

Bibliometric Analysis of Procurement Ethics and Supplier Management

Loso Judijanto¹, Said Hamzali², Eva Yuniarti Utami³

¹ IPOSS Jakarta, Indonesia and losojudijantobumn@gmail.com

² Fakultas Ekonomi dan Bisnis, Universitas Syiah Kuala and hamzali_psdku@usk.ac.id

³ Universitas Sebelas Maret and eva.yuniarti.utami@staff.uns.ac.id

ABSTRACT

This study conducts a bibliometric analysis to map the intellectual structure, thematic trends, and collaborative patterns within the field of procurement ethics and supplier management. Using data from the Scopus database and visualized through VOSviewer, the analysis covers co-authorship networks, keyword co-occurrence, citation structures, and country-level collaboration. Results show that "supplier management" remains the dominant theme, closely linked to operational concerns such as supplier selection, quality control, and risk management. More recent trends reveal a growing integration of sustainability, artificial intelligence, and information technology into procurement practices. Co-authorship and country collaboration networks highlight influential researchers and global research hubs, particularly in Germany and the United States. Despite progress, ethical constructs are often framed through strategic or technological lenses rather than normative perspectives. The study provides a roadmap for future research, emphasizing the need for broader ethical engagement and greater inclusivity of emerging economies in global procurement discourse.

Keywords: *Procurement Ethics, Supplier Management, Bibliometric Analysis, Sustainable, Supply Chains.*

1. INTRODUCTION

Procurement and supplier management are essential components of modern supply chains, enabling organizations to acquire the goods and services necessary for operational efficiency and competitive advantage. As globalization intensifies and supply networks become more complex, procurement practices have evolved from transactional routines to strategic functions encompassing relationship building, risk management, and value creation [1]. Within this expanded scope, ethical considerations have emerged as a critical determinant of sustainable procurement performance. Ethical procurement ensures transparency, fairness, accountability, and compliance with regulatory frameworks, which are crucial not only for maintaining reputation but also for minimizing risks such as fraud, bribery, and supplier exploitation [2], [3].

Over the last two decades, research has increasingly acknowledged that procurement ethics cannot be treated as peripheral concerns but must be embedded within broader supplier management strategies. Supplier management today entails not only price negotiations and contract enforcement but also ethical vetting, long-term collaboration, and the alignment of supplier practices with corporate social responsibility (CSR) objectives [4]. Organizations are held accountable not just for their internal practices but also for the ethical conduct of their suppliers. This heightened scrutiny is especially relevant in industries with complex multi-tier supply chains, where unethical practices—such as labor exploitation or environmental harm—may be hidden in lower tiers [5].

The growing complexity of global supply chains and the need for ethical governance have contributed to the proliferation of academic literature examining procurement ethics and supplier management from various theoretical and methodological perspectives. These include behavioral ethics, institutional theory, stakeholder theory, and supply chain resilience. The literature addresses

diverse concerns such as conflict of interest, supplier diversity, corruption, whistleblowing, and ethical codes of conduct [6]. However, the field remains fragmented, with limited integrative analyses that map its intellectual structure and thematic evolution. This fragmentation hampers the ability of researchers and practitioners to identify coherent trends, research gaps, and areas of convergence [7].

Bibliometric analysis, as a quantitative method for assessing and visualizing academic literature, offers a valuable tool for synthesizing this dispersed body of work. By systematically mapping co-authorship, citation patterns, and keyword co-occurrences, bibliometric techniques can uncover the most influential authors, institutions, and articles; identify emerging research clusters; and trace the evolution of core themes over time [8]. Previous bibliometric studies in related domains—such as sustainable supply chain management and CSR in procurement—have provided strategic insights that guide both academic inquiry and policy formulation. Nonetheless, a focused bibliometric investigation into the intersection of procurement ethics and supplier management is still lacking.

Given the heightened global interest in ethical sourcing and sustainable procurement, it is timely and necessary to comprehensively map the academic landscape in this field. Issues such as green procurement, ethical auditing, digital traceability, and supplier codes of conduct have grown in prominence, particularly in the wake of regulatory shifts such as the EU Corporate Sustainability Due Diligence Directive. Moreover, recent disruptions—such as the COVID-19 pandemic and geopolitical tensions—have underscored the importance of resilience and ethics in supplier relationships. A bibliometric analysis can thus reveal how the academic discourse has responded to such developments, and what trajectories it might follow in the coming years.

Despite the growing volume of research on procurement ethics and supplier management, the literature remains conceptually scattered and methodologically diverse, making it difficult to grasp its full scope, identify dominant themes, or track its intellectual evolution. There is currently no comprehensive bibliometric synthesis that systematically maps the field's structure, influential contributors, or thematic trends. This lack of consolidation hinders the development of a coherent research agenda and limits practitioners' ability to adopt evidence-based ethical procurement strategies. This study aims to conduct a bibliometric analysis of the academic literature on procurement ethics and supplier management.

2. METHODS

This study employed a bibliometric analysis approach to systematically map the intellectual landscape of procurement ethics and supplier management research. Bibliometric analysis is a quantitative method that enables researchers to assess the structure, trends, and patterns within a body of scholarly literature through statistical and network-based techniques [8]. The methodology involved three key stages: data collection, data cleaning, and bibliometric mapping using specialized software.

2.1 Data Collection

The bibliographic data for this study were extracted from the Scopus database, one of the most comprehensive sources of peer-reviewed literature across disciplines. Scopus was selected for its robust indexing of management, business ethics, operations, and supply chain journals, ensuring broad coverage of relevant research. The search query combined keywords related to procurement ethics (e.g., "ethical procurement," "procurement ethics," "ethical sourcing") and supplier

management (e.g., "supplier governance," "supplier relationship management," "supplier monitoring") using Boolean operators. The following example illustrates the search string used: (TITLE-ABS-KEY("procurement ethics" OR "ethical procurement" OR "ethical sourcing") AND TITLE-ABS-KEY("supplier management" OR "supplier governance" OR "supplier relationship")). The search was limited to journal articles published between 2000 and 2024, written in English, and categorized under business, management, economics, decision sciences, or social sciences subject areas. This resulted in an initial dataset of 890 articles, which was then exported in CSV format for analysis.

2.2 Data Cleaning and Preparation

Before conducting the bibliometric analysis, the dataset underwent a rigorous data cleaning process. Duplicate entries, incomplete records, and non-research items such as editorials or notes were removed. Author names were standardized to address variations in spelling or initials, and keywords were harmonized to unify semantically equivalent terms (e.g., "CSR" and "corporate social responsibility"). This step was crucial to ensure the reliability and accuracy of the resulting co-authorship, citation, and keyword networks.

2.3 Analytical Techniques and Software Tools

The cleaned dataset was analyzed using VOSviewer (version 1.6.x), a widely used software tool for constructing and visualizing bibliometric networks. VOSviewer was selected for its robust capabilities in generating intuitive visual maps based on co-authorship, citation, and keyword co-occurrence relationships. Four primary analytical techniques were employed in this study. First, co-authorship analysis was conducted to explore collaborative patterns among individual researchers, institutions, and countries, revealing prolific contributors and the degree of inter-organizational and international cooperation. Second, citation and co-citation analysis were utilized to identify the most influential authors, articles, and journals, as well as to uncover foundational theoretical linkages through frequently co-cited document pairs. Third, keyword co-occurrence analysis (co-word mapping) was implemented to detect dominant themes and emerging topics in the field. This analysis applied the full counting method with a minimum occurrence threshold of five to generate thematic clusters, each of which was qualitatively interpreted through contextual review. Finally, temporal trend analysis was performed using VOSviewer's overlay visualization feature to map the evolution of research focus over time, capturing notable shifts from compliance-based procurement approaches to more recent emphases on sustainability, transparency, and digital supplier governance.

3. RESULTS AND DISCUSSION

3.1 Network Visualization

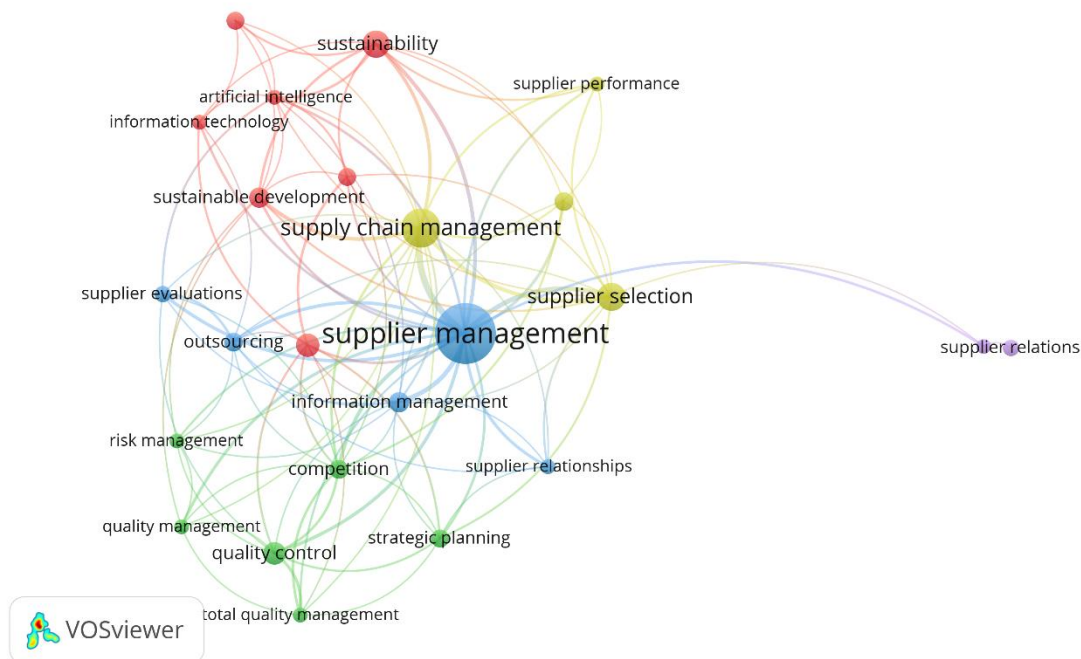


Figure 1. Network Visualization

Source: Data Analysis Result, 2025

The visualization presents a keyword co-occurrence network focused on the research domain of procurement ethics and supplier management. The network is structured into several clusters, each represented by a unique color, indicating thematic groupings based on the frequency of keyword co-occurrence in the analyzed literature. At the center of the map is the keyword "supplier management", which appears as the most dominant term, signifying its central role in the research corpus. It is connected to a wide range of concepts, indicating its integrative function in bridging multiple research themes related to operations, ethics, and strategic procurement.

One of the prominent clusters is the red cluster, which revolves around themes such as sustainability, sustainable development, artificial intelligence, and information technology. This suggests a growing scholarly interest in how technological advancements and sustainability objectives influence supplier management practices. The presence of AI and IT alongside sustainability indicates that digital tools are being explored not only for efficiency gains but also for enforcing ethical and environmentally conscious procurement strategies. The green cluster includes keywords like quality management, total quality management, risk management, strategic planning, and competition. This grouping highlights an emphasis on performance measurement, process optimization, and risk mitigation in supplier management. It underscores a traditional but still relevant focus on ensuring suppliers meet performance and compliance benchmarks, with growing attention to strategic alignment and competitive differentiation through supplier collaboration.

The yellow cluster connects terms such as supply chain management, supplier selection, and supplier performance, forming a core area of research focused on decision-making and evaluation processes. This reflects the analytical and operational dimensions of supplier management, particularly in selecting and maintaining suppliers based on multidimensional criteria that may include not only cost and quality but also ethical alignment and social responsibility. Interestingly, there is a relatively isolated purple node labeled supplier relations, which although connected to the central theme, shows fewer links to other clusters. This may indicate that while relational aspects of procurement are acknowledged, they are less integrated in the broader discourse compared to technical or sustainability-focused themes. This gap could point to an underexplored area where

ethical considerations and long-term relationship governance could be further developed in future studies.

3.2 Overlay Visualization

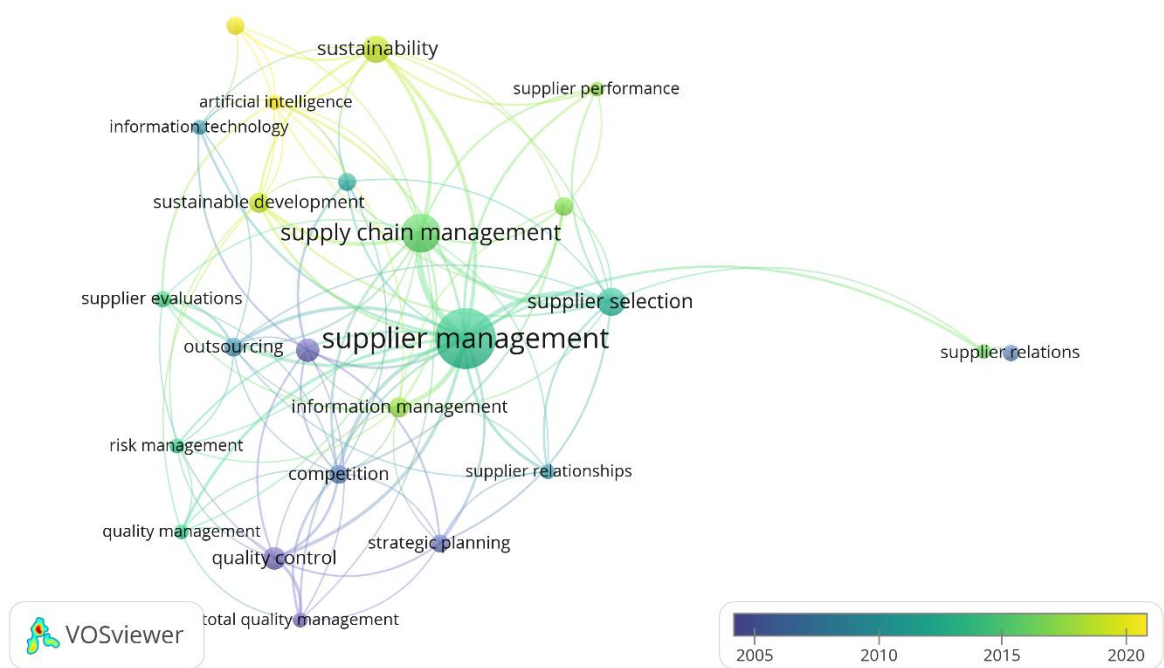


Figure 2. Overlay Visualization
Source: Data Analysis Result, 2025

The overlay visualization map provides a temporal perspective of the research evolution in the field of procurement ethics and supplier management. The node colors, ranging from dark blue (earlier years) to yellow (more recent years), represent the average publication year of keywords. The dominant keyword “supplier management” appears centrally and is marked in green, indicating it has been a consistent and enduring research focus, especially from around 2012 onward. It forms a dense network with related topics such as supplier selection, information management, and supply chain management, which also show greenish hues, signaling their emergence as central themes over the past decade. The yellow-colored nodes such as sustainability, artificial intelligence, and information technology indicate more recent research interests gaining traction in the late 2010s up to 2020. These topics reflect the field’s shift towards integrating ethical and technological considerations in procurement, particularly around sustainable sourcing and the adoption of digital innovations like AI in supplier evaluation and monitoring. This shift signifies a broader academic and industry response to global sustainability pressures and the digitization of supply chains, aligning procurement strategies with environmental, social, and governance (ESG) frameworks. Conversely, older themes like quality control, total quality management, and risk management appear in dark blue to light green, denoting their prominence in earlier years (2005–2010). While these foundational topics remain linked to supplier management, their relatively subdued presence in recent years suggests that scholarly focus has transitioned towards more strategic and ethics-driven areas

3.3 Citation Analysis

Table 1. The Most Impactful Literatures

Citations	Authors and year	Title
570	[9]	An interactive possibilistic programming approach for multiple objective supply chain master planning
412	[10]	Green supplier selection using fuzzy group decision making methods: A case study from the agri-food industry
410	[7]	A newsvendor's procurement problem when suppliers are unreliable
398	[6]	Models for supply chains in e-business
387	[11]	Sustainable procurement in the United Kingdom public sector
370	[5]	A survey of supply chain collaboration and management in the UK construction industry
354	[4]	A multi-objective robust stochastic programming model for disaster relief logistics under uncertainty
331	[3]	Does sustainable supplier co-operation affect performance? Examining implications for the triple bottom line
331	[2]	Strategic and operational benefits of electronic integration in B2B procurement processes
322	[1]	Thinking differently about purchasing portfolios: An assessment of sustainable sourcing

Source: Scopus, 2025

3.4 Density Visualization

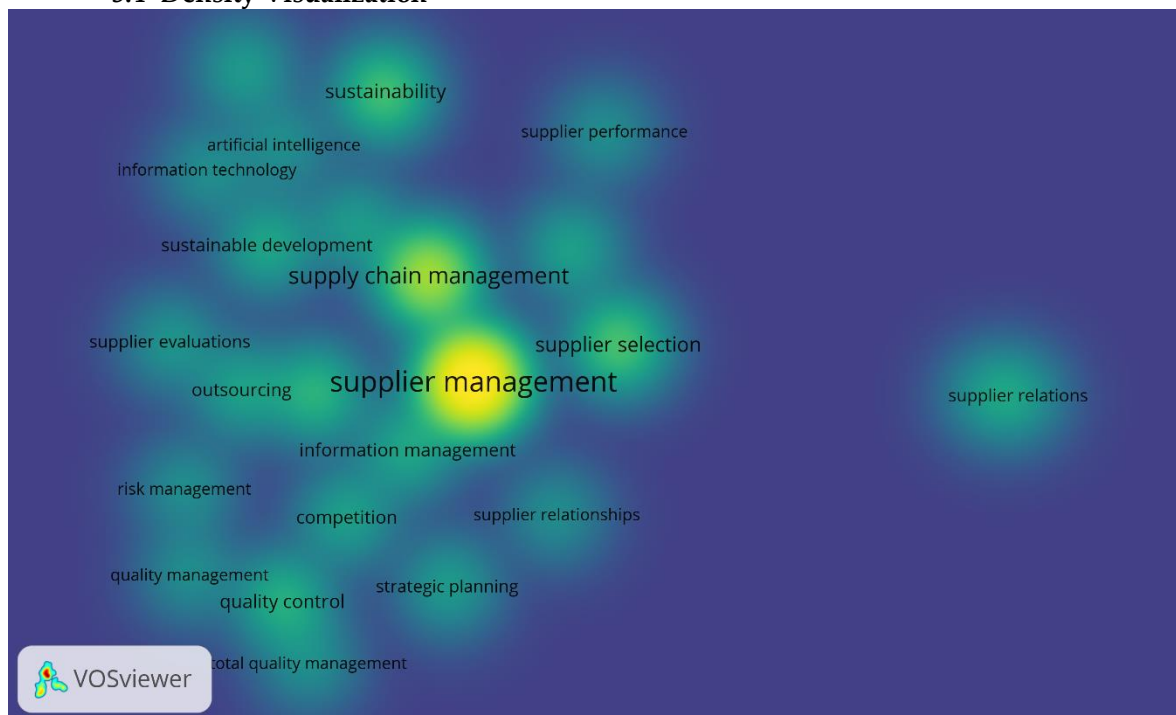


Figure 3. Density Visualization

Source: Data Analysis Result, 2025

The density visualization map highlights the intensity of research activity within the domain of procurement ethics and supplier management. The color gradient—from dark blue (low density) to bright yellow (high density)—represents the frequency of keyword occurrences and co-occurrences. The term "supplier management" appears as the brightest and most central node, confirming its position as the focal point of scholarly attention in this field. Closely surrounding it are other frequently explored concepts such as supply chain management, supplier selection, and

information management, all of which show strong research connectivity and high co-occurrence density. Other areas of moderate intensity (green zones) include keywords like sustainability, sustainable development, artificial intelligence, and risk management, indicating growing but still emerging interest in integrating ethical and technological considerations into supplier governance. On the periphery, topics such as supplier relations, while present, appear in less intense regions, suggesting they are relatively underexplored compared to the operational and evaluative dimensions of supplier management. This map reinforces that while the core discourse remains grounded in operational performance and strategic supplier selection, there is a rising trajectory toward ethical sustainability and digital innovation as key future directions.

3.5 Co-Authorship Network

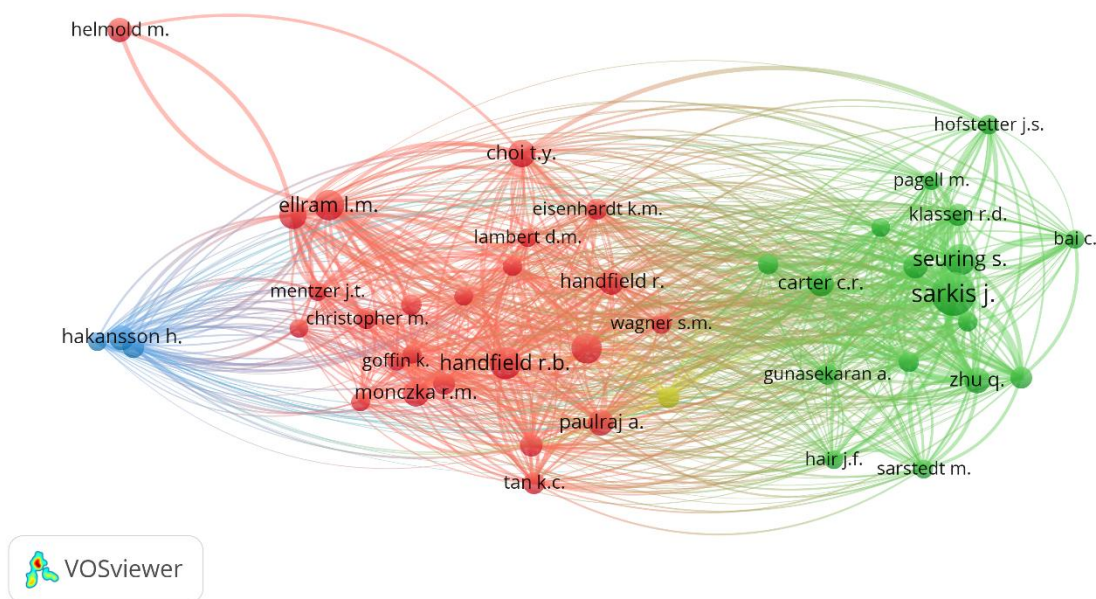


Figure 4. Author Visualization

Source: Data Analysis Result, 2025

The co-authorship network map visualizes the collaborative structure among the most influential authors in the field of procurement ethics and supplier management. The clusters, distinguished by colors, represent groups of researchers with strong intra-group collaboration. The red cluster, featuring central figures such as Handfield R.B., Eliram L.M., and Choi T.Y., indicates a dominant group focused on supply chain coordination and strategic procurement. The green cluster, with prominent authors like Sarkis J., Seuring S., and Carter C.R., appears to emphasize sustainable supply chain management and environmental considerations. Meanwhile, Håkansson H. in the blue cluster seems more isolated, possibly representing foundational or earlier works related to industrial networks. The dense interconnections within and between the red and green clusters highlight a mature and well-integrated research field, with several bridge authors linking theoretical and applied perspectives.

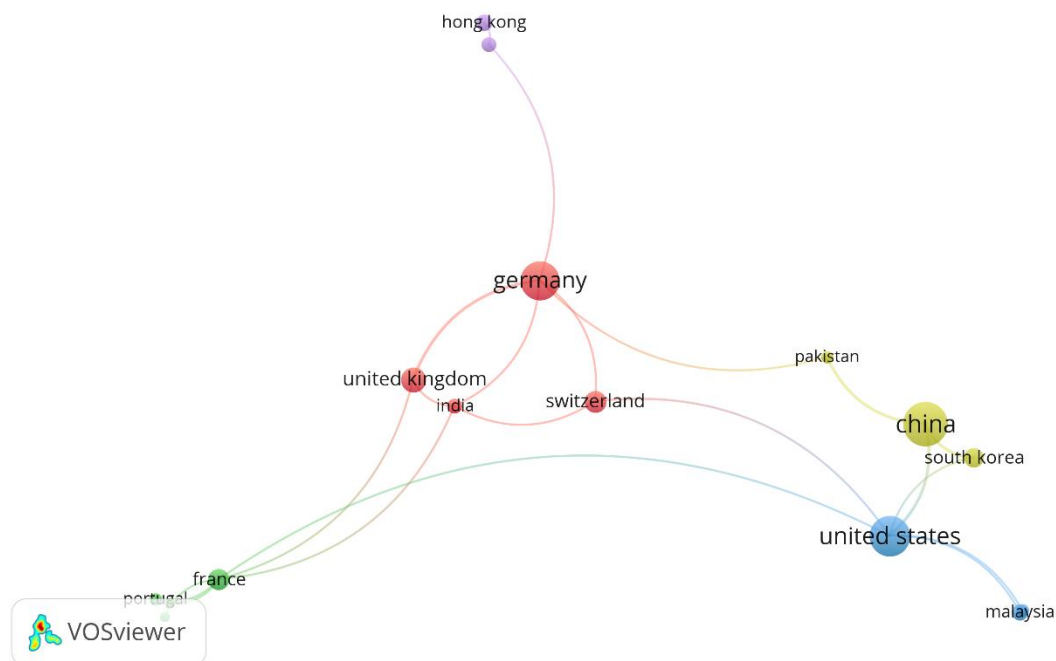


Figure 5. Country Visualization

Source: Data Analysis Result, 2025

The country collaboration network visualizes the international co-authorship patterns in research related to procurement ethics and supplier management. Germany emerges as a central hub, exhibiting strong collaborative ties with several countries including the United Kingdom, Switzerland, India, and Hong Kong, indicating its pivotal role in European and cross-regional research efforts. The United States forms another major node, actively collaborating with China, Malaysia, France, and South Korea, suggesting a transcontinental research bridge between North America and Asia. Other notable links include China's collaboration with Pakistan and South Korea, and France's connections with Portugal and Germany, reflecting both regional proximity and thematic alignment.

Discussion

This bibliometric analysis provides a comprehensive overview of the intellectual landscape, thematic structure, and collaboration patterns within the field of procurement ethics and supplier management. Through a combination of co-authorship, citation, keyword co-occurrence, temporal evolution, and geographical collaboration mapping, the study offers key insights into how the field has evolved, the dominant areas of scholarly interest, and the gaps that merit further exploration.

The keyword co-occurrence network revealed that "supplier management" stands at the core of this research domain, both in terms of frequency and centrality. Its strong linkages to terms such as "supply chain management," "supplier selection," and "information management" indicate a focus on strategic, data-driven decision-making in procurement practices. These terms suggest that much of the literature emphasizes efficiency, optimization, and performance evaluation as fundamental concerns. However, the notable presence of keywords such as "sustainability," "artificial intelligence," and "sustainable development" reflects a growing shift toward more ethically and technologically progressive paradigms. This thematic convergence implies that procurement is no longer evaluated solely on cost or quality metrics but is increasingly scrutinized through the lens of environmental responsibility and technological innovation.

The overlay visualization further strengthens this interpretation by providing a temporal layer to keyword trends. Early research, indicated by darker shades (blues and purples), focused heavily on traditional concerns such as quality control, risk management, and strategic planning. These topics, while foundational, have gradually been eclipsed by emerging concerns like sustainability, AI, and information technology, which appear in lighter (yellow) hues. This evolution suggests that procurement ethics is not static but responsive to broader socio-economic and regulatory shifts, such as climate change awareness, ESG standards, and digital transformation. The relatively recent appearance of artificial intelligence and information technology also indicates that the field is beginning to adopt tools that can enhance transparency, automate compliance, and support ethical sourcing decisions at scale.

The density visualization offers an additional layer of insight by highlighting the most intensively researched areas. The brightest regions—centered around supplier management, supply chain management, and supplier selection—reflect the conceptual gravity of these topics. This visualization confirms that while sustainability and technological terms are increasing in prominence, the practical concerns of managing supplier relationships and making strategic procurement decisions remain the dominant preoccupations of scholars. Interestingly, supplier relations appears as an isolated yet dense cluster, implying that while the term is less interconnected with the broader discourse, it holds significant research weight in its own niche. This suggests an opportunity to further integrate relational ethics and long-term partnership theories into mainstream procurement discussions.

The co-authorship map provides valuable insight into the structure of academic collaboration in this field. Notably, it reveals two dominant intellectual communities: one centered around scholars like Handfield R.B., Eliram L.M., and Choi T.Y., and another around Sarkis J., Seuring S., and Carter C.R. The former appears to focus on traditional supply chain and procurement management themes, while the latter leans toward sustainability and environmental performance. The dense connections between these groups indicate a healthy exchange of ideas, though the relative segmentation may also point to a thematic divergence within the field. Scholars like Gunasekaran A. and Pagell M. serve as intellectual bridges, helping to integrate the sustainability and operations management sub-fields. The map also highlights peripheral authors like Håkansson H., whose work may represent earlier or more theoretical contributions that have not been deeply embedded into current research dialogues. Strengthening the integration of such foundational perspectives could help expand the theoretical richness of the field.

The geographical collaboration map reveals that procurement ethics and supplier management research is heavily concentrated in developed economies, particularly Germany and the United States. Germany appears as a central hub with strong ties to the UK, Switzerland, India, and Hong Kong, indicating its central role in cross-regional and interdisciplinary research. The United States, meanwhile, maintains active collaborative networks with China, Malaysia, and France, demonstrating its position as a global research leader and connector. Interestingly, countries like Pakistan, South Korea, and Portugal appear at the periphery of the network, suggesting either emerging engagement or underrepresentation in global scholarship. This points to a potential gap in regional diversity and contextual richness, highlighting the need to incorporate more perspectives from developing economies, where procurement challenges often intersect directly with issues of governance, corruption, and socio-economic development.

Another notable insight from the analysis is the underrepresentation of explicit ethical vocabulary in the keyword network. While terms like sustainability and risk management are ethically adjacent, more normative concepts such as transparency, fairness, corruption, compliance, and corporate ethics are conspicuously absent or minimally connected. This suggests that while ethical issues are being discussed, they are often framed in terms of operational or strategic risks rather than normative imperatives. This could reflect a tendency in procurement literature to prioritize managerial concerns over ethical theory, or it may indicate that ethical discussions are

siloed in other domains (e.g., public administration, philosophy, or law). Bridging this gap could enrich the field by embedding stronger ethical reasoning into procurement models, frameworks, and decision-making tools.

The increasing appearance of keywords like artificial intelligence and information technology also signals a nascent but critical research frontier. These tools are being explored for their capacity to enhance supplier vetting, monitor compliance, and improve transparency—functions that are integral to ethical procurement. However, these technological advances also raise new ethical questions related to data privacy, algorithmic bias, and the potential for automated decision-making to obscure accountability. Thus, while technology is a powerful enabler of ethical supplier management, it also necessitates new ethical frameworks to govern its application. Future research should explore the dual role of digital tools as both instruments of and challenges to procurement ethics.

In synthesizing the findings, this study highlights both the maturity and the fragmentation of the procurement ethics and supplier management literature. There is a well-developed core around operational themes and a promising expansion into sustainability and digital innovation. Yet, the field remains somewhat fragmented across thematic lines (performance vs. ethics) and geographic boundaries (Global North vs. Global South). Strengthening interdisciplinary collaboration, diversifying regional representation, and embedding normative ethics more explicitly into procurement models can help address these shortcomings.

CONCLUSION

This study presents a comprehensive bibliometric analysis of procurement ethics and supplier management, revealing the structural, thematic, and collaborative evolution of the field over the past two decades. Findings indicate that while traditional themes like supplier selection and performance remain central, there is a marked shift toward integrating sustainability and digital technologies into procurement discourse. However, the relative absence of normative ethical terminology suggests a need for deeper theoretical engagement with ethical principles beyond performance and compliance. The results highlight key research clusters, influential scholars, and international collaborations, particularly among institutions in Germany, the United States, and China. The study offers valuable insights for academics, practitioners, and policymakers aiming to advance responsible and transparent procurement practices in an increasingly complex global supply chain environment.

REFERENCES

- [1] M. Pagell, Z. Wu, and M. E. Wasserman, "Thinking differently about purchasing portfolios: an assessment of sustainable sourcing," *J. supply Chain Manag.*, vol. 46, no. 1, pp. 57–73, 2010.
- [2] T. Mukhopadhyay and S. Kekre, "Strategic and operational benefits of electronic integration in B2B procurement processes," *Manage. Sci.*, vol. 48, no. 10, pp. 1301–1313, 2002.
- [3] D. Hollos, C. Blome, and K. Foerstl, "Does sustainable supplier co-operation affect performance? Examining implications for the triple bottom line," *Int. J. Prod. Res.*, vol. 50, no. 11, pp. 2968–2986, 2012.
- [4] A. Bozorgi-Amiri, M. S. Jabalameli, and S. M. J. Mirzapour Al-e-Hashem, "A multi-objective robust stochastic programming model for disaster relief logistics under uncertainty," *OR Spectr.*, vol. 35, pp. 905–933, 2013.
- [5] A. Akintoye, G. McIntosh, and E. Fitzgerald, "A survey of supply chain collaboration and management in the UK construction industry," *Eur. J. Purch. supply Manag.*, vol. 6, no. 3–4, pp. 159–168, 2000.
- [6] J. M. Swaminathan and S. R. Tayur, "Models for supply chains in e-business," *Manage. Sci.*, vol. 49, no. 10, pp. 1387–1406, 2003.
- [7] M. Dada, N. C. Petruzzi, and L. B. Schwarz, "A newsvendor's procurement problem when suppliers are unreliable," *Manuf. Serv. Oper. Manag.*, vol. 9, no. 1, pp. 9–32, 2007.
- [8] N. Donthu, S. Kumar, D. Mukherjee, N. Pandey, and W. M. Lim, "How to conduct a bibliometric analysis: An overview and guidelines," *J. Bus. Res.*, vol. 133, pp. 285–296, 2021.
- [9] S. A. Torabi and E. Hassini, "An interactive possibilistic programming approach for multiple objective supply chain master planning," *Fuzzy sets Syst.*, vol. 159, no. 2, pp. 193–214, 2008.
- [10] N. Banaeian, H. Mobli, B. Fahimnia, I. E. Nielsen, and M. Omid, "Green supplier selection using fuzzy group decision

- making methods: A case study from the agri-food industry," *Comput. Oper. Res.*, vol. 89, pp. 337–347, 2018.
- [11] H. Walker and S. Brammer, "Sustainable procurement in the United Kingdom public sector," *Supply Chain Manag. An Int. J.*, vol. 14, no. 2, pp. 128–137, 2009.