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MAPPING THE LANDSCAPE OF SUSTAINABLE PROCUREMENT: A SYSTEMATIC LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

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ABSTRACT

Sustainable procurement (SP) has emerged as a strategic mechanism for integrating environmental, social, and economic considerations into organizational decision-making. This study aims to synthesize and analyze the intellectual and thematic development of SP research through a systematic literature review (SLR) combined with bibliometric analysis. Using the PRISMA framework, 4,425 Scopus-indexed publications were initially identified, from which 138 peer-reviewed journal articles met the inclusion criteria for in-depth analysis. The findings reveal a significant increase in research attention since 2012, reflecting SP's evolution from a compliance-based policy tool to a strategic capability that drives innovation and sustainability performance. Five major thematic clusters were identified: (1) sustainability in public procurement, (2) the role of SP in the circular economy, (3) sustainable construction, (4) the role of corporate social responsibility (CSR), and (5) SP in higher education. Theoretically, the study draws on institutional theory, stakeholder theory, and the resource-based view to explain how external pressures, stakeholder expectations, and organizational capabilities jointly influence SP adoption and implementation. The results underscore the importance of robust institutional frameworks, leadership, and capability-building in advancing sustainable procurement. Finally, the study highlights future research opportunities in digital transformation, cross-sectoral collaboration, and the measurement of SP's contribution to environmental, social, and governance (ESG) outcomes, thereby offering actionable insights for policymakers, practitioners, and academics.



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I. INTRODUCTION

Sustainable improvement has become a crucial worldwide concern due to the increase in environmental degradation and the depletion of natural resources [1] The sustainable development goals (SDGs) established by the United Nations provide a comprehensive framework for addressing these global challenges and promoting a sustainable future. In particular, SDG 11 calls for the creation of sustainable cities and communities [2], while SDG 12 emphasizes responsible consumption and production practices. Achieving these goals requires coordinated efforts across multiple domains—including procurement, logistics, and organizational transformation—where the strategic role of procurement is vital for advancing sustainable practices and realizing SDGs 11 and 12 [3] In response, organizations are increasingly expected to adopt sustainable practices to mitigate environmental, social, and economic pressures [4] At the heart of this transformation lies sustainable procurement (SP), a key driver for achieving sustainability goals through responsible sourcing, supplier engagement, and value-based decision-making [5], [6] SP is also regarded as an effective strategy for advancing the SDGs by integrating the pillars of sustainability (i.e., economic, environmental, and social) into procurement practices [7] It entails the acquisition of goods and services that deliver optimal value for money while minimizing negative environmental impacts and promoting social equity throughout the product or service lifecycle [8] By integrating these principles into organizational procurement systems, SP enhances resource efficiency, reduces waste, and strengthens social well-being, ultimately positioning procurement as a catalyst for sustainable organizational performance and long-term development [9].

Ultimately, aligning purchasing decisions with sustainability principles transforms procurement into both a managerial challenge and a strategic opportunity for organizations striving to balance operational efficiency with corporate responsibility in the pursuit of sustainable development [10], [11]. Globally, governments have increasingly developed procurement policies to advance sustainability and social responsibility objectives. In Northern Ireland, for instance, all public contracts are required to include at least a 10% weighting for social value criteria, while in the United States, federal agencies prioritize sustainable products through EPA ecolabel standards [12]. Similar initiatives can be observed in Scotland's Procurement Reform Act (2014), Canada's Federal Sustainable Development Strategy, the European Union Procurement Directive (2014), and Spain's Law 9/2017, each of which embeds sustainability considerations within public purchasing frameworks [13], [14]. More broadly, SP is becoming increasingly institutionalized through international regulatory frameworks, including the European Union procurement directives and guidelines developed by global organizations such as the OECD, ILO, WTO, and UNEP [15]. Collectively, these frameworks promote greater transparency, accountability, and sustainability across global supply chains, reinforcing SP as a critical instrument for achieving sustainable development. Despite its growing significance, the implementation of SP remains a considerable challenge for many organizations, particularly in developing countries, due to the inherent complexity of procurement processes and supply chain structures [16], [17], [18]. These complexities often hinder organizations from fully understanding, operationalizing, and monitoring sustainability principles across diverse suppliers and market contexts [19].

Effective implementation of SP requires a comprehensive understanding of its core principles and operational mechanisms (i.e., encompassing risk management, supplier evaluation, and ethical sourcing) to proactively mitigate adverse environmental and social impacts through robust due diligence. A persistent challenge also lies in balancing economic viability with sustainability objectives, as decision-makers must reconcile short-term financial constraints with long-term environmental and social commitments. Achieving this balance demands a holistic approach that integrates life-cycle costing, value chain analysis, and resource optimization to ensure both competitiveness and sustainability [20]. Moreover, barriers such as limited institutional support, weak policy enforcement, and insufficient stakeholder engagement continue to impede the widespread adoption of SP practices [21], [22]. Given these persistent challenges, a comprehensive understanding of the current state of research on SP is essential to inform both theory and practice. Conducting a systematic literature review (SLR) provides a robust approach for synthesizing and mapping the existing body of knowledge, identifying research trends, influential scholars, and methodological gaps within the SP domain [23], [24]. These methods enable a structured and quantitative evaluation of academic output, revealing how SP has evolved conceptually and empirically across disciplines and regions. To date, only one study (from Scopus database) has systematically synthesized the SP knowledge base. Notably, Kabra et al. [25] conducted a bibliometric analysis mapping the intellectual structure of SP research, identifying key thematic clusters such as green supply chain practices, socially responsible purchasing, and public procurement.

However, their study primarily offered a descriptive mapping of publication trends and research networks, without critically examining the contributions of SP. In contrast, the present study adopts a combined SLR and bibliometric approach to provide a more comprehensive and analytical perspective, by exploring the evolution of SP research while assessing its contributions. Beyond Kabra et al. [25], related reviews have examined adjacent areas such as circular procurement management [26], green purchasing behavior [27], and sustainable procurement risks in the construction sector [28]. While these studies contribute valuable insights, they focus on specific procurement dimensions or sectoral contexts rather than providing a holistic synthesis of sustainable procurement as a strategic framework across industries. Therefore, this study fills an important gap by offering an integrative understanding of SP research trends, challenges, and its contributions through a rigorous SLR and bibliometric analysis. The remainder of this paper is structured as follows. Section 2 describes the research methodology, outlining the systematic literature review protocol, bibliometric analysis procedures, and data collection steps adopted for this study. Section 3 presents the results and findings, including descriptive bibliometric outcomes, thematic clusters, and key insights derived from the systematic review. Section 4 provides an in-depth discussion, interpreting the results in light of existing theories, and practical implications. Finally, Section 5 concludes the study by summarizing the main findings, highlighting limitations, and proposing directions for future research.

II. METHODOLOGY

A systematic literature review (SLR), when combined with bibliometric analysis, offers a robust and comprehensive approach for examining the development and intellectual structure of a research domain [29]. A rigorously conducted SLR enables the identification, selection, and synthesis of relevant studies based on predetermined inclusion and exclusion criteria, thereby minimizing bias and enhancing reliability [23]. In parallel, bibliometric analysis quantitatively evaluates the research landscape by identifying publication trends, influential authors, and thematic relationships through citation, co-citation, and keyword co-occurrence analyses. Integrating these methods provides both qualitative depth and quantitative breadth, offering a holistic understanding of the field [24]. Data were retrieved from the Scopus database, recognized for its extensive coverage of peer-reviewed journals and strong indexing of sustainability and management research [30], [31], [32], [33]. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework and commenced on May 31, 2025. An initial search of article titles, abstracts, and keywords using the Boolean string "sustainable" AND "procurement" yielded 4,425 documents. After screening the titles, abstracts, and keywords for relevance, the results were narrowed down to 601 documents. To ensure quality and consistency, only journal articles were selected, and for the sake of readability, only those written in English were included. As a result, a total of 138 articles were retained for the final analysis. A bibliometric analysis was performed using VOSviewer. This tool facilitated visualization and network analysis of research collaboration, thematic evolution, and intellectual structure. Key analytical dimensions included:

- Performance analysis: publication trends and dominant subject areas.
- Science mapping: bibliographic coupling networks.
- Keyword co-occurrence analysis: identification of dominant themes and emerging topics.

Prior to analysis, data were standardized to merge author name variants, institutional affiliations, and keyword synonyms. Duplicate and incomplete records were removed. Network maps were normalized using the association strength method in VOSviewer to ensure meaningful clustering.

III. FINDINGS

III.1 PUBLICATION TRENDS

The bibliometric analysis of publication output in the field of SP reveals a clear upward trajectory when examined by publication year (see Figure 1). The earliest documented studies appeared in 2004, marking the beginning of scholarly attention to this emerging topic. During the initial years, research output remained modest, with only a few publications recorded up to 2011, reflecting the early developmental stage of the field as sustainability concerns were only beginning to gain widespread recognition. This slow growth period indicates that SP had not yet been fully recognized as a distinct academic and professional domain. From 2012 onwards, the number of publications increased steadily, reaching its peak in 2023 and 2024. This surge signifies heightened global interest and recognition of sustainable procurement as a critical instrument for achieving sustainability objectives [5]. The growth aligns with broader developments such as rising environmental awareness, the establishment of supportive regulatory frameworks, and an expanding understanding of the strategic role of public procurement in advancing sustainable development goals [34]. Although a slight decline in publication numbers appears in 2025, this is likely due to incomplete data for the year rather than an actual reduction in research activity.

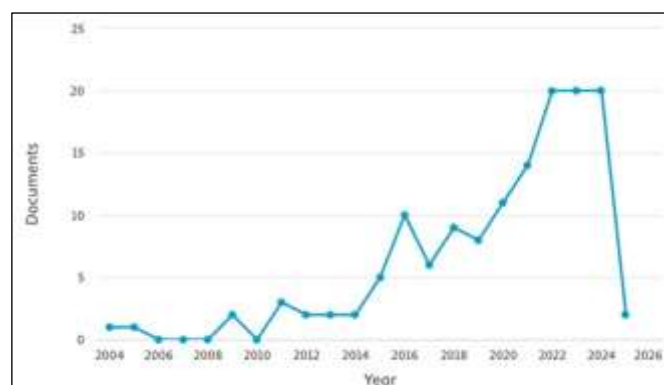


Figure 1: Publication Trends.

Source: Authors (2026).

III.2 SUBJECT AREAS

An analysis by subject area reveals that research on SP is predominantly situated within the fields of “business, management, and accounting,” indicating strong engagement with SP as a strategic organizational function (see Table 1). This dominance reflects an increasing recognition of procurement as a core component of corporate sustainability, emphasizing its role in driving competitive advantage through responsible sourcing, resource efficiency, and value creation. The prominence of this subject area aligns with studies that explore how organizations integrate sustainability principles into procurement and supply chain management, often linking these practices to improvements in economic and financial performance **Erro! Fonte de referência não encontrada..**

Table 1: Distribution of documents by subject area.

Subject area	Documents
Business, management, and accounting	58
Social sciences	47
Environmental science	46
Engineering	45
Energy	35
Computer science	20
Decision sciences	15
Economics, econometrics, and finance	11
Agricultural and biological sciences	5
Mathematics	5

Source: Authors, (2026).

Subsequently, the substantial representation of the “social sciences” further underscores the societal and policy-oriented dimensions of sustainable procurement. Research within this domain frequently addresses the role of procurement in promoting ethical behavior, social inclusion, and governance accountability [35]. Similarly, the strong contributions from “environmental science” and “engineering” highlight the technical and environmental focus of the field, particularly concerning reducing ecological footprints, promoting eco-friendly technologies, and developing sustainable production systems [36]. Additional contributions from fields such as “energy”, “computer science”, “decision sciences”, and “economics, econometrics, and finance” demonstrate the multidisciplinary nature of SP research [37]

These areas reflect the integration of technological, analytical, and economic perspectives into procurement-related sustainability efforts. Although less represented, disciplines such as “agricultural and biological sciences”, as well as “mathematics” indicate emerging directions in the field, potentially expanding future research into data-driven modeling, life-cycle analysis, and sustainable resource management.

III.3 GEOGRAPHICAL AND INSTITUTIONAL DISTRIBUTION OF RESEARCH

The upward trend in SP publications since 2012 is also reflected in the country-level analysis, which highlights the expanding global engagement with this field. The United Kingdom (UK) leads in both the number of documents and total citations, suggesting a mature and influential research landscape supported by well-established academic programs, policy initiatives, and funding schemes promoting sustainable practices (see Table 2). Germany follows closely, exhibiting a high citation count relative to its publication output—an indication of the strong impact and quality of its research contributions [38].

Table 2: Bibliographical coupling data by country.

Country	Documents	Citations	Total Link Strength
United Kingdom	40	2364	20
Brazil	11	501	7
United States of America	11	181	4
Australia	11	213	1
Italy	10	293	10
Netherlands	7	208	7
France	6	305	9
Poland	6	196	5
Germany	6	608	4
Ghana	6	75	4

Source: Authors, (2026).

The “Total Link Strength” metric, representing the intensity of collaborative networks, further enhances this analysis. Countries such as Brazil and Italy demonstrate high link strength scores, reflecting the benefits of international collaboration in fostering knowledge exchange and resource sharing [39]. These findings help identify key nations and institutions driving innovation and best practices in sustainable procurement. For example, the city of Copenhagen’s renewable energy-oriented procurement policies exemplify how government initiatives can operationalize sustainability principles [36]. Further exploration of policy frameworks and research programs in the UK and Germany could provide valuable insights into the institutional mechanisms that underpin their leadership in SP research and implementation [40]. The inclusion of Ghana in the dataset also reflects the emerging research contributions from Africa, signaling growing global awareness of SP’s importance [39]. The diversification of research contexts points to the need for regionally focused studies that address local challenges and opportunities, facilitating broader and more effective implementation of sustainable procurement practices. At the institutional level, publication data reveal that universities such as UNSW Sydney, the University of Leeds, and Liverpool John Moores University are among the most productive contributors, indicating a strong research focus on sustainable procurement in Australia and the UK. Notably, Fahim Ullah of UNSW Sydney has contributed extensively to the literature on sustainable development and risk management. These universities likely host specialized research centers dedicated to sustainability, supply chain management, and the circular economy. Additionally, institutions such as Universidade Federal Fluminense (Brazil), University of Belgrade (Serbia), and Kwame Nkrumah University of Science and Technology (Ghana) demonstrate the geographical broadening of SP research beyond traditional centers. Other contributors, including the University of Johannesburg, King Abdulaziz University, and Universidade Estadual Paulista Júlio de Mesquita Filho, further emphasize the global diffusion of research efforts and the growing inclusivity of sustainability scholarship.

III.4 THETAMIC ANALYSIS

Keywords co-occurrence analysis provides a powerful methodological approach for deconstructing the knowledge structure of SP. By mapping relationships among frequently co-occurring keywords, it reveals the dominant themes, conceptual linkages, and research clusters within the field, thereby offering valuable insights into key areas of focus and potential research gaps. As the central theme, SP shows strong associations with foundational concepts such as “supply chain management,” “sustainability,” and “performance”, see Figure 2. The frequent co-occurrence of “supply chain management” and “sustainability” underscores their interdependence, reflecting the growing recognition that sustainable procurement is integral to achieving broader supply chain sustainability objectives. The prominence of “performance” highlights the field’s emphasis on measuring the outcomes of SP practices—particularly their contributions to reducing environmental impact and enhancing social responsibility. Similarly, the frequent appearance of keywords such as “circular economy,” “life cycle assessment,” and “environmental impact” emphasizes the environmental orientation of SP research, demonstrating a strong focus on resource efficiency, waste reduction, and eco-innovation.

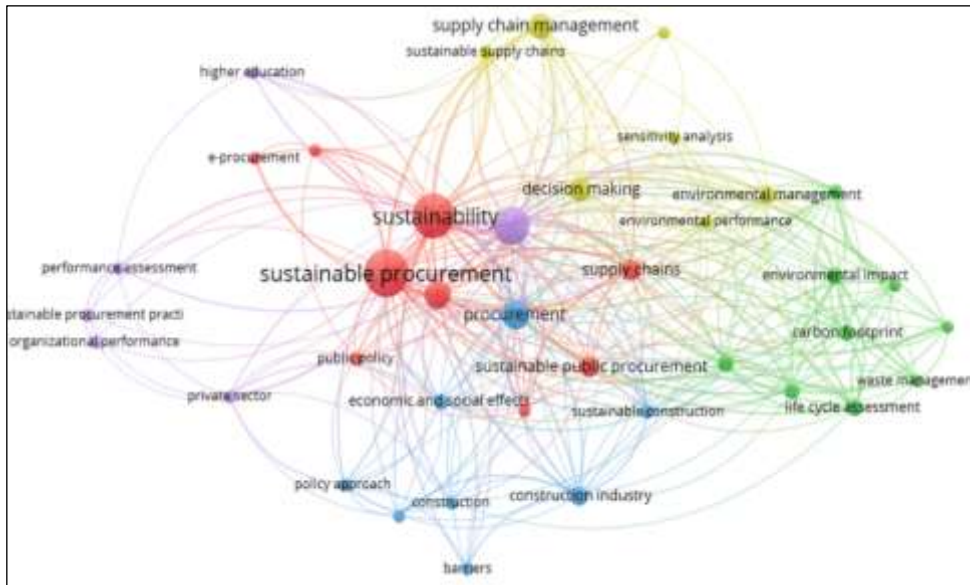


Figure 2: Keywords Co-occurrence Network.

Source: Authors (2026).

Another emerging thematic cluster conceptualizes the strategic deployment of SP within higher education institutions, highlighting its potential to enhance organizational performance and advance institutional sustainability goals. The co-occurrence of keywords such as “corporate social responsibility,” “decision making,” “environmental management,” “environmental performance,” and “supply chain management” reflects growing scholarly attention to the role of SP in advancing corporate social responsibility (CSR) agendas. This association demonstrates that procurement decisions are increasingly viewed not merely as administrative processes but as strategic levers for sustainability-driven value creation. Furthermore, the clustering of keywords such as “barriers,” “construction industry,” “policy approach,” “project management,” and “sustainable construction” highlights the sectoral challenges and opportunities associated with implementing SP practices in construction and infrastructure development. In these contexts, researchers have emphasized the influence of policy frameworks and governance mechanisms in shaping SP outcomes. The presence of terms such as “public green procurement,” “university,” and “sustainable development goals (SDGs)” points to the institutionalization of sustainability principles within the public sector and academia. However, in many cases, legal and regulatory constraints limit universities’ ability to fully integrate sustainability into their procurement decisions, despite their substantial purchasing capacity [41]. As major economic and social actors, universities represent critical environments for advancing sustainable procurement. They allocate significant financial resources for a wide range of activities—including teaching, research, administration, and campus operations—providing a fertile ground for interdisciplinary innovation and the promotion of sustainable development principles. Thus, higher education institutions not only serve as laboratories for testing sustainability initiatives but also play a pivotal role in modeling and disseminating best practices in SP. Next, the keywords co-occurrence analysis revealed five major thematic clusters representing the intellectual and conceptual foundations of SP research (see Table 3). Each cluster reflects distinct yet interconnected perspectives on how sustainability principles are operationalized within procurement systems across public, private, and institutional contexts.

Table 3: Thematic analysis based on Keywords.

Cluster Color	Keywords	Cluster Name (Theme)
Red	e-procurement, green procurement, procurement strategy, public policy, public procurement, supply chains, sustainability, sustainable procurement, sustainable public procurement	Sustainability in public procurement
Green	carbon footprint, circular economy, climate change, environmental impact, environmental sustainability, life cycle analysis, life cycle assessment, waste management	The role of sustainable procurement in circular economy
Blue	barriers, construction industry, economic and social effects, policy approach, procurement, project management, sustainable construction	Sustainable construction
Yellow	corporate social responsibility, decision making, environmental management, environmental performance, sensitivity analysis, supply chain management, sustainable supply chain	The role of corporate social responsibility
Purple	higher education, organizational performance, performance assessment, private sector, sustainable development, sustainable procurement	Sustainable procurement in higher education

Source: Authors, (2026).

III.4.1 Cluster 1: Sustainability in Public Procurement

The theme of “sustainability in public procurement” represents a central pillar of SP research, highlighting the transformation of public sector procurement into a strategic instrument for advancing sustainability objectives. This cluster, encompassing keywords such as e-procurement, green procurement, procurement strategy, public policy, public procurement, supply chains, sustainability, and sustainable public procurement, underscores how the integration of sustainability principles within public purchasing frameworks can drive transparency, accountability, and environmental stewardship across government operations.

The adoption of e-procurement systems marks a significant advancement in this regard. As a digital innovation, e-procurement not only streamlines procurement processes but also embeds sustainability criteria directly into decision-making frameworks. Basheka et al. [42] emphasize that implementing e-procurement enhances institutional quality by enabling more comprehensive supplier evaluations that include social, economic, and environmental indicators alongside traditional cost metrics. Recent studies also demonstrate how big data analytics and emerging digital technologies strengthen governance and sustainability outcomes in public procurement. According to Sanda et al. [43], big data tools enhance accountability and transparency by identifying irregularities, enabling real-time oversight, and supporting data-driven decisions. Likewise, Da Silveira et al. [35] discuss the potential of blockchain technology in ensuring traceability and verification of sustainability practices throughout the supply chain, improving compliance monitoring and stakeholder trust. However, the transition toward sustainable e-procurement is not without challenges. As Tao et al. [44] observe, public institutions often face institutional barriers and cost-oriented mindsets that limit the adoption of sustainability-focused approaches. Despite growing demand for sustainable goods and services, procurement practices frequently prioritize short-term cost savings over long-term sustainability gains. Fernández-Pérez and Luque-Vílchez [45] argue that overcoming this imbalance requires a cultural and organizational shift—one that values lifecycle costing, environmental impact mitigation, and social inclusion as core procurement priorities. In addition, the role of collaborative frameworks and stakeholder engagement is crucial in advancing sustainability within public procurement. Zin Zawawi et al. [46] highlight that engaging multiple stakeholders, from policymakers to suppliers and civil society, fosters shared learning, innovation, and collective accountability, all of which are essential for achieving meaningful sustainability outcomes. External pressures also play a role; Vluggen et al. [47] note that regulatory frameworks, social expectations, and international sustainability standards can reinforce accountability and stimulate the institutionalization of sustainable procurement practices. Sustainability in public procurement, therefore, is evolving from a compliance-driven activity into a strategic governance mechanism for achieving sustainable development. By leveraging digital innovations such as e-procurement, big data analytics, and blockchain, public institutions can enhance transparency and embed sustainability into all stages of procurement. Nevertheless, realizing this potential requires not only technological innovation but also institutional reform, cross-sector collaboration, and long-term commitment to aligning procurement with sustainability imperatives.

III.4.2 Cluster 2: The role of sustainable procurement in circular economy

Minimizing environmental impact through the adoption of circular economy (CE) principles has become a cornerstone of sustainable development. The transition from a linear “take–make–dispose” model toward a circular economic system emphasizes resource efficiency, waste reduction, and product life-cycle optimization, allowing businesses and societies to mitigate ecological damage while fostering long-term economic resilience. Within this paradigm, SP plays a pivotal role by prioritizing eco-efficient materials, renewable resources, and closed-loop supply chains, thereby serving as a key operational mechanism for realizing circular economy objectives. The integration of circular economy principles into procurement practices extends across diverse sectors and scales. Education is among the most influential arenas for driving this transition. El Mahdi Safhi et al. [48] highlight the importance of embedding sustainability and CE education into academic curricula, noting that future decision-makers must develop a deep understanding of these concepts to effectively champion sustainable practices. This educational foundation ensures that emerging professionals can embed circular thinking into procurement, production, and organizational decision-making processes across industries. In the healthcare sector, circular principles are increasingly influencing procurement strategies aimed at improving efficiency and reducing waste. Di Virgilio et al. [49] emphasize that sustainable procurement in hospitals enhances operational efficiency while minimizing environmental impacts. Their study underscores that the inclusion of performance indicators (such as cost-effectiveness, compliance, and resource utilization) enables institutions to assess sustainability outcomes more holistically, aligning healthcare operations with circular economy goals. The construction industry presents one of the most promising yet challenging domains for implementing circular procurement. Aboginije et al. [50] stress the importance of holistic waste management in construction and demolition projects, particularly in developing contexts such as Nigeria. Their findings show that integrating circular practices, such as material reuse and recycling, can substantially reduce waste generation and environmental degradation. This approach aligns procurement strategies with life-cycle management and resource optimization, reinforcing the sector’s contribution to sustainable urban development.

From a supply chain perspective, CE implementation is strengthened through strategic supplier partnerships and engagement. Caldera et al. [51] demonstrate that in Australia’s built environment sector, integrating CE elements into procurement regulations encourages supplier collaboration in areas such as product life extension, component recovery, and material recirculation. These partnerships create innovation ecosystems that support sustainable material sourcing, reduce the carbon footprint, and enhance circular supply chain resilience. Similarly, the link between supplier selection and circular procurement is critical. Le et al. [52] highlight the need for supplier evaluation frameworks that incorporate environmental and social performance metrics alongside traditional cost and quality considerations. Such systematic approaches ensure that procurement decisions reinforce circularity objectives by prioritizing suppliers committed to sustainability and low-impact production. Life-cycle assessment (LCA) methodologies further support this integration by offering a comprehensive understanding of environmental impacts throughout a product’s lifespan, thereby guiding more informed and responsible purchasing choices. Recent advances in decision-support systems and modeling have further enhanced the alignment of procurement with circular economy objectives. Ahamed et al. [53] propose multi-criteria decision-making (MCDM) models that embed sustainability parameters into supplier selection, combining cost efficiency with ecological and social considerations. These heuristic models provide decision-makers with structured tools for balancing performance and sustainability trade-offs, reinforcing the contribution of procurement to both resource efficiency and economic durability. The synergy between SP and CE principles forms a powerful foundation for minimizing environmental impacts and promoting systemic sustainability. By integrating sustainability education, fostering supplier collaboration, improving waste management practices, and adopting robust evaluation frameworks, organizations can accelerate the transition toward a regenerative and resource-efficient economic model. SP thus emerges not merely as a management function but as a transformative enabler of the circular economy, bridging environmental responsibility with long-term organizational performance and societal well-being.

III.4.3 Cluster 3: Sustainable construction

The construction industry plays a pivotal role in advancing environmental and social sustainability but continues to face substantial challenges in the adoption of sustainable practices. As one of the most resource-intensive sectors, construction significantly impacts land use, energy consumption, and waste generation. Overcoming these challenges requires systemic approaches that integrate sustainability principles throughout project lifecycles. In this context, integrated project management (IPM) has emerged as a critical mechanism for promoting sustainable construction, offering a structured framework for stakeholder collaboration, decision-making, and resource optimization. The application of IPM fosters collaboration among project stakeholders, streamlines communication, and enhances decision-making processes, factors essential for the effective implementation of sustainability strategies in construction. According to Fregonara et al. [54], improving governance structures and enhancing access to targeted resources and collaborative tools are key enablers for advancing sustainable procurement practices within construction projects. Strengthened governance ensures accountability, transparency, and alignment of stakeholder goals, thus creating an environment conducive to sustainable outcomes. A major barrier to sustainability adoption in construction lies in the lack of leadership commitment and institutional knowledge. Caldera et al. [51] emphasize that the COVID-19 pandemic exposed critical weaknesses in project resilience and adaptability, underscoring the need for integrated and flexible procurement approaches. Empowering leadership teams with sustainability knowledge and competencies is therefore vital to embedding sustainability principles into project management frameworks and ensuring that organizations can respond effectively to future disruptions. Another pressing concern is construction and demolition waste, which remains one of the largest contributors to environmental degradation in the built environment.

Aboginije et al. [50] highlight that the adoption of integrated project management techniques can substantially improve waste management processes by enhancing planning, execution, and monitoring capabilities. Such integration enables firms to adopt circular waste management frameworks that promote recycling, material reuse, and reduction of landfill dependency—thereby minimizing the overall environmental footprint of construction projects. Technological innovation, particularly the use of e-procurement systems, further strengthens the implementation of sustainable construction practices. Jelodar et al. [55] note that digital procurement platforms enhance supplier engagement, improve decision-making, and enable organizations to assess suppliers' sustainability performance more effectively. The integration of IPM tools with e-procurement systems allows for better tracking, reporting, and compliance monitoring, ensuring that environmental standards and sustainability criteria are consistently applied across projects. Stakeholder collaboration also plays a crucial role in overcoming sustainability barriers within construction projects. Casanovas-Rubio et al. [56] argue that multi-stakeholder engagement and dialogue are essential for minimizing the social and environmental impacts associated with construction activities. Collaborative approaches foster shared accountability, mutual learning, and consensus-building, all of which strengthen the social legitimacy and practical implementation of sustainability objectives. In addition to governance and collaboration, organizational culture remains a determining factor in the success of sustainable construction initiatives. Oyewobi and Jimoh [57] identify attitudinal resistance and a lack of awareness as persistent barriers to adopting sustainable procurement in the construction industry. Through IPM, organizations can implement change management strategies that reshape stakeholder mindsets, bridge knowledge gaps, and foster a culture of continuous sustainability improvement.

III.4.4 Cluster 4: The role of corporate social responsibility

Corporate social responsibility (CSR) plays a pivotal role in shaping SP by embedding ethical, social, and environmental considerations into procurement and operational decisions, thereby promoting responsible and transparent business practices. Through such alignment, firms not only address stakeholder expectations but also reinforce ethical, social, and environmental accountability across the entire value chain. A key dimension of this integration lies in aligning corporate strategies with sustainable procurement practices. Di Virgilio et al. [49] highlight that organizations embedding sustainability within their procurement systems experience tangible benefits, including improved compliance, enhanced stakeholder trust, and increased client satisfaction. By operationalizing CSR principles in procurement, firms can leverage their social and environmental commitments to strengthen brand reputation and build long-term stakeholder relationships. This alignment ensures that procurement decisions reflect a balance between economic performance, social equity, and environmental responsibility—the three pillars of sustainability. To achieve this, organizations must improve access to resources and managerial tools that support CSR-driven practices. Aluchna and Rok [58] emphasize that empowering firms with tools for ethical sourcing, sustainable material selection, and supplier engagement is essential for enhancing operational efficiency and accountability. Such practices cultivate a corporate culture that values ethics and sustainability alongside profitability, reinforcing the broader CSR agenda.

Emerging technologies also play a transformative role in integrating CSR within supply chains. Sanda et al. [43] demonstrate that big data analytics can be applied to monitor supplier compliance with CSR standards, enabling firms to assess environmental and social risks in real time. This data-driven approach enhances transparency, mitigates unethical sourcing risks such as child labor or environmental harm, and supports informed decision-making in procurement. Similarly, Letunovska et al. [59] highlight the potential of green technologies and reverse logistics in amplifying CSR outcomes, showing how digital platforms and e-procurement tools can streamline sustainable practices while improving traceability and compliance. Nevertheless, effective CSR integration requires overcoming organizational and cultural barriers. Ahamed et al. [53] argue that strong institutional frameworks and supportive policy environments are vital for embedding sustainability within supply chains. Companies must cultivate inclusive and participatory cultures that encourage stakeholder engagement and ensure that sustainability objectives are championed at all organizational levels. Leadership commitment, cross-functional coordination, and transparent communication are critical enablers of this transformation. Complementing these managerial and technological dimensions, LCA frameworks offer an evidence-based approach to evaluating the environmental impacts of procurement choices in relation to CSR commitments [44]. By examining the entire lifecycle of products and materials—from production to disposal—LCA enables firms to make procurement decisions that prioritize long-term ecological balance over short-term cost considerations. This perspective aligns with CSR's foundational goals of transparency, accountability, and sustainable value creation.

III.4.5 Cluster 5: Sustainable procurement in higher education

The incorporation of SP practices within higher education institutions (HEIs) plays a crucial role in advancing both organizational performance and sustainable development objectives. By addressing environmental stewardship, social accountability, and economic efficiency, SP enables universities to align their operational and strategic decisions with broader sustainability goals. Within educational settings, sustainable procurement fosters responsible resource use, enhances stakeholder engagement, and reinforces the institution's commitment to sustainability-driven governance. A growing body of literature highlights that SP can significantly enhance organizational performance by cultivating a culture of sustainability among academic staff, administrators, and students. The integration of sustainability principles into procurement not only improves operational efficiency but also builds institutional capacity for sustainability-focused research and innovation. This cultural transformation ensures that procurement choices reflect the environmental and ethical values of the institution, creating a framework where education, research, and operations reinforce one another in pursuit of sustainability. Education itself serves as a key enabler of sustainable procurement adoption. El Mahdi Safhi et al. [48] underscore the importance of embedding sustainability and circular economy education into university curricula to prepare future leaders capable of implementing and advocating for sustainable practices. By equipping students with practical knowledge and critical awareness, HEIs contribute to developing a new generation of decision-makers who integrate sustainability into organizational strategies and professional practice—thereby amplifying the long-term impact of SP both within and beyond academia. External influences, such as the COVID-19 pandemic, have also reshaped sustainable procurement in HEIs.

Caldera et al. [51] demonstrate that the pandemic prompted universities to reassess procurement systems, revealing the need for greater resilience, adaptability, and innovation in managing supply chains. Flexible procurement strategies, supported by digital platforms and collaborative frameworks, can strengthen institutional agility and enable HEIs to maintain sustainability commitments even under disruptive circumstances. Institutional drivers remain critical for embedding SP practices effectively. Leal Filho et al. [8] identify policy frameworks, leadership commitment, and stakeholder collaboration as essential enablers of sustainable procurement integration in HEIs. Leadership that prioritizes transparency, shared accountability, and cross-departmental cooperation can mitigate organizational resistance and foster the successful implementation of sustainability initiatives. In this regard, effective leadership acts as both a facilitator of cultural change and a catalyst for innovation, ensuring sustainability becomes a central element of institutional governance. SP also offers competitive advantages for universities, enhancing reputation, compliance, and funding opportunities. As Di Virgilio et al. [49] note, HEIs that adopt sustainable procurement strategies not only improve operational compliance and stakeholder satisfaction but also attract partnerships and sponsorships aligned with sustainability objectives. Demonstrating commitment to sustainable practices strengthens institutional credibility and aligns HEIs with global efforts such as the UN SDGs. The intersection between SP and CSR also provides an additional framework for amplifying impact. Integrating CSR into procurement processes can increase engagement among faculty, students, and external partners, fostering shared ownership of sustainability goals. This alignment allows HEIs to leverage their procurement power to promote social equity, ethical sourcing, and environmental conservation, thereby embedding sustainability into the institution's organizational identity.

IV. DISCUSSION

The results of the thematic analyses reveal that SP is increasingly conceptualized not merely as a technical or operational activity, but as a strategic, institutionally embedded, and stakeholder-sensitive domain. The five clusters (i.e., sustainability in public procurement, SP in CE, sustainable construction, the role of CSR, and SP in HEI) reflect how SP has evolved to bridge digital, environmental, governance, and educational spheres. To interpret these results, this discussion draws upon institutional theory, stakeholder theory, and the resource-based view (RBV) as key analytical frameworks that explain the patterns, drivers, and outcomes observed in the literature. Interpreting these findings through theoretical lenses helps explain the observed trends, identify underlying mechanisms, and derive practical implications.

IV.1 THEORETICAL CONSIDERATION

IV.1.1 Institutional theory

Institutional theory provides a robust framework for understanding how regulatory environments, policy frameworks, and institutional norms shape the adoption and diffusion of SP practices across sectors. According to DiMaggio and Powell [60], organizations face three primary types of institutional pressures—coercive, normative, and mimetic—that drive conformity and legitimacy-seeking behaviors. These forces are particularly evident in how SP becomes institutionalized through laws, public policies, and professional norms. Findings from Cluster 1 demonstrate that governments play a pivotal role in institutionalizing SP through regulatory mandates, e-procurement systems, and transparency mechanisms. Such institutional reforms encourage organizations to embed sustainability into procurement processes to comply with evolving norms and expectations. For instance, the European Union's Green Public Procurement (GPP) directives have effectively normalized sustainability as a standard component of public contracting, shaping how organizations define procurement excellence [61]. Similarly, digital procurement platforms and data-driven monitoring systems have enhanced accountability and governance efficiency, reflecting how institutional modernization aligns with sustainability objectives. However, institutional constraints (such as fragmented regulations, inadequate digital infrastructure, and entrenched cost-based procurement cultures) continue to limit the depth of SP implementation, particularly in contexts with lower institutional capacity. In such settings, weaker enforcement and short-term economic priorities can result in partial or symbolic compliance rather than substantive sustainability adoption. Grob and Benn [62] further extends institutional theory to the domain of SP, emphasizing that normative and coercive pressures from policy frameworks, industry norms, and cross-sectoral emulation are primary drivers of SP adoption. Glover et al. [63] applied institutional theory to explore how supermarkets shape sustainability practices across the dairy supply chain, revealing how dominant institutional logics influence the diffusion of sustainability norms.

Their findings showed that while smaller organizations aspired to integrate sustainable practices, powerful actors, such as supermarkets, exerted coercive pressures prioritizing cost reduction and profit maximization over genuine sustainability outcomes. Moreover, these dominant firms often engaged in mimetic behaviors, replicating public sustainability initiatives for legitimacy and image rather than deep systemic change. Translating this insight to the sustainable procurement domain, institutional power asymmetries can similarly shape SP adoption, where larger buyers impose compliance requirements that may reinforce efficiency and reputation goals but not necessarily transformative sustainability impact. Thus, institutional theory underscores how legitimacy concerns and power structures can either enable or constrain the substantive institutionalization of sustainable procurement. Next, within the SP in higher education cluster, institutional theory also explains how policy mandates and leadership commitment shape procurement practices. HEIs, often situated between public accountability and academic autonomy, face dual pressures: to comply with governmental sustainability policies and to model sustainable values as part of their educational mission. As semi-public entities, HEIs must demonstrate both operational efficiency and social responsibility, thereby institutionalizing sustainability as a core governance principle. This dynamic reinforces the role of universities as norm entrepreneurs, influencing not only their internal operations but also broader societal perceptions of sustainability in procurement [64]. Taken together, institutional theory elucidates how external coercive forces (e.g., regulations and funding requirements), normative influences (e.g., professional standards and educational norms), and mimetic behaviors (e.g., imitation of best practices) collectively drive the legitimization and diffusion of sustainable procurement practices. Nonetheless, the persistence of institutional barriers highlights the need for adaptive reforms (balancing compliance with innovation) to ensure that SP evolves beyond a regulatory requirement into an embedded organizational norm that supports long-term sustainability transitions.

IV.1.2 Stakeholder theory

Stakeholder theory offers a complementary perspective for understanding the social and relational dimensions of sustainable procurement. The theory posits that organizations must consider the expectations of diverse stakeholders (ranging from suppliers and customers to regulators and local communities) to maintain legitimacy and long-term success [65]. Findings from Cluster 4 illustrate this dynamic clearly. The integration of CSR in SP acts as a mechanism through which organizations respond to stakeholder demands for ethical, social, and environmental accountability. In supply chain contexts, firms increasingly engage in ethical sourcing, supplier audits, and CSR-driven partnerships to address stakeholder concerns over labor practices, environmental degradation, and transparency [43]. This demonstrates a growing emphasis on shared accountability and co-creation of social value, where procurement decisions are no longer guided solely by price or efficiency but by their ability to contribute to broader social and environmental goals. Similarly, in construction, stakeholder collaboration—across contractors, regulators, and community actors—has emerged as a key enabler for overcoming barriers to sustainable project delivery [56]. From a practical standpoint, the stakeholder lens suggests that inclusive decision-making, transparent reporting, and participatory governance are essential for building trust and fostering sustainability across procurement networks. This also highlights a managerial implication: procurement professionals must develop relational competencies, not just technical expertise, to balance stakeholder demands and achieve long-term sustainability outcomes. In both public procurement and construction clusters, stakeholder engagement plays a central role: multi-actor collaborations, participatory decision-making, and transparent governance help manage conflicts, build trust, and reinforce legitimacy. For HEIs, the alignment of procurement with stakeholder values (including students, faculty, and local communities) can enhance institutional credibility and support. The stakeholder lens thereby emphasizes that SP is not just about supplier selection or environmental impact; it is fundamentally about social value creation and legitimacy in multi-actor networks.

IV.1.3 Resource-based view

While institutional and stakeholder theories explain why organizations adopt SP, the resource-based view (RBV) provides insight into how they derive strategic advantage from doing so. The RBV posits that firms can achieve sustained competitive advantage by cultivating resources and capabilities that are valuable, rare, inimitable, and non-substitutable [66]. Within the SP context, these strategic capabilities include sustainability analytics, LCA expertise, supplier relationship management systems, green innovation, and a culture of sustainability-oriented leadership. Unlike external compliance pressures described in institutional theory, RBV focuses on internal resources that enable organizations to transform sustainability from an obligation into a source of value creation. Clusters such as Cluster 2 and Cluster 4 reflect this logic, showing how firms develop distinctive competencies, such as circular material flows, closed-loop logistics, and CSR-based supplier evaluation, that enhance both environmental performance and market differentiation. Firms with advanced sustainability capabilities are not only better equipped to meet stakeholder and regulatory demands but also to achieve efficiency, innovation, and reputational gains that reinforce long-term advantage [53].

In Cluster 3 and Cluster 5, the RBV lens further illustrates how organizational culture, knowledge sharing, and leadership commitment act as intangible resources that drive sustainability integration. For instance, embedding sustainability principles into procurement and project management routines enables institutions to strengthen operational efficiency, foster innovation, and build reputational capital, key intangible assets that contribute to sustained strategic advantage. By leveraging these unique resources, organizations can achieve dual objectives: reducing environmental impact and enhancing organizational performance. The RBV deepens the understanding of sustainable procurement by positioning it as a capability-driven strategic asset rather than a compliance mechanism. Organizations that cultivate and integrate sustainability-oriented resources (technological, human, and relational) can convert sustainability investments into enduring sources of competitive advantage, thereby reinforcing the strategic and transformative potential of sustainable procurement.

IV.2 PRACTICAL IMPLICATION AND POLICY RELEVANCE

The findings of this study suggest several actionable implications for policy makers, public agencies, HEIs, and supply chain managers. They also highlight areas where regulatory support and organizational capabilities can foster more effective SP implementation. First, governments should reinforce institutional frameworks that mandate the inclusion of sustainability criteria within public procurement processes. Establishing clear sustainability standards, coupled with regulatory incentives, can encourage suppliers to prioritize transparency, ethical compliance, and environmental stewardship. The notion of institutional responses to digital procurement highlights how policy instruments can accelerate the adoption of e-procurement platforms that embed sustainability metrics into decision-making systems [67]. Similarly, a supportive regulatory environment, such as those promoting green supply chain management, encourages organizations to invest in sustainability initiatives that enhance both legitimacy and performance, consistent with stakeholder theory perspectives [68]. Second, organizations must cultivate internal capabilities that enable them to operationalize sustainability principles effectively. Under the RBV, capabilities such as sustainability analytics, LCA proficiency, supplier relationship management, and robust data systems represent strategic assets that provide enduring competitive advantage [69]. By investing in these internal competencies, firms can transform sustainability from a compliance burden into a driver of innovation, resilience, and stakeholder value. Third, leadership and governance mechanisms must be strengthened to mitigate cultural resistance, ensure accountability, and foster coordination among diverse stakeholders. Empirical evidence suggests that public-sector organizations adopting e-procurement systems often experience institutional inertia (a resistance to change rooted in bureaucratic culture) unless reforms are accompanied by strong leadership, change management strategies, and transparent policies [67]. Leadership commitment thus becomes a critical enabler for aligning institutional objectives with sustainable procurement performance.

Fourth, higher education institutions can play both instructional and exemplary roles in advancing sustainable procurement. As knowledge hubs, HEIs should integrate sustainability, circular economy, and responsible procurement principles into their curricula, thereby equipping future managers and policymakers with the competencies required to make sustainability-driven decisions. Institutionally, universities should also revise their procurement policies to prioritize CSR, environmental criteria, and long-term social value rather than cost minimization alone. This alignment enhances institutional reputation, strengthens stakeholder satisfaction, and increases eligibility for research funding and partnerships emphasizing environmental, social, and governance (ESG) objectives. Fifth, the adoption of digital and data-driven procurement systems—including e-procurement platforms, blockchain-based traceability, big data analytics, and automated dashboards, is essential for improving transparency, efficiency, and accountability in SP implementation. These technologies facilitate real-time monitoring of supplier performance and sustainability compliance while minimizing opportunities for corruption or data manipulation [67]. However, effective deployment requires governments and public agencies to invest in data infrastructure and ensure interoperability across systems. Inconsistent or poor-quality data remains a major barrier to informed decision-making and accurate performance measurement. Finally, SP policies should remain context-sensitive, reflecting economic, institutional, and cultural differences across nations and industries. Institutional capacity, supplier market maturity, and enforcement strength significantly affect how SP practices are designed and implemented. Aligning national SP strategies with global frameworks, such as the UN SDGs, OECD guidelines, and WTO procurement standards, can enhance policy coherence and ensure cross-border legitimacy and comparability.

V. CONCLUSION

This study provides a comprehensive synthesis of SP research through a combined SLR and bibliometric analysis, uncovering the intellectual, thematic, and methodological evolution of the field. By analyzing 138 peer-reviewed studies, the research identifies critical trends, dominant clusters, and theoretical underpinnings that have shaped SP scholarship over the past two decades. The results indicate that SP has evolved from a compliance-oriented policy concept to a strategic organizational capability that integrates environmental, social, and economic considerations into procurement decisions. Empirically, the findings reveal five major thematic clusters: (1) sustainability in public procurement, emphasizing the institutionalization of sustainability through e-procurement and policy frameworks; (2) the role of SP in CE, focusing on resource efficiency and waste minimization; (3) sustainable construction, highlighting project management integration and governance challenges; (4) the role of CSR, linking ethical sourcing and social responsibility with corporate performance; and (5) SP in higher education, which underscores universities' dual role as both practitioners and educators in advancing sustainability. These clusters collectively reflect a dynamic, cross-sectoral research landscape where sustainability is increasingly embedded in operational and strategic decision-making. From a theoretical perspective, the study demonstrates that institutional theory, stakeholder theory, and the RBV collectively provide a multidimensional understanding of SP. Institutional theory explains how coercive, normative, and mimetic pressures from regulatory bodies, policy frameworks, and social norms drive organizations toward sustainable procurement adoption.

Stakeholder theory highlights the role of diverse actors (i.e., governments, suppliers, consumers, and civil society) in shaping expectations and accountability mechanisms. Meanwhile, RBV elucidates how firms convert sustainability practices into internal capabilities and competitive advantages through innovation, knowledge sharing, and technology adoption. Together, these frameworks offer a comprehensive explanation of why and how organizations institutionalize sustainability in procurement and supply chain processes. In practical terms, the study provides actionable insights for policymakers, practitioners, and educators. Governments should strengthen institutional frameworks and digital infrastructures to facilitate transparency and interoperability in procurement systems. Organizations must cultivate sustainability-oriented capabilities, such as LCA expertise, data analytics, and stakeholder engagement, which serve as valuable and inimitable resources under the RBV framework. HEIs should integrate sustainability and circular economy principles into curricula while modeling responsible procurement practices to foster future sustainability leaders. Despite the growing maturity of SP research, significant gaps and opportunities remain. First, there is a need for deeper exploration of digital transformation and data governance in procurement, particularly regarding blockchain, artificial intelligence, and predictive analytics for supplier evaluation. Second, comparative and longitudinal studies could examine regional and sectoral variations in SP implementation, especially in developing economies where institutional capacity remains limited.

Third, future research should adopt mixed-method and multi-level analytical designs to investigate the interaction between institutional pressures and organizational capabilities over time. Fourth, scholars could expand the theoretical lens by integrating dynamic capability theory, network governance, or institutional complexity frameworks to better understand how organizations balance competing sustainability logics. Finally, evaluating the impact of SP on ESG performance metrics can provide empirical evidence linking procurement decisions to measurable sustainability outcomes.

VI. AUTHOR'S CONTRIBUTION

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