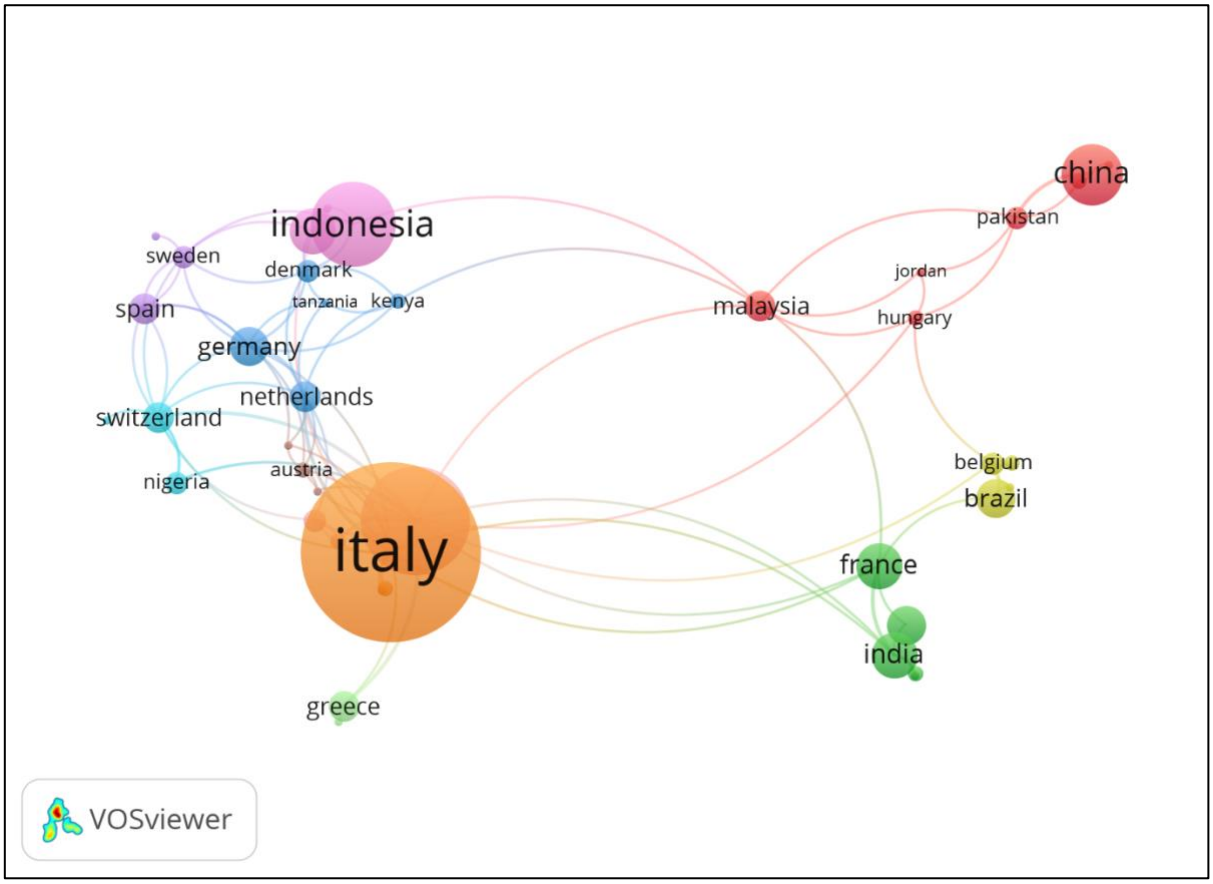


Figure 4. Country collaboration network based on co-authorship analysis.

performance. The results reveal that Sustainability (Switzerland) emerged as the most productive source, publishing 16 documents and achieving the highest overall score (OS = 0.768). This finding reflects the journal's prominent role in disseminating interdisciplinary sustainability-related research, particularly within agribusiness, governance, and ESG-oriented domains. In contrast, Land Use Policy recorded the highest citation count (349 citations) despite publishing only one document, indicating the presence of highly influential foundational research within the field. Similarly, journals such as Resources, Conservation and Recycling, Journal of Cleaner Production, and Technological Forecasting and Social Change also demonstrated substantial citation performance, highlighting the increasing integration of sustainability governance discourse with circular economy, sustainable production, and technological transition perspectives.

The dominance of sustainability- and management-oriented journals suggests that the field has evolved within an interdisciplinary scholarly environment combining sustainability science, supply chain management, agribusiness studies, and governance research. The presence of high-impact journals such as *Journal of Cleaner Production*, *World Development*, and

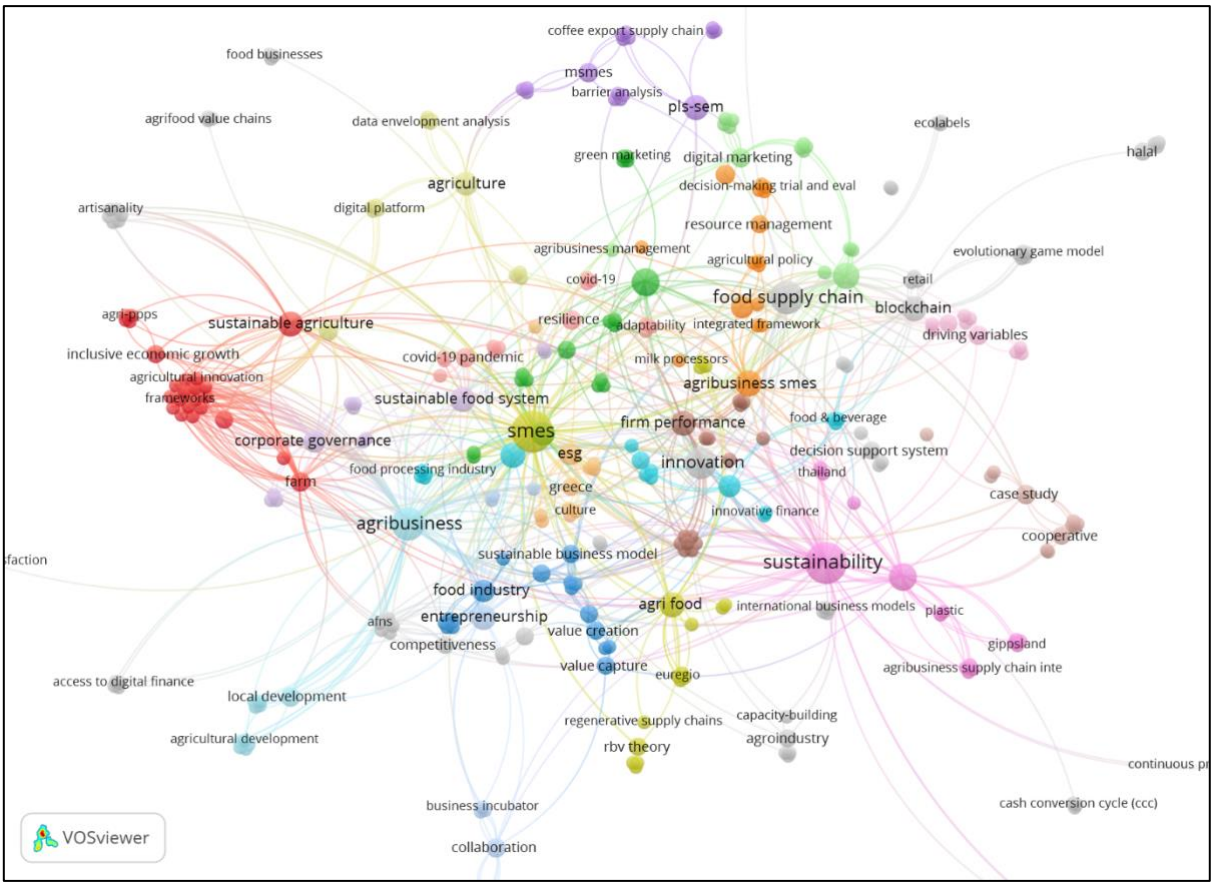


Figure 5. Network visualization of keyword co-occurrence in sustainable agribusiness SMEs research.

International Journal of Production Economics further indicates that sustainability governance in agribusiness SMEs is increasingly recognized as a strategically important research area within broader sustainability and development discussions.

Table 2 presents the leading authors based on publication output, citation impact, and collaboration performance. The findings indicate that *Michael Bourlakis* emerged as one of the most influential contributors, recording the highest number of documents (3), citations (323), and total link strength (TLS = 10). This suggests that Bourlakis plays a central role within the collaborative knowledge structure of the field. Similarly, *Emel Aktas*, *Sonal Choudhary*, and *Abhijeet Ghadge* also demonstrated strong publication and collaboration performance, reflecting the growing importance of supply chain resilience, sustainability governance, and agri-food management within the literature.

Figure 3 illustrates the author collaboration network based on co-authorship analysis. The network consists of 13 authors grouped into three clusters with 30 links and a total link strength of 32, indicating a moderate level of scholarly collaboration within the field. The existence of multiple clusters suggests that research collaboration remains relatively fragmented and concentrated within small research groups rather than being dominated by a single large collaborative network. Several authors, including *Michael Bourlakis*, *Emel Aktas*, *Sonal Choudhary*, and *Abhijeet Ghadge*, occupy relatively central positions within the network, reflecting their important role in connecting sustainability governance, agri-food supply chain management, and SME-related sustainability research.

The fragmented collaboration structure may indicate that sustainability governance research in agribusiness SMEs is still developing across diverse disciplinary and geographical contexts. This finding aligns with the interdisciplinary nature of the field, which integrates sustainability science, agribusiness management, governance studies, and supply chain research. The relatively limited size of the collaboration network also suggests opportunities for broader international and interdisciplinary research collaboration in future studies.

Table 3 presents the leading countries contributing to sustainability governance research in agribusiness SMEs based on publication output, citation performance, and collaboration strength. The results indicate that Italy recorded the highest number of publications (23 documents), while the United Kingdom demonstrated

Table 4. Keyword clusters and thematic interpretation in sustainable agribusiness SMEs research.

Cluster	Main Keywords	Thematic Interpretation
1	sustainable agriculture; agricultural innovation; value chain; inclusive economic growth; poverty alleviation	Sustainable agricultural development, inclusive growth, and value-chain strengthening
2	sustainable supply chain management; SDGs; climate change adaptation; environmental performance	Sustainable supply chains and environmental adaptation in developing economies
3	business model innovation; sustainable business model; decarbonization; value creation	Sustainable business model innovation and decarbonization strategies
4	SMEs; agri-food; internationalization; regenerative supply chains	SME internationalization and regenerative agri-food systems
5	MSMEs; financial strategies; organizational agility; digital platform capability	MSME resilience, digital capability, and strategic adaptation
6	supply chain management; food processing industry; sustainability reporting	Food industry governance, reporting, and supply chain performance
7	agribusiness SMEs; ICT; sustainable development; resource management	ICT-driven agribusiness sustainability and resource optimization
8	firm performance; big-data-driven supply chain; innovation clusters; sustainability leadership	Innovation capability and sustainability-oriented firm performance
9	circular economy; biomass; sustainability; life cycle assessment	Circular economy transition and resource efficiency in agri-food systems
10	resilience; COVID-19 pandemic; risk; disruption situations	Supply chain resilience and crisis management under uncertainty
11	digital transformation; digital marketing; e-commerce platform; agriculture entrepreneurs	Digital transformation and entrepreneurial competitiveness in agribusiness
12	entrepreneurship; collaboration; agri-food e-commerce; business incubator	Entrepreneurial ecosystems and collaborative agri-food innovation
13	agriculture; food security; fintech; e-commerce	Agricultural productivity, food security, and digital finance
14	corporate governance; sustainable food system; food policy; globalization	Governance and policy dimensions of sustainable food systems
15	agribusiness; inclusive business; local development; social value	Inclusive agribusiness development and regional socioeconomic impact
16	ESG; green accounting; transparent communication; sustainable performance measurement	ESG practices, accountability, and sustainability measurement
17	cooperative; crowdfunding; multi-tier supply chain; crude palm oil	Cooperative finance and supply chain collaboration in food industries
18	barriers; sustainability performance; environmental practices; business strategies	Barriers and strategic drivers of sustainability implementation
19	food SMEs; benchmarking; dairy; impact assessment	Sustainability benchmarking and assessment in food SMEs
20	blockchain; internet of things; supply chain financing; retail	Blockchain-enabled smart supply chains and financing mechanisms
21	alternative food networks; competitiveness; business model; short food supply chain	Alternative food networks and local food competitiveness
22	food supply chain; ecolabels; environmental product declaration; food waste synergies	Sustainable food supply chains and environmental certification
23	authenticity; artisanality; place of origin food; socio-cultural practice	Territorial food identity and socio-cultural food practices
24	agricultural finance; bankruptcy; free cash flow; working capital	Financial management and financial health in agri-food businesses
25	innovation; international business models; international SMEs; sustainable development indicators	Innovation and international business development in SMEs
26	agroindustry; food processing; rural non-farm economy; system dynamics	Agroindustrial development and rural economic transformation
27	safety culture; effectiveness; continuous process improvement	Operational effectiveness and safety-oriented organizational culture
28	halal; customer satisfaction; growth; business internal process	Halal business performance and customer-oriented growth
29	women entrepreneurship; non-oil export; quality standards orientation	Women entrepreneurship and export-oriented quality development

Cluster	Main Keywords	Thematic Interpretation
30	decision support system; multi-criteria analysis; measurement	Decision-support and analytical tools for sustainability evaluation
31	java coffee; processing; upstream sector; downstream sector	Coffee industry value-chain integration and processing activities
32	financial literacy; access to digital finance; business experience	Financial literacy and digital financial inclusion for SMEs
33	agrifood value chains; risk perception; Russia–Ukraine war	Geopolitical risk and vulnerability in agrifood value chains
34	food businesses; social capital theory; responsible tourism	Social capital and sustainability in local food-based tourism
35	working capital management; cash conversion cycle; PDO/PGI products	Working capital efficiency and geographical indication products

the strongest overall scientific influence with the highest citation count (1,483 citations), total link strength (TLS = 20), and overall score (OS = 0.864). This finding highlights the United Kingdom's dominant position within the global knowledge structure of sustainability governance research, particularly in terms of research impact and international collaboration.

Several European countries, including Switzerland, Germany, France, and the Netherlands, also demonstrated strong collaboration performance, indicating that Europe remains a major hub for sustainability governance and agribusiness-related research. Meanwhile, emerging economies such as Indonesia, India, China, and Malaysia showed substantial publication activity, reflecting the increasing importance of sustainability governance issues within developing agribusiness economies. Indonesia ranked among the top contributing countries with 11 publications, although its citation performance remained relatively limited compared to European countries. This pattern suggests that sustainability governance research in developing economies is expanding rapidly but may still require stronger international visibility and citation impact.

Figure 4 illustrates the country collaboration network based on co-authorship analysis. The network consists of 43 countries grouped into 11 clusters with 95 links and a total link strength of 105, indicating an increasingly internationalized research landscape. The United Kingdom, Italy, Germany, Switzerland, and the Netherlands occupy central positions within the collaboration network, reflecting their strong role in facilitating international scholarly cooperation. Several Asian countries, particularly India, China, Malaysia, and Indonesia, also demonstrated growing participation within the global collaboration structure.

The country collaboration network further reveals the emergence of sustainability governance research across both developed and developing economies. This pattern reflects the global relevance of sustainability challenges within agribusiness systems and indicates that sustainability governance in agribusiness SMEs is increasingly recognized as a shared international concern. Nevertheless, the uneven distribution of citation impact and collaboration strength across countries also suggests the existence of geographical disparities in research influence and knowledge production capacity within the field.

3.3. Thematic Structure and Evolution of Sustainable Agribusiness SMEs Research (2005–2025)

Figure 5 presents the network visualization of keyword co-occurrence generated from the bibliometric mapping analysis. The network consists of 357 items grouped into 35 thematic clusters, with 1,572 links and a total link strength (TLS) of 1,676, indicating a highly interconnected research structure within the field of sustainable agribusiness SMEs. The visualization demonstrates that the literature has evolved into several interrelated research streams combining sustainability, supply chain management, digital transformation, agribusiness development, and SME resilience.

The most dominant keywords in the network include "SMEs", "sustainability", "agribusiness", "food supply chain", "innovation", and "sustainable supply chain management". These keywords exhibit high occurrence frequencies and strong interconnections, suggesting that sustainability-oriented SME development in agribusiness is increasingly discussed through multidimensional perspectives involving governance, technology adoption, environmental performance, and market competitiveness.

As shown in Table 4, Cluster 1 emphasizes sustainable agricultural development and inclusive economic growth through themes such as sustainable agriculture, value chains, poverty alleviation, and stakeholder collaboration. This cluster reflects the strong orientation toward rural development and agricultural transformation. Meanwhile, Cluster 2 focuses on sustainable supply chain management and environmental adaptation, particularly in developing economies facing climate change challenges and SDG implementation pressures.

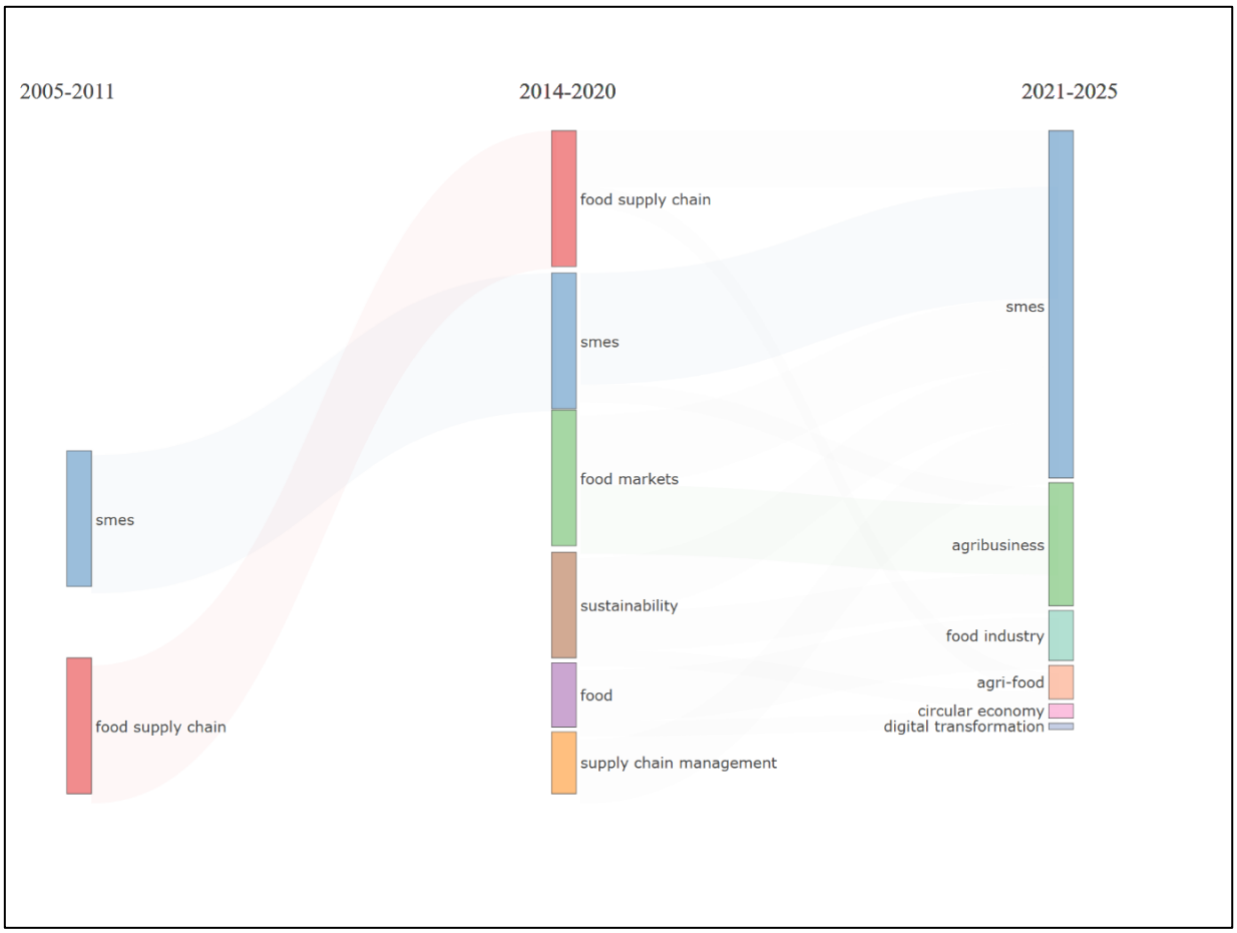


Figure 6. Thematic evolution of sustainable agribusiness SMEs research (2005–2025).

Several emerging clusters highlight the growing integration of digitalization and sustainability. For example, Cluster 11 discusses digital transformation, digital marketing, and e-commerce platforms in agribusiness entrepreneurship, while Cluster 20 concentrates on blockchain, Internet of Things (IoT), and supply chain financing. These findings indicate that technological innovation has become an increasingly important strategy for improving supply chain efficiency, transparency, and competitiveness among agribusiness SMEs.

The analysis also reveals a substantial expansion of sustainability-oriented business models. Cluster 3 emphasizes sustainable business model innovation and decarbonization strategies, reflecting the transition from traditional profit-oriented business approaches toward environmentally responsible value creation. Similarly, Cluster 9 focuses on circular economy practices, biomass utilization, and life cycle assessment, indicating growing scholarly attention to resource efficiency and waste reduction within agri-food systems.

Another notable theme concerns resilience and crisis management. Cluster 10 specifically addresses resilience, disruption situations, risk, and the COVID-19 pandemic, suggesting that recent global crises have accelerated research interest in supply chain adaptability and organizational robustness. This indicates a shift in agribusiness SME research from operational efficiency toward resilience-based sustainability strategies.

The network visualization further demonstrates the diversification of contextual and regional studies. Several clusters examine specific sectors and localized issues, such as halal business performance (Cluster 28), coffee industry value chains (Cluster 31), women entrepreneurship and export orientation (Cluster 29), and agrifood vulnerability during the Russia–Ukraine war (Cluster 33). These findings suggest that the field has increasingly incorporated socio-cultural, geopolitical, and territorial dimensions into sustainability discussions.

Figure 6 illustrates the thematic evolution of the field across three periods: 2005–2011, 2014–2020, and 2021–2025. During the initial period (2005–2011), the research landscape was relatively narrow and concentrated primarily on “food supply chain” and “SMEs”. The thematic continuity shown by the strong inclusion index

Table 5. Synthesis of highly cited publications in sustainable food supply chain SMEs research.

Author and Year	Title	Cited by	Key Findings	Ref.
Ilbery & Maye (2005)	Food supply chains and sustainability: Evidence from specialist food producers in the Scottish/English borders	349	The study found that specialist and local food supply chains were not inherently sustainable, as many small rural enterprises still relied on conventional commodity-based supply chains to remain economically viable. The authors emphasized that terms such as "local," "alternative," and "sustainable" should not be automatically treated as equivalent.	[53]
Ali et al. (2021)	A sustainable Blockchain framework for the halal food supply chain: Lessons from Malaysia	246	The research proposed a sustainable blockchain framework for halal food supply chains and identified key implementation challenges faced by SMEs. The findings highlighted that blockchain technology can improve transparency, traceability, and supply chain integrity, while supply chain integration and supportive food regulations act as critical enablers for successful adoption.	[54]
Bourlakis et al. (2014)	Firm size and sustainable performance in food supply chains: Insights from Greek SMEs	187	The study revealed that sustainable performance differs according to firm size within the Greek food supply chain. Small firms demonstrated stronger flexibility and responsiveness, while weaknesses were identified in product conservation time across firms regardless of size. The findings suggested that sustainability incentives should consider differences in firm characteristics and operational capacity.	[55]
Singh et al. (2019)	Applications of information and communication technology for sustainable growth of SMEs in India food industry	177	The study identified government initiatives, public–private partnerships, and support for ICT service providers as the most influential factors driving sustainable ICT adoption in Indian food SMEs. ICT integration was found to improve supply chain coordination, reduce food wastage, and enhance sustainable growth within the food sector.	[56]
Nordhagen et al. (2021)	COVID-19 and small enterprises in the food supply chain: Early impacts and implications for longer-term food system resilience in low- and middle-income countries	133	The findings showed that the COVID-19 pandemic severely disrupted agri-food MSMEs through reduced sales, limited access to inputs and financing, and workforce challenges. Smaller firms with lower turnover were more vulnerable, although many enterprises adopted mitigation strategies and explored new business opportunities to improve long-term food system resilience.	[57]
Ghadge et al. (2017)	Implementing environmental practices within the Greek dairy supply chain Drivers and barriers for SMEs	117	The study identified major drivers and barriers influencing environmental practice adoption among SMEs in the Greek dairy supply chain. Government regulations, customer expectations, and competitive pressure were found to be the strongest external drivers encouraging SMEs to improve environmental sustainability performance.	[58]
Donald & Blay-Palmer (2006)	The urban creative-food economy: Producing food for the urban elite or social inclusion opportunity?	112	The research demonstrated that creative-food SMEs in urban areas contribute not only to economic growth but also to social inclusion and sustainable urban development. The authors argued that supportive public policies and infrastructure are essential to strengthen local and culturally diverse food systems.	[59]
Fortunati et al. (2020)	Circular economy and corporate social	84	The study showed that circular economy and corporate social responsibility practices can	[60]

Author and Year	Title	Cited by	Key Findings	Ref.
	responsibility in the agricultural system: Cases study of the Italian agri-food industry		support sustainable organizational performance in agri-food SMEs. Italian SMEs demonstrated increasing attention to circular strategies, sustainability reporting, and responsible resource management within agricultural systems.	
Bucci et al. (2018)	Precision agriculture as a driver for sustainable farming systems: State of art in litterature and research	81	The review highlighted that precision agriculture technologies can enhance competitiveness and sustainability in agri-food SMEs by improving efficiency and resource management. However, adoption among SMEs remained relatively slow despite growing opportunities offered by digital technologies.	[61]
Howard et al. (2022)	Going beyond waste reduction: Exploring tools and methods for circular economy adoption in small-medium enterprises	78	The study found that SMEs can advance circular economy adoption by utilizing management tools such as life cycle assessment, value mapping, and modelling techniques. The proposed framework emphasized collaboration, digital technologies, and broader social and environmental integration to achieve sustainable circular practices beyond simple waste reduction.	[62]

values indicates that these foundational themes remained central throughout the subsequent periods.

In the second period (2014–2020), the literature expanded significantly toward broader sustainability and management-related issues, including sustainability, food markets, supply chain management, and food systems. The emergence of themes such as environmental sustainability, entrepreneurship, and management practices reflects the growing recognition of sustainability challenges in agribusiness SMEs.

The most recent period (2021–2025) demonstrates a major thematic diversification characterized by the rise of digital transformation, circular economy, agri-food systems, and resilience-oriented sustainability research. The evolution pathways indicate that earlier themes related to food supply chains and SMEs gradually transformed into more complex discussions involving innovation, sustainable development, risk management, and technology-enabled business transformation.

Notably, the thematic pathway from "food supply chain" to "digital transformation" indicates a transition from conventional supply chain concerns toward digitally integrated agribusiness ecosystems. Similarly, the evolution from "sustainability" toward "agribusiness", "agri-food", and "SMEs" reflects the increasing convergence between sustainability principles and business competitiveness in agribusiness sectors.

Overall, the thematic evolution analysis suggests that sustainable agribusiness SME research has evolved from basic operational and supply-chain-oriented discussions into a multidisciplinary field emphasizing sustainability transition, digital innovation, resilience, governance, and inclusive development. This evolution also demonstrates the increasing complexity of sustainability challenges faced by agribusiness SMEs in the context of globalization, technological disruption, and environmental uncertainty.

3.4. Intellectual Structure and Highly Cited Publications in Sustainable Food Supply Chain SMEs Research

The intellectual structure of sustainable food supply chain SMEs research is shaped by several influential themes, including sustainability performance, digital transformation, circular economy adoption, environmental practices, and food system resilience. As presented in Table 5, the most highly cited publications indicate a progressive evolution of the research field from conventional sustainability concerns toward technology-driven and resilience-oriented approaches.

Early influential studies primarily focused on the sustainability dimensions of local and alternative food systems. Ilbery and Maye [53], the most cited publication in this dataset, critically examined the assumption that local and specialty food supply chains are inherently sustainable. Their findings demonstrated that many SMEs still depend on conventional supply chain structures to maintain economic viability, highlighting the complexity of balancing environmental, social, and economic sustainability objectives.

Subsequent studies expanded the discussion toward organizational performance and operational sustainability among SMEs. Bourlakis et al. [55] emphasized that sustainable performance varies according to firm size, with smaller firms often showing

superior flexibility and responsiveness. Similarly, Ghadge et al. [58] explored environmental sustainability practices in the Greek dairy supply chain and identified government regulation, customer demand, and competitive pressure as the primary drivers encouraging SMEs to adopt green practices.

Another dominant research stream concerns digitalization and technological innovation within food supply chains. Singh et al. [56] highlighted the critical role of information and communication technology (ICT) in reducing food waste and improving supply chain coordination in Indian food SMEs. More recently, Ali et al. [54] introduced blockchain technology as a mechanism for improving transparency, traceability, and integrity in halal food supply chains, demonstrating the growing relevance of Industry 4.0 technologies in sustainability research.

Recent highly cited studies also reflect increasing attention to resilience and circular economy practices. Nordhagen et al. [57] investigated the impacts of the COVID-19 pandemic on agri-food MSMEs and revealed the vulnerability of smaller enterprises to disruptions in financing, labor, and supply availability. In parallel, Fortunati et al. [60] and Howard et al. [62] emphasized the importance of circular economy strategies, corporate social responsibility, and sustainable resource management in enhancing long-term organizational sustainability.

Overall, the highly cited literature demonstrates that sustainable food supply chain SMEs research has evolved into a multidisciplinary field integrating sustainability management, digital transformation, environmental governance, resilience, and circular economy perspectives. These studies collectively provide a strong intellectual foundation for understanding how SMEs can improve sustainability performance while adapting to technological, economic, and global challenges.

4. Discussion

4.1. Growth and Research Dynamics of Sustainability Governance in Agribusiness SMEs

The bibliometric results demonstrate a substantial increase in publications and citations related to sustainability governance in agribusiness SMEs between 2005 and 2025. This trend reflects the growing recognition of sustainability governance as a strategic concern within agribusiness and food supply chain systems rather than merely an environmental issue. Early studies primarily focused on sustainable food systems, local food production, and the operational performance of SMEs within agri-food supply chains [53, 59, 63, 64]. Over time, however, the research expanded toward broader governance concerns involving digitalization, resilience, traceability, and circular economy practices.

The increasing scholarly attention can also be linked to several global developments. First, the adoption of the Sustainable Development Goals (SDGs) in 2015 accelerated research interest in sustainable production and responsible consumption across agri-food systems. Second, the emergence of Industry 4.0 technologies, including blockchain, precision agriculture, and information communication technology (ICT), encouraged researchers to examine the integration of digital governance into agribusiness SMEs [54, 56, 61]. Third, the COVID-19 pandemic significantly exposed vulnerabilities within global food supply chains and stimulated discussions regarding resilience, adaptive governance, and sustainable business continuity among agribusiness SMEs [57, 65, 66].

The publication trend also indicates that sustainability governance research has shifted from a compliance-oriented perspective toward a more strategic and innovation-driven approach. SMEs are increasingly expected to balance economic performance with environmental responsibility and social inclusion while simultaneously adapting to technological transformation and market uncertainty. This evolution confirms that sustainability governance is becoming an integral component of long-term competitiveness and resilience in agribusiness SMEs.

4.2. Collaboration Patterns and Scientific Influence

The collaboration network analysis highlights the concentration of influential contributions within several countries, including the United Kingdom, Greece, Malaysia, India, and Italy. These countries have emerged as key contributors due to their strong agri-food sectors, active sustainability agendas, and growing policy support for SME development. The dominance of these regions also reflects the increasing institutional interest in sustainable food supply chains and governance transformation.

The findings further reveal that collaboration among researchers remains relatively fragmented, suggesting that sustainability governance research in agribusiness SMEs is still evolving as an interdisciplinary field. While international collaboration networks are gradually increasing, many studies remain regionally focused and concentrated on local food systems, national policy contexts, or country-specific SME challenges. This fragmentation may limit the development of globally integrated sustainability governance frameworks applicable across diverse agribusiness environments.

The strong influence of highly cited publications also demonstrates the importance of cross-disciplinary integration between sustainability studies, supply chain management, digital innovation, and organizational governance. For example, studies examining blockchain implementation [54], circular economy practices [62], and ICT adoption [56] illustrate how sustainability governance increasingly depends on technological capabilities and collaborative stakeholder networks. Consequently, future studies may benefit from stronger international collaboration and comparative approaches to better understand governance practices across developed and developing economies.

4.3. Evolution of Sustainability Governance Themes

The thematic evolution analysis demonstrates a clear transformation in the intellectual focus of sustainability governance research on agribusiness SMEs over the last two decades. During the early development phase, research primarily emphasized local food systems, sustainability performance, and supply chain structures. Studies conducted by Ilbery and Maye (2005) [53] and Donald and Blay-Palmer (2006) [59] focused on the relationship between local food production, rural enterprises, and sustainable development. These studies highlighted concerns regarding economic viability, local food governance, and the social dimensions of sustainable food systems.

Between 2015 and 2020, research themes began shifting toward environmental management, technological integration, and organizational sustainability practices. The increasing attention toward ICT implementation, green practices, and precision agriculture reflected the growing importance of digital transformation and environmental responsibility within agribusiness SMEs [56, 58, 61]. During this period, sustainability governance expanded beyond operational efficiency to include resource management, environmental performance, and organizational adaptation.

In more recent years, sustainability governance research has increasingly focused on resilience-oriented and technology-enabled governance frameworks. Topics such as blockchain adoption, circular economy implementation, supply chain transparency, and post-pandemic resilience have become dominant themes in the literature [54, 57, 60, 62]. This transition indicates that agribusiness SMEs are no longer viewed solely as small-scale production actors but also as critical participants in sustainable and resilient global food systems.

The emergence of digital technologies and ESG-oriented governance mechanisms reflects broader transformations observed across contemporary agri-food systems. Recent studies have highlighted the growing role of blockchain, digital traceability platforms, data-driven decision support systems, and sustainability reporting frameworks in improving transparency, accountability, and supply chain resilience. These developments suggest that sustainability governance is increasingly becoming technology-enabled, requiring agribusiness SMEs to integrate both managerial and technological capabilities to remain competitive within evolving sustainability-oriented markets.

The thematic transition identified in this study suggests that sustainability governance research is evolving from traditional sustainability concerns toward integrated governance models that combine environmental sustainability, digital innovation, and organizational resilience. Such developments are particularly important for agribusiness SMEs, which often face limited financial resources, technological constraints, and market uncertainties while simultaneously being expected to adopt sustainable business practices.

4.4. Intellectual Foundations of Sustainable Agribusiness SMEs Research

The analysis of highly cited publications reveals that the intellectual structure of sustainability governance research in agribusiness SMEs is built upon three major knowledge domains: sustainable food supply chains, digital governance and technological innovation, and circular economy and resilience.

The first intellectual domain focuses on sustainable food supply chains and SME performance. Foundational studies by Ilbery and Maye (2005) [53] and Bourlakis et al. (2014) [55] established the importance of sustainability performance within local and regional food systems. These studies emphasized that sustainability in agribusiness SMEs requires balancing economic viability with environmental and social considerations. Importantly, they also challenged the assumption that local or alternative food systems are automatically sustainable.

The second intellectual domain concerns digital governance and technological innovation. Studies by Singh et al. (2019) [56], Bucci et al. (2018) [61], and Ali et al. (2021) [54] demonstrate the growing role of digital technologies in improving sustainability governance within agribusiness SMEs. Technologies such as ICT systems, precision agriculture, and blockchain are increasingly recognized as important tools for enhancing traceability, supply chain integration, transparency, and resource efficiency. These findings indicate that digital transformation has become a critical mechanism for

strengthening sustainable governance in modern agri-food systems.

The third intellectual domain relates to circular economy practices and organizational resilience. Studies by Fortunati et al. (2020) [60], Howard et al. (2022) [62], and Nordhagen et al. (2021) [57] emphasize the importance of adaptive governance, circular production systems, and crisis resilience in agribusiness SMEs. The COVID-19 pandemic further accelerated scholarly attention toward resilience-based governance approaches, particularly regarding supply chain disruptions, business continuity, and sustainable adaptation strategies.

Overall, the intellectual structure identified in this study confirms that sustainability governance research in agribusiness SMEs is increasingly multidisciplinary and integrative. The field has evolved from focusing primarily on operational sustainability toward broader governance frameworks that integrate technological innovation, circular economy principles, and resilience-oriented strategies.

4.5. Theoretical and Practical Implications

The findings provide several important theoretical implications for the sustainability governance literature. First, the thematic evolution identified in this study demonstrates that sustainability governance in agribusiness SMEs has progressed beyond a narrow focus on environmental performance and food supply chain efficiency toward a broader governance-oriented perspective incorporating ESG principles, digital transformation, resilience, and circular economy practices. This shift suggests that sustainability governance should be conceptualized as a multidimensional construct that integrates environmental, social, economic, technological, and institutional dimensions.

Second, the intellectual structure analysis highlights the increasing convergence of sustainability governance, supply chain management, digital innovation, and organizational resilience. This finding supports the view that sustainability challenges in agribusiness SMEs cannot be adequately addressed through isolated disciplinary perspectives. Instead, future theoretical developments should emphasize integrated governance frameworks capable of explaining how technological innovation, stakeholder engagement, and sustainability objectives interact within complex agri-food systems.

From a practical perspective, the findings offer valuable insights for policymakers, SME managers, and sustainability practitioners. Policymakers may use these findings to develop targeted support programs that promote ESG adoption, digital transformation, and sustainability-oriented innovation among agribusiness SMEs. For SME managers, the emergence of themes such as blockchain, ICT, resilience, and circular economy practices highlights the growing importance of integrating sustainability governance into strategic planning and operational decision-making processes. Sustainability practitioners and supply chain actors may also benefit from the identified research trends when designing initiatives related to traceability, transparency, sustainability reporting, and responsible supply chain governance.

4.6. Research Gaps and Future Directions

Despite the increasing number of publications and thematic diversification, several research gaps remain within sustainability governance research on agribusiness SMEs. First, most existing studies are concentrated in developed or rapidly industrializing countries, while limited attention has been given to low-income and rural regions where agribusiness SMEs face significantly different governance challenges [67]. Future studies should therefore explore sustainability governance practices in underrepresented regions to improve the global applicability of current frameworks.

Second, many studies focus on individual sustainability dimensions such as environmental performance, digitalization, or supply chain management separately. Limited research has attempted to develop integrated governance models that simultaneously address environmental, economic, social, and technological dimensions [68–70]. Future research could therefore adopt more holistic and interdisciplinary approaches to sustainability governance.

Third, although digital technologies such as blockchain and precision agriculture have gained significant scholarly attention, empirical evidence regarding their long-term effectiveness and adoption barriers among SMEs remains limited. Future studies should examine implementation readiness, technological capability, financial limitations, and institutional support mechanisms affecting sustainable digital transformation in agribusiness SMEs.

Finally, future bibliometric and empirical studies may benefit from comparative cross-country analyses and longitudinal approaches to better understand how sustainability governance evolves over time across different institutional and socio-economic contexts. Such efforts would contribute to developing more adaptive and globally relevant sustainability governance frameworks for agribusiness SMEs.

5. Conclusion

This study provides a comprehensive bibliometric overview of sustainability governance research in agribusiness SMEs from 2005 to 2025 based on 116 Scopus-indexed articles. The findings demonstrate that the field has evolved rapidly, particularly after 2019, driven by increasing global concerns regarding ESG implementation, sustainable food systems, climate resilience, and governance transformation in agribusiness sectors. The literature has developed into a highly interdisciplinary domain integrating sustainability management, agri-food supply chains, digital transformation, circular economy, and organizational resilience.

Thematic evolution analysis reveals a clear transition from conventional discussions centered on local food systems and operational sustainability toward more complex governance-oriented paradigms emphasizing digitalization, innovation, adaptive resilience, and technology-enabled sustainability strategies. Emerging themes such as blockchain, precision agriculture, ICT integration, circular economy practices, and resilient supply chain governance indicate that sustainability governance is increasingly viewed as a strategic mechanism for strengthening the competitiveness and long-term adaptability of agribusiness SMEs within complex global agri-food systems.

The findings offer several important practical implications. For policymakers, the results highlight the need to strengthen institutional support for ESG implementation, sustainability-oriented innovation, and digital transformation among agribusiness SMEs. For SME managers, the emergence of technology-enabled governance themes underscores the importance of integrating sustainability considerations into strategic planning, operational management, and supply chain decision-making. For sustainability practitioners and supply chain stakeholders, the identified research trends emphasize the value of enhancing transparency, traceability, accountability, and resilience through digital technologies and collaborative governance approaches.

Despite its contributions, this study is subject to certain limitations. The analysis was restricted to Scopus-indexed publications and bibliometric indicators, which may not capture all relevant studies available in other databases or provide deeper contextual insights into governance implementation practices. Nevertheless, the findings offer a robust foundation for understanding the evolution, intellectual structure, and future development of sustainability governance research in agribusiness SMEs.

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