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Research Trends in E-Procurement and Goods/Services Procurement: A Bibliometric Study with Insights from Indonesia (2020–2025)

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ABSTRACT: The rapid evolution of procurement systems, particularly through digital platforms, transformed how goods and services were acquired in both public and private sectors. Driven by technological advances, regulatory reforms, and lessons learned from implementation challenges, procurement research expanded significantly in recent years. This study aimed to map research trends in e-procurement and goods/services procurement between 2020 and 2025, with specific insights from Indonesia as one of the leading contributors. A bibliometric approach was employed using VOSviewer to analyze 136 articles retrieved from the Scopus, Google Scholar, and Garuda databases. Metadata, including titles, authors, keywords, and citations, were systematically processed to identify publication networks, keyword clusters, and thematic evolution. The results revealed that Indonesia led in publication volume, followed by countries such as Kenya, the United States, and the United Kingdom. Keyword mapping highlighted dominant themes of performance, cost efficiency, and procurement practices, while emerging topics since 2023 included digital platforms, open contracting, and transparency. Author collaboration remained fragmented, with limited international networking. The analysis also indicated a gradual shift from procedural issues toward multidimensional concerns, integrating technical, managerial, and social perspectives in procurement research. This study concluded that bibliometric mapping provided valuable insights into the current state and future directions of procurement research. It recommended further comparative studies across regions, greater focus on user satisfaction and sustainability, and the strengthening of international collaboration to broaden the knowledge base.

KEYWORDS: E-Procurement; public procurement; bibliometric analysis; VOSviewer; research trends

1. Introduction

Procurement of goods and services played a critical role in ensuring the effective allocation of resources to meet organizational and societal needs. It encompassed complex processes of specification, pricing, and contractual agreements that were managed through efficient and accountable mechanisms. Over the past decade, procurement systems worldwide experienced

rapid transformation, particularly through the adoption of electronic procurement (e-procurement) platforms designed to enhance transparency, reduce inefficiencies, and improve accountability in both public and private sectors [1–4]. The evolution from e-procurement 3.0 toward e-procurement 4.0 was marked by increasing integration of digital platforms, transparency tools, and innovative technologies such as blockchain [5–7]. Studies also emphasized that the integration of electronic notification systems, the European Single Procurement Document (ESPD), and artificial intelligence–driven decision support accelerated both efficiency and accountability in procurement processes [8, 9].

In Indonesia, the shift toward digital procurement was strongly reinforced by government regulations mandating the use of e-procurement and e-purchasing systems. The issuance of Presidential Regulation No. 46 of 2025, as an amendment to Presidential Regulation No. 16 of 2018, underlined the government's commitment to streamlining public procurement from needs identification to project delivery. A significant milestone in this process was the implementation of e-purchasing, which leveraged e-marketplaces and electronic catalogs for supplier selection. Since its broader introduction in 2018, e-purchasing had been further strengthened by regulatory frameworks such as LKPP Regulation No. 12 of 2020 on strategic planning and Presidential Instruction No. 2 of 2022, which emphasized the prioritization of domestic products and MSME participation, aiming for 90% adoption by 2024 [10]. Empirical studies further demonstrated how the Indonesian e-procurement system was aligned with international practices, although challenges persisted in ensuring transparency, user satisfaction, and efficiency [11, 12].

Despite these advancements, persistent challenges remained. Ahmad et al. [13] and Laryea [14] highlighted barriers to e-procurement adoption and the risks associated with implementation, while Mohungoo et al. [15] provided evidence of systemic difficulties in adoption across developing countries. Boafo et al. [16] and Mélon and Spruk [17] further emphasized that the effectiveness of e-procurement was highly dependent on institutional quality and governance. More recent studies, such as Rizqi et al. [18], identified factors influencing e-purchasing performance in construction projects, while Nazara et al. [19] illustrated how bibliometric methods uncovered evolving research themes across multiple disciplines. Complementary works also suggested that procurement reforms should not only address efficiency and cost but also incorporate sustainability and digital transformation strategies [20–23]. Nevertheless, systematic mapping of procurement research, particularly in the domain of e-procurement, remained limited.

This research addressed the existing gap by conducting a bibliometric study aimed at identifying dominant themes, collaboration patterns, and emerging areas within procurement research. The novelty of this work lay in the application of bibliometric analysis, which had been widely adopted in other scientific domains including supply chain management, sustainable procurement, and green public procurement, but was rarely applied in procurement studies [24–27]. Using VOSviewer, the study provided visual insights into publication networks, keyword clustering, and thematic developments within the 2020–2025 period. By doing so, it contributed to a comprehensive understanding of current research trends and offered evidence-based recommendations for future studies, particularly in the context of digital transformation and public policy in Indonesia.

2. Materials and Methods

2.1. Data sources and search strategy.

This study adopted a descriptive bibliometric approach to investigate research trends in procurement and e-procurement. Data collection was conducted on August 18, 2025, and resulted in 136 eligible articles within a seven-year range (2020–2025). The search was performed using the keywords "procurement of goods and services" and "procurement," which were applied to article titles, abstracts, and keywords. Three databases were selected to ensure comprehensive coverage and representativeness: Scopus, for internationally indexed and peer-reviewed journal articles; Google Scholar, to include conference papers and grey literature not indexed in Scopus; and Garuda, for Indonesian-language and national journal publications that captured local perspectives. Each database offered unique strengths and potential biases. Scopus provided reliable citation data but favored English-language journals; Google Scholar had broader coverage but included non-peer-reviewed content; while Garuda emphasized national literature but may have underrepresented international collaboration. These biases were mitigated through manual screening and relevance validation to ensure comparability and data quality..

2.2. Screening and inclusion criteria.

An initial total of 196 articles was identified from the three databases. After removing duplicates and applying screening filters, 136 articles were retained for analysis. The detailed parameters for inclusion and exclusion are summarized in Table 1. This transparent selection process aligned with PRISMA-like screening procedures commonly employed in bibliometric reviews to ensure rigor and replicability.

Table 1. Summary of inclusion and exclusion criteria for article selection.

Parameter	Inclusion Criteria	Exclusion Criteria
Document Type	Journal articles, conference papers	Books, editorials, theses
Publication Year	2020–2025	< 2020 or > 2025
Language	English and Indonesian	Other languages
Relevance	Related to procurement, e-procurement, or digital procurement systems	Unrelated topics
Accessibility	Full metadata available	Incomplete or inaccessible records

2.3. Data cleaning and normalization.

Metadata, including titles, authors, publication years, keywords, and citation counts, were exported into CSV format. Data cleaning and normalization were conducted through several steps, including merging synonymous or variant terms such as unifying "e-procurement" and "eprocurement," correcting author name inconsistencies, and standardizing keywords using both manual checking and VOSviewer's thesaurus file. This procedure ensured data consistency and improved clustering accuracy during visualization analysis. The methodological approach applied in this stage was consistent with previous bibliometric studies in related fields [28–30].

2.4. Bibliometric and visualization analysis.

The bibliometric mapping and visualization were conducted using VOSviewer version 1.6.x, following the standard methodological framework proposed by van Eck and Waltman [31]. The analyses performed included co-authorship analysis to identify research collaboration patterns, co-occurrence analysis of keywords to reveal thematic clusters, co-citation analysis and overlay visualization to trace topic evolution over time, and density mapping to highlight high-frequency research topics. Quantitative indicators such as total link strength, citation frequency, and minimum occurrence thresholds (≥3) were used as analytical criteria for cluster formation and node inclusion.

2.5. Interpretation and limitations.

Interpretation focused on identifying dominant research themes, emerging topics, and collaboration structures in e-procurement studies. Descriptive statistics, including the annual distribution of publications, average citations per article, and leading journals or authors, were compiled prior to network analysis to provide a contextual overview. This study acknowledged inherent limitations of bibliometric methods, including (i) citation bias that favored older studies, (ii) language bias due to the inclusion of only English and Indonesian publications, and (iii) limitations of co-authorship networks that might not have fully represented the quality of collaboration. Despite these constraints, the adopted methodology provided a comprehensive and reproducible framework for mapping the evolution of procurement research..

3. Results and Discussion

The bibliometric analysis using VOSviewer generated several types of data visualizations, including publication distribution by country, author collaboration networks, author overlays, keyword overlays and density maps, as well as thematic keyword clusters. These results provided a comprehensive understanding of global and national research developments on procurement and e-procurement between 2020 and 2025.

3.1. Publication trends by country.

The first finding concerned international publication distribution. As presented in Table 2, Indonesia recorded the highest number of publications, with 50 articles during the study period. This was not surprising, since the search strategy included keywords in Bahasa Indonesia, resulting in a strong representation of national research output. Nevertheless, this dominance also reflected the increasing academic interest in procurement and e-procurement issues following the nationwide implementation of digital procurement systems. Meanwhile, Kenya and the United States each contributed 12 publications, representing two contrasting contexts: Kenya as a developing country comparable to Indonesia, and the United States as a developed country with a more mature procurement system. Other countries such as the United Kingdom (9), Finland (5), and Turkey (4) also contributed, while most others had fewer than five publications.

Table 2. Distribution of publications by country.

No.	Country	Number of Publications	No.	Country	Number of Publications
1	Indonesia	50	13	Rwanda	1
2	Argentina	1	14	Saudi Arabia	4
3	Ghana	4	15	Nepal	2
4	Kenya	12	16	Tanzania	3
5	Colombia	1	17	Switzerland	1
6	Malaysia	3	18	Ethiopia	3
7	Turkey	4	19	Finland	5
8	USA	12	20	Zambia	2
9	United Kingdom	9	21	Hungary	3
10	China	3	22	Bahrain	1
11	Pakistan	2	23	Nepal	2
12	Nigeria	3	24	Spain	3

These results indicated a persistent research gap across regions, although opportunities for international collaboration remained open through smaller nodes within the global network. These patterns were consistent with comparative bibliometric studies of procurement research at the international level [32]. To complement the country-level statistics, Table 3 provided a descriptive summary of annual publication and citation performance. The results showed a steady increase in publication and citation activity, particularly from 2022 onwards, indicating a shift toward interdisciplinary and digitally oriented procurement research. A yearly publication trend graph for 2020–2025 (Figure 1) further illustrated this consistent upward trajectory of research outputs, aligning with global movements toward open contracting, e-marketplaces, and sustainable procurement practices.

Table 3. Descriptive Statistics of Selected Articles (2020–2025)

Year	Number of Articles	Average Citations/Article	Top Journal	Top Author(s)
2020	14	5.1	*Journal of Public Procurement*	Boafo, K.
2021	18	5.9	*Construction Management and Economics*	Laryea, S.
2022	23	6.3	*International Journal of Procurement Management*	Ahmad, S.
2023	29	7.2	*Sustainability*	Rejeb, A.
2024	36	8.1	*Journal of Business Research*	Nazara, S.
2025	16	4.6	*Decision Support Systems*	Siciliani, P.

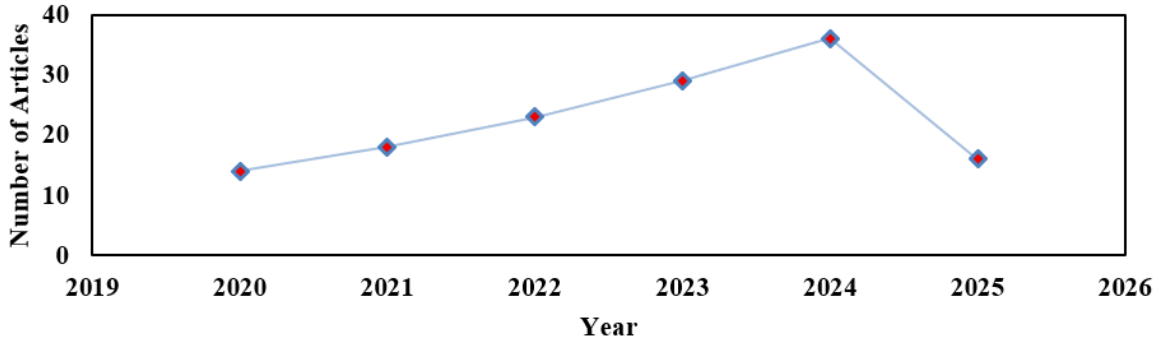

Figure 1. Publication trend graph (2020–2025).

3.2.Author collaboration networks.

The second major finding related to author collaboration networks. Figure 2 showed that VOSviewer identified seven major clusters of authors, with the red cluster representing the largest and strongest connections. However, the visualization also highlighted the limited number of links between clusters, indicating that collaboration remained localized and often restricted to authors within the same country or institution. This observation supported the

findings of Nazara et al. [19] and Rejeb et al. [37], who noted that procurement research globally remained fragmented, with relatively weak international collaboration networks. These patterns suggested that stronger cross-country and interdisciplinary collaborations were essential to advance procurement research toward a more global and integrated knowledge base.

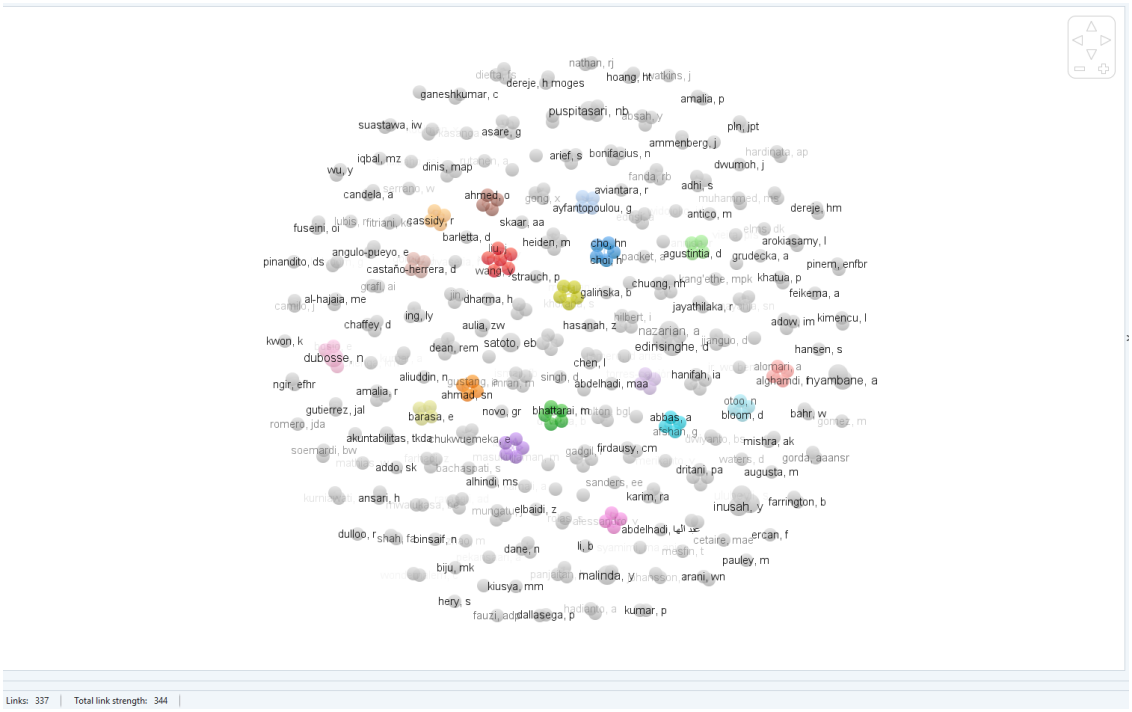

Figure 2. Visualization of author collaboration network.

The temporal overlay (Figure 3) further supports this pattern. Earlier research (2020–2021) is represented by blue–green nodes, while more recent studies (2023–2025) appear in yellow–orange tones. This demonstrates a temporal evolution toward research on digital platforms, open contracting, and transparency—indicating a paradigm shift from procedural and efficiency-based issues toward digital governance and accountability in procurement.

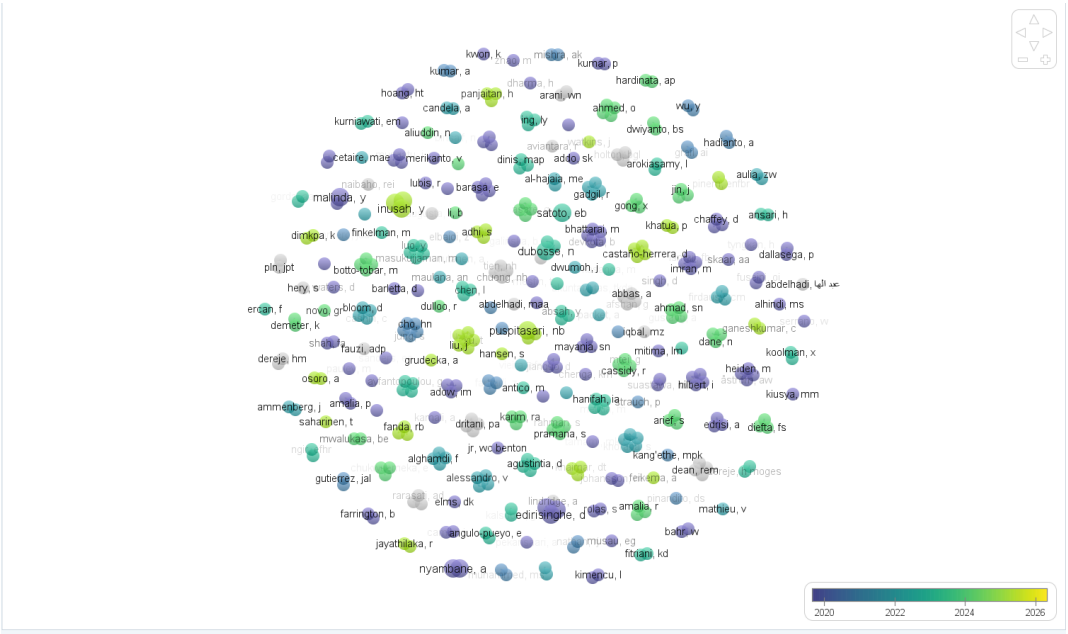

Figure 3. Overlay visualization of author publications.

3.3. Keyword analysis and cluster mapping.

A similar trend was observed in the analysis of keywords. Figure 4 presented the keyword overlay visualization, where early-stage studies emphasized traditional terms such as procurement, purchase, and performance. By contrast, newer terms such as open contracting, digital platforms, and transparency became more prominent after 2023. Figure 5 depicted the keyword density map, highlighting frequently occurring terms such as purchase, performance, impact, and cost. Terms related to consumer behavior and intention remained less common, signaling a potential research gap in user satisfaction and behavioral dimensions [34–37]. The keyword co-occurrence network (Figure 6) revealed four dominant clusters. The green cluster, including terms such as performance, e-procurement practices, and organizational performance, represented studies linking procurement mechanisms to organizational efficiency [38]. The red cluster, including purchase, direct procurement, and raw materials, emphasized operational and cost-efficiency challenges, particularly in construction projects. The blue cluster, including government procurement, contracts, and open contracting, underlined the growing attention to transparency and accountability in public infrastructure projects. The yellow cluster, including impact, quality, perception, and customer satisfaction, reflected emerging attention on user-centered and behavioral outcomes [39–43]. In addition, smaller clusters (purple and turquoise) highlighted consumer behavior and procurement platforms, integrating digital and psychological perspectives. The recurring appearance of "green procurement" keywords within these clusters aligned with the growing emphasis on sustainability in recent bibliometric studies [44, 45].

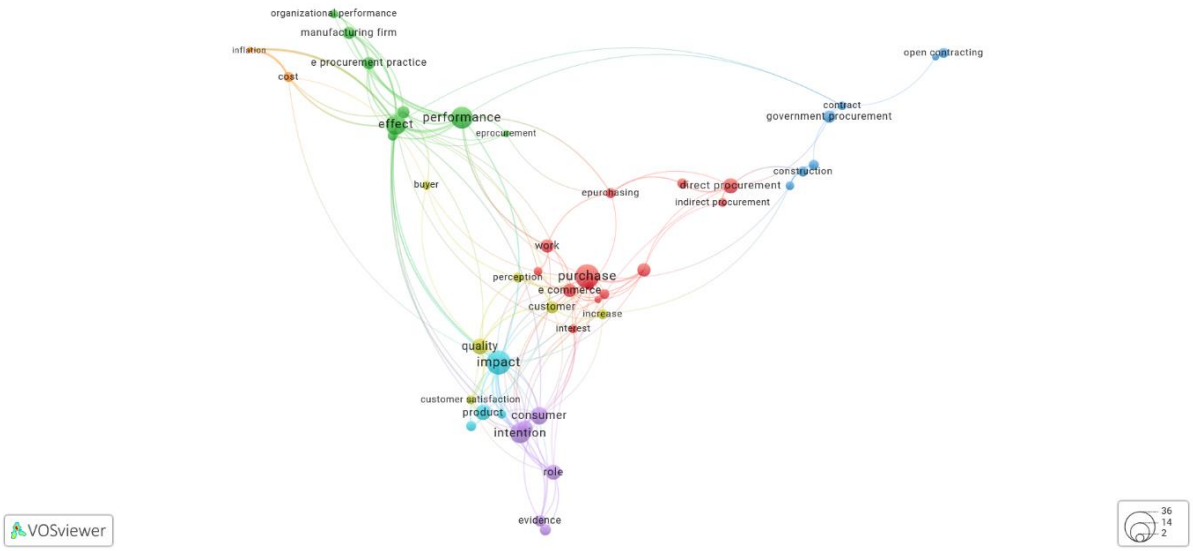

Figure 4. Overlay of keywords.

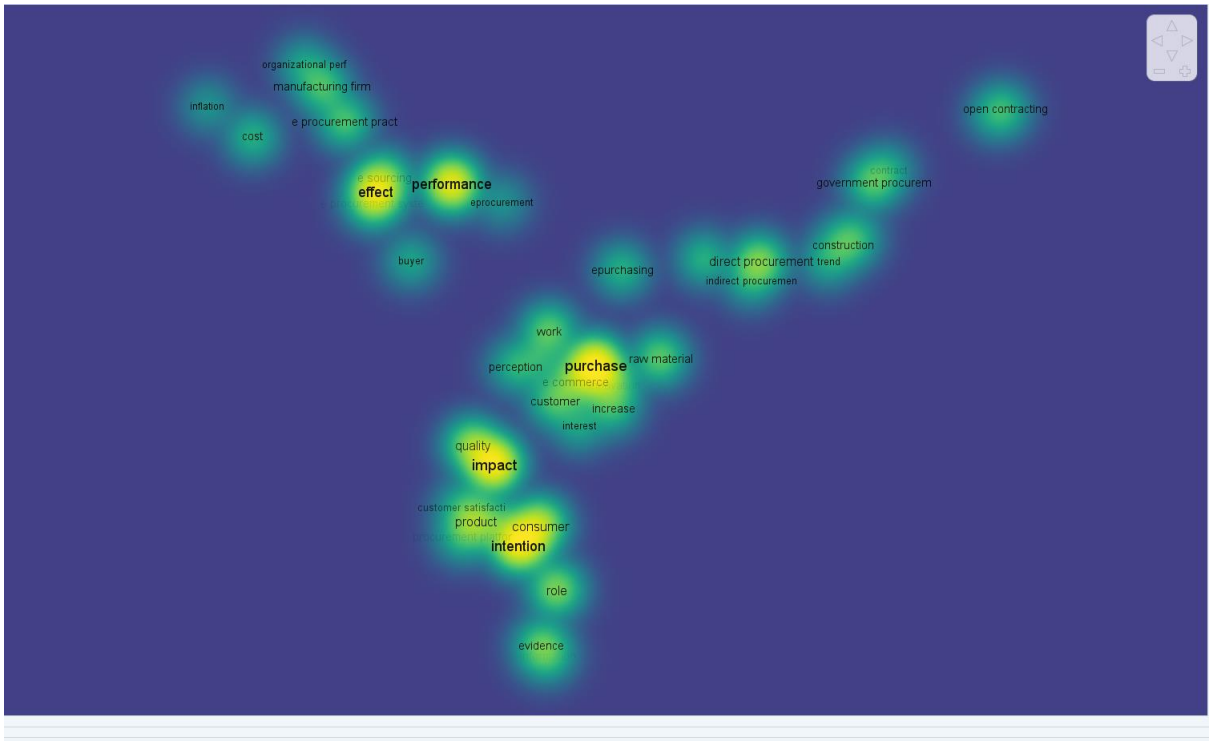

Figure 5. Density Map of Keywords

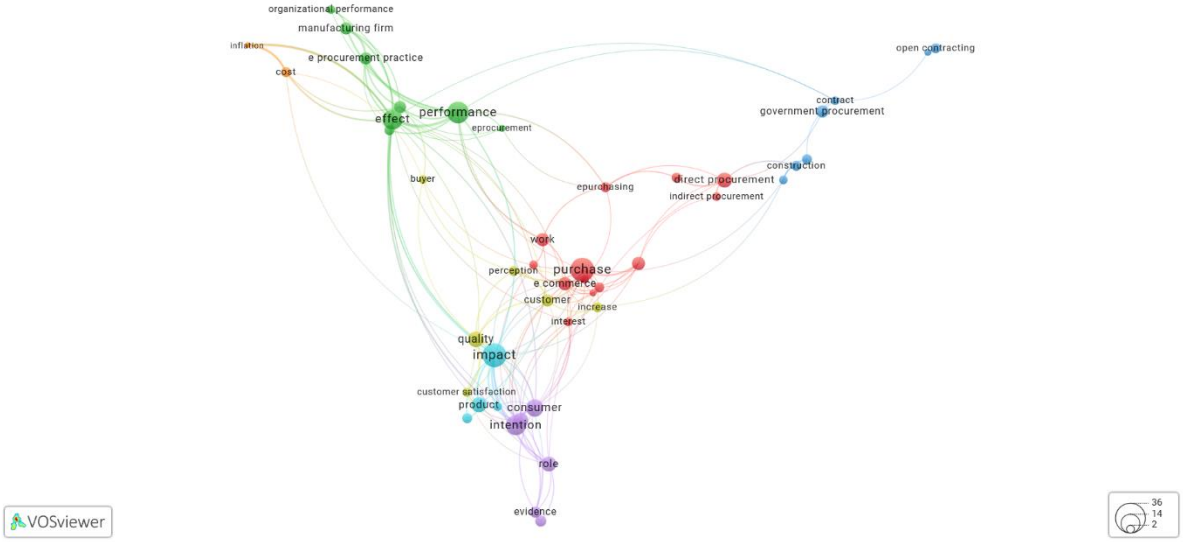

Figure 6. Visualization of Keyword Clusters

Temporal evolution of clusters: Over time, the green cluster (efficiency–performance) dominated early research (2020–2021). Between 2022 and 2023, the red and blue clusters became central, reflecting the expansion of interest in digital transformation and governance reform. By 2024 and 2025, the yellow cluster gained prominence, indicating a transition toward user perception, satisfaction, and sustainability, which marked a more human-centered and multidisciplinary direction in procurement studies..

3.4. Emerging themes, research gaps, and limitations.

These findings demonstrated that procurement research had become increasingly multidisciplinary, integrating technical, managerial, and social dimensions. In civil engineering and infrastructure contexts, this trend was particularly relevant. E-procurement supported

digital transformation in construction project delivery, direct procurement continued to face timing, contractual, and material availability challenges, government procurement remained crucial for infrastructure transparency and accountability, and user-centered issues such as perception, satisfaction, and sustainability emerged as new research frontiers [46, 47]. Beyond descriptive mapping, several future research opportunities were identified. These included evaluating the implementation of e-procurement in construction projects, analyzing direct procurement performance in relation to cost, quality, and project duration, investigating the impact of digitalization on cost efficiency and inflation stability, conducting comparative studies between public and private procurement systems, and exploring non-technical factors such as user satisfaction, behavioral responses, and sustainability [48].

Finally, it was important to acknowledge methodological limitations. Bibliometric mapping relied on citation frequency and co-authorship, which might not have fully reflected research quality or collaboration intensity. Citation bias could also have favored older publications. Despite these constraints, bibliometric analysis remained a powerful and transparent tool for mapping knowledge structures and identifying emerging research directions in procurement and e-procurement.

4. Conclusions

This bibliometric study successfully mapped research trends in the procurement of goods and services from 2020 to 2025 using VOSviewer. The findings showed that Indonesia dominated in publication output, reflecting both the language bias in keyword selection and the strong national interest in procurement research, particularly following the adoption of e-procurement and e-purchasing systems. Despite this dominance, author collaboration networks indicated that research remained fragmented and mostly localized, with limited international partnerships. The overlay analysis of authors and keywords demonstrated a clear shift in research focus from traditional procedural issues, such as efficiency and cost, toward digitalization, transparency, and open contracting. Emerging themes such as consumer perception, intention, and satisfaction also highlighted the growing relevance of non-technical and multidisciplinary perspectives in procurement studies. These trends underlined the importance of integrating technical, managerial, and social dimensions to advance both theory and practice in procurement, especially in the civil engineering and infrastructure sectors.

Based on these findings, several directions for future research were proposed. First, further evaluation of e-procurement implementation in both public and private construction projects in Indonesia was needed. Second, the performance of direct procurement should be analyzed in relation to project quality, duration, and efficiency. Third, the impact of digitalization on cost control and material price stability, including inflation management mechanisms, should be explored in greater depth. Fourth, comparative studies between public and private sector procurement could offer valuable insights into their respective strengths and weaknesses. Fifth, research on AI-based decision support systems for procurement could provide new opportunities to enhance efficiency, transparency, and evidence-based decision-making in public procurement. Sixth, greater attention should be given to user satisfaction and the role of cross-functional coordination and procurement skills in strengthening procurement performance. Finally, there was considerable potential to expand research on sustainability and consumer perception, which remained underrepresented in the current literature. Overall, this study not only provided a systematic overview of procurement research trends but also laid the

groundwork for more comprehensive and collaborative studies in the future. By bridging technical efficiency with transparency, user-centered outcomes, AI integration, and digital innovation, future research could contribute to the development of procurement systems that are not only effective but also accountable and sustainable.

Author Contribution.

Dewa Puji Santosa contributed to data collection, data cleaning, bibliometric processing using VOSviewer, and preparation of the initial manuscript draft. Nectaria Putri Pramesti contributed to conceptualization, methodology design, supervision, validation of analysis, and critical revision of the manuscript. Both authors read and approved the final version of the manuscript.

Data Availability

The datasets generated and analyzed during this study are available from the corresponding author upon reasonable request. All bibliometric data were obtained from publicly accessible databases (Scopus, Google Scholar, and Garuda).

Competing Interest

All authors should disclose any financial, personal, or professional relationships that might influence or appear to influence their research.

References

[1] Mavidis, A.; Folinas, D. (2022). From Public E-Procurement 3.0 to E-Procurement 4.0; A Critical Literature Review. *Sustainability*, *14*, 11252. https://doi.org/10.3390/su141811252.

[2] Górski, J. (2023). Digital transformation of public procurement: WTO's historical and ongoing role. In The Elgar Companion to the World Trade Organization. Chaisse, J., Rodríguez-Chiffelle, C., Eds.; Edward Elgar Publishing: Northampton, USA. https://doi.org/10.4337/9781800882867.00014.

[3] Masudin, I.; Aprilia, G.D.; Nugraha, A.; Restuputri, D.P. (2021). Impact of E-Procurement Adoption on Company Performance: Evidence from Indonesian Manufacturing Industry. *Logistics*, *5*, 16. https://doi.org/10.3390/logistics5010016.

[4] Althabatah, A.; Yaqot, M.; Menezes, B.; Kerbache, L. (2023). Transformative Procurement Trends: Integrating Industry 4.0 Technologies for Enhanced Procurement Processes. *Logistics*, *7*, 63. https://doi.org/10.3390/logistics7030063.

[5] Kassen, M. (2022). Blockchain and e-government innovation: Automation of public information processes. *Information Systems*, *103*, 101862. https://doi.org/10.1016/j.is.2021.101862.

[6] Siciliani, L.; Taccardi, V.; Basile, P.; Di Ciano, M.; Lops, P. (2023). AI-based decision support system for public procurement. *Information Systems*, *119*, 102284. https://doi.org/10.1016/j.is.2023.102284.

[7] Gurgun, A.P.; Kunkcu, H.; Koc, K.; Arditi, D.; Atabay, S. (2024). Challenges in the Integration of E-Procurement Procedures into Construction Supply Chains. *Buildings*, *14*, 605. https://doi.org/10.3390/buildings14030605.

[8] Bertocchi, E. et al. (2022). Accelerating Transparency and Efficiency in the Public Procurement Sector for a Smarter Society: eNotification and ESPD Integration for Developing E-procurement. In Smart Education and e-Learning - Smart Pedagogy. Uskov, V.L., Howlett, R.J., Jain, L.C. Eds; Springer: Singapore. https://doi.org/10.1007/978-981-19-3112-3_25.

[9] Ragin-Skorecka, K.; Hadaś, Ł. (2024). Sustainable E-Procurement: Key Factors Influencing User Satisfaction and Dissatisfaction. *Sustainability*, *16*, 5649. https://doi.org/10.3390/su16135649.
[10] Peraturan LKPP No. 12 Tahun 2020 tentang Perencanaan Strategis. (accessed on 1 May 2025) Available online: https://peraturan.bpk.go.id/Details/157555/peraturan-lkpp-no-12-tahun-2020.
[11] Hadi, I.; Widnyani, I.A.P.S. (2024). Modernization and Digitalization of Public Services: Realizing a Golden Indonesia Through Harmonization of Electronic-Based Government Systems (SPBE). *Jurnal Kridatama Sains Dan Teknologi*, *6*, 639–658. https://doi.org/10.53863/kst.v6i02.1398.
[12] Yuswantoro, F.; Oktaria, N.; Mujoko, H. (2022). Peran Implementasi E-Procurement dan Inovasi Supply Chain Terhadap Kinerja Supply Chain Industri Pertahanan Pada Era Digital. *Journal of Industrial Engineering & Management Research*, *3*, 7–16.
[13] Yevu, S.K.; Yu, A.T.W.; Darko, A. (2021). Barriers to electronic procurement adoption in the construction industry: a systematic review and interrelationships. *International Journal of Construction Management*, *23*, 964–978. https://doi.org/10.1080/15623599.2021.1946900.
[14] Kwasafo, O.K.; Laryea, S.; Govender, N. (2025). Using Case Studies to Model an Ai-Based Construction Bid Automation Framework. SSRN. http://doi.org/10.2139/ssrn.5188140.
[15] Mélon, L.; Spruk, R. (2020). The impact of e-procurement on institutional quality. *Journal of Public Procurement*, *20*, 333–375. https://doi.org/10.1108/JOPP-07-2019-0050.
[16] E-Procurement as a Pillar of Good Governance: A Literature Review of Fraud Prevention Efforts in the Public Sector. (2025). *ROE: Research of Economics and Business*, *1*, 108–117. https://doi.org/10.70895/roe.v1i2.85.
[17] Putra, A.; Biantoro, A.W. (2025). Factors that Influence the selection of Reservoir Construction Providers using the E-Purchasing Method via Electronic Catalog. *ASTONJADRO*, *14*, 124–132. https://doi.org/10.32832/astonjadro.v14i1.16391.
[18] Kabra, G.; Srivastava, S.K.; Ghosh, V. (2023). Mapping the field of sustainable procurement: a bibliometric analysis. *Benchmarking: An International Journal*, *30*, 4370–4396. https://doi.org/10.1108/BIJ-06-2022-0418.
[19] Wang, L.; Song, H.; Yang, Y.; Han, M. (2025). A systematic literature review and bibliometric analysis of green procurement. *Kybernetes*, *54*, 6820–6851. https://doi.org/10.1108/K-05-2023-0848.
[20] Zaman, S.I.; Ali, M.R.; Khan, S.A. (2024). Exploring interrelationships among barriers and enablers of green procurement for a sustainable supply chain. *International Journal of Procurement Management*, *19*, 226–252. https://doi.org/10.1504/IJPM.2024.136051.
[21] Herold, S.; Heller, J.; Rozemeijer, F.; Mahr, D. (2023). Dynamic capabilities for digital procurement transformation: a systematic literature review. *International Journal of Physical Distribution & Logistics Management*, *53*, 424–447. https://doi.org/10.1108/IJPDLM-12-2021-0535.
[22] Ofori-Amanfo, J.; Owusu, G.M.Y.; Arku, F.K. (2023). Twenty-one years of the Journal of Public Procurement: a performance and content review using bibliometric analysis. *Journal of Public Procurement*, *23*, 297–320. https://doi.org/10.1108/JOPP-12-2022-0057.
[23] Khasbulloh, M.W.; Suzano, R.; Rukmana, A.Y.; Mesra, R. (2023). Peta Keterkaitan Konsep dalam Penelitian Kepemimpinan Kewirausahaan: Analisis Bibliometrik dan Co-occurrence. *Sanskara Manajemen Dan Bisnis*, *1*, 217–228. https://doi.org/10.58812/smb.v1i03.219.
[24] Aboelazm, K.S. (2022). E-procurement in the international experience: an approach to reduce corruption in administrative contracts in Egypt. *International Journal of Procurement Management*, *15*, 340–364. https://doi.org/10.1504/IJPM.2022.122570.
[25] Afolabi, A.; Ibem, E.; Aduwo, E.; Tunji-Olayeni, P. (2022). Digitizing the grey areas in the Nigerian public procurement system using e-Procurement technologies. *International Journal of Construction Management*, *22*, 2215–2224. https://doi.org/10.1080/15623599.2020.1774836.

[26] Akenroye, T.O.; Owens, J.D.; Elbaz, J.; Durowoju, O.A. (2020). Dynamic capabilities for SME participation in public procurement. *Business Process Management Journal*, *26*, 857–888. https://doi.org/10.1108/BPMJ-10-2019-0447.

[27] Balaeva, O.; Yakovlev, A.; Rodionova, Y.; Esaulov, D. (2022). Public procurement transaction costs: a country-level assessment. *Public Money and Management*, *42*, 181–190. https://doi.org/10.1080/09540962.2020.1831170.

[28] Benjamin, O. (2020). Diversity as job quality: toward the inclusion of trade unions in public procurement of social services. *Equality, Diversity and Inclusion*, *41*, 1014–1028. https://doi.org/10.1108/EDI-01-2019-0050.

[29] Bleda, M.; Chicot, J. (2020). The role of public procurement in the formation of markets for innovation. *Journal of Business Research*, *107*, 186–196. https://doi.org/10.1016/j.jbusres.2018.11.032.

[30] Burghardt, T.E.; Pashkevich, A. (2021). Green Public Procurement criteria for road marking materials from insiders' perspective. *Journal of Cleaner Production*, *298*, 126521. https://doi.org/10.1016/j.jclepro.2021.126521.

[31] Busu, M.; Busu, C. (2021). Detecting bid-rigging in public procurement. A cluster analysis approach. *Administrative Sciences*, *11*, 13. https://doi.org/10.3390/admsci11010013.

[32] Chiappinelli, O. (2020). Political corruption in the execution of public contracts. *Journal of Economic Behavior and Organization*, *179*, 116–140. https://doi.org/10.1016/j.jebo.2020.08.044.

[33] Cutcher, L.; Ormiston, J.; Gardner, C. (2020). 'Double-taxing' Indigenous business: exploring the effects of political discourse on the transfer of public procurement policy. *Public Management Review*, *22*, 1398–1422. https://doi.org/10.1080/14719037.2019.1679235.

[34] Donthu, N.; Kumar, S.; Mukherjee, D.; Pandey, N.; Lim, W.M. (2021). How to conduct a bibliometric analysis: an overview and guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070.

[35] Gallego, J.; Rivero, G.; Martínez, J. (2021). Preventing rather than punishing: an early warning model of malfeasance in public procurement. *International Journal of Forecasting*, *37*, 360–377. https://doi.org/10.1016/j.ijforecast.2020.06.006.

[36] Gauthier, B.; Goyette, J.; Kouamé, W.A.K. (2021). Why do firms pay bribes? Evidence on the demand and supply sides of corruption in developing countries. *Journal of Economic Behavior and Organization*, *190*, 463–479. https://doi.org/10.1016/j.jebo.2021.06.041.

[37] Hamilton, S.G. (2021). Public procurement – price-taker or market-shaper? *Critical Perspectives on International Business*, *18*, 574–615. https://doi.org/10.1108/cpoib-08-2020-0116.

[38] Jiménez, A.; Hanoteau, J.; Barkemeyer, R. (2022). E-procurement and firm corruption to secure public contracts: the moderating role of governance institutions and supranational support. *Journal of Business Research*, *149*, 640–650. https://doi.org/10.1016/j.jbusres.2022.05.070.

[39] Krieger, B.; Zipperer, V. (2022). Does green public procurement trigger environmental innovations? *Research Policy*, *51*, 104516. https://doi.org/10.1016/j.respol.2022.104516.

[40] Kristensen, H.S.; Mosgaard, M.A.; Remmen, A. (2021). Circular public procurement practices in Danish municipalities. *Journal of Cleaner Production*, *281*, 124962. https://doi.org/10.1016/j.jclepro.2020.124962.

[41] Lenderink, B.; Halman, J.I.M.; Boes, J.; Voordijk, H.; Dorée, A.G. (2022). Procurement and innovation risk management: how a public client managed to realize a radical green innovation in a civil engineering project. *Journal of Purchasing and Supply Management*, *28*, 100747. https://doi.org/10.1016/j.pursup.2022.100747.

[42] Ligorio, L.; Venturelli, A.; Caputo, F. (2022). Tracing the boundaries between sustainable cities and cities for sustainable development. An LDA analysis of management studies. *Technological Forecasting and Social Change*, *176*, 121447. https://doi.org/10.1016/j.techfore.2021.121447.

[43] Lindström, H.; Lundberg, S.; Marklund, P.-O. (2022). Green public procurement: an empirical analysis of the uptake of organic food policy. *Journal of Purchasing and Supply Management*, *28*, 100752. https://doi.org/10.1016/j.pursup.2022.100752.

[44] Lyandau, Y.V.; Umnova, M.G. (2021). Development of management system of public procurement participation in supplier companies. *Quality-Access to Success*, *22*, 182.

[45] Maseda, A.; Iturralde, T.; Cooper, S.; Aparicio, G. (2022). Mapping women's involvement in family firms: a review based on bibliographic coupling analysis. *International Journal of Management Reviews*, *24*, 279–305. https://doi.org/10.1111/ijmr.12278.

[46] Matela, M.; Hallikas, J. (2021). The antecedents of innovation orientation in public procurement. *International Journal of Business and Systems Research*, *15*, 727–747. https://doi.org/10.1504/IJBSR.2021.118785.

[47] Namagembe, S.; Ntayi Mpeera, J.; Kalid, A. (2021). An examination of SME involvement in public procurement under bid lot sizing. *Journal of Public Procurement*, *21*, 370–398. https://doi.org/10.1108/JOPP-04-2020-0031.

[48] Ntsondé, J.; Aggeri, F. (2021). Stimulating innovation and creating new markets – the potential of circular public procurement. *Journal of Cleaner Production*, *308*, 127303. https://doi.org/10.1016/j.jclepro.2021.127303.