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A Bibliometric Analysis of the Development of Accounting Journal Articles on Procurement Fraud, 2020–2025

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Abstract: This study aims to analyze trends and developments in procurement fraud research published in accounting journals from 2020 to 2025 using a bibliometric approach. Data were obtained through Publish or Perish from the Google Scholar database using the keywords “procurement fraud,” “fraud pengadaan,” and “pengadaan barang dan jasa,” resulting in 54 articles. The data were analyzed using VOSviewer version 1.6.18 through network, overlay, and density visualizations. The findings show that procurement fraud research has developed in terms of research focus and methodological approaches. The keywords “fraud” and “procurement” emerged as central themes, followed by “e-procurement,” “good governance,” and “fraud prevention.” These findings indicate a shift from conventional fraud detection toward systemic prevention through digital governance, transparency, and accountability. Temporally, research during 2020–2022 focused more on fraud detection, while studies from 2023–2025 increasingly addressed digital transformation and public accountability. Future research is encouraged to develop forensic digital accounting approaches, utilize big data analytics, and integrate governance and behavioral fraud theories to strengthen fraud prevention in public procurement systems.

Keywords: procurement fraud, e-procurement, good governance, bibliometric analysis, forensic accounting.

INTRODUCTION

Public procurement activities constitute an important component in supporting the implementation of national development undertaken by the government (Presidential Regulation Number 46 of 2025 on Government Procurement of Goods and Services). The scope of public procurement includes the provision of infrastructure, such as buildings, roads, and hospitals, with the aim of promoting economic growth. As an instrument related to fiscal policy, procurement plays a strategic role in the provision of public services (Azmi et al., 2015). The importance of procurement activities has made public procurement one of the areas involving a substantial proportion of state expenditure.

Indonesia allocates more than one-quarter of its total state expenditure to public procurement, with an allocation of IDR 11,175.56 trillion, or 38.41% of the 2023 State Budget

(APBN) (LKPP, 2023). This expenditure is allocated to various public services, including healthcare, education, security, and transportation (Adjei-Bamfo et al., 2019; Artantri et al., 2016). The substantial value of government expenditure allocated to procurement requires procurement activities to be managed in an accountable and transparent manner. In practice, however, procurement processes are frequently associated with inefficiencies (Adjei-Bamfo et al., 2019). In addition to inefficiency, the procurement sector is also highly vulnerable to fraud, which can result in significant losses to public finances (Auriol et al., 2016; Rustiarini et al., 2019). Therefore, strengthening oversight mechanisms throughout the procurement process is essential to address vulnerabilities within the sector.

Major procurement-related cases in Indonesia, such as the electronic identity card (e-KTP) and Hambalang projects, provide evidence of the substantial risk of fraud in procurement practices (news.detik.com, 2018). The procurement case involving the National Search and Rescue Agency (Basarnas) in 2014, which was only uncovered in 2024, also demonstrates the involvement of public officials in fictitious procurement activities, resulting in state financial losses of IDR 20.4 billion (news.detik.com, 2024). The Corruption Eradication Commission (KPK) reported 339 procurement-related fraud cases between 2004 and 2023, with a substantial increase to 69 cases in 2023 (aclc.kpk.go.id, 2024). The recurrence of procurement-related cases over the years indicates that procurement fraud is not merely a technical issue but is also associated with bureaucratic culture. Therefore, strengthening integrity and ethical values in procurement practices should be prioritized. Consistent enforcement of legal measures concerning procurement-related cases is also necessary to reduce the number of such cases.

Previous studies have employed bibliometric analysis to examine the development of research on fraud and forensic accounting. Airout et al. (2024) found that forensic accounting research has increased significantly since 2015, with major research focuses including fraud detection, audit quality, and corporate governance. These findings indicate considerable scholarly attention to fraud detection in the corporate sector; however, similar research in the public sector remains relatively limited. This condition represents an important research gap, considering that the public sector has fraud dynamics that differ from those of the private sector.

A study conducted by Moyo et al. (2025) indicates that the majority of fraud research focuses on the public sector, particularly in the context of public procurement. Nevertheless, the study also found that the literature concerning governance mechanisms and fraud prevention systems in the public sector remains fragmented. This finding indicates the need for a more comprehensive analysis of the structure of scientific knowledge in the field of government-related fraud in order to map the relationships among concepts and identify future research directions.

Within the domains of public policy and financial regulation, Filatova and Tumpach (2023) found an increase in publications between 2018 and 2022 examining the relationship between public financial policies and regulatory effectiveness in mitigating fraud. However, their study primarily focused on developed countries, while the dynamics of developing countries received relatively limited attention. Meanwhile, Branet and Hategan (2024) emphasized the importance of bibliometric research in understanding the relationship between public-sector auditing and fraud prevention through transparent and accountable government governance.

These studies demonstrate that bibliometric approaches can identify research patterns and scholarly trends in the field of fraud prevention. The study conducted by Farikhoh and Chariri (2022), which employed bibliometric analysis covering the period from 2011 to 2020, serves as a reference for replication in the present study. Their research used data from journals indexed in Scopus, comprising 759 articles. The dataset obtained from Scopus was analyzed using VOSviewer version 1.6.17. The analysis concluded that, at the international level, public-sector corruption represents a research theme that has received considerable scholarly attention.

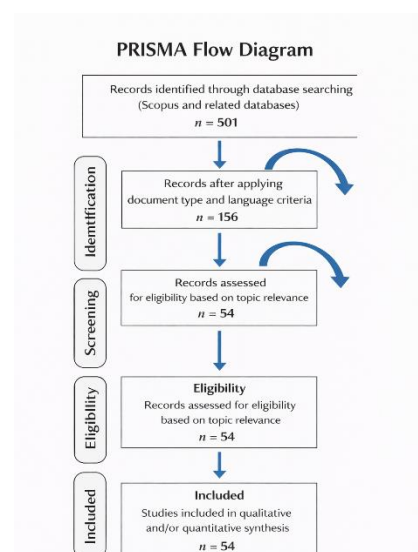
The present study differs from previous research in several respects, particularly in terms of the publication period, the use of Google Scholar as the database source, the focus on articles published in accounting journals, and the keywords employed in the search process.

Public procurement and corruption are examined in this study using the keywords “procurement fraud,” “fraud pengadaan,” and “pengadaan barang dan jasa.” The use of these keywords aims to identify and analyze the development of scholarly research related to procurement fraud. Given the limitations of previous studies and the continuing occurrence of procurement-related corruption, particularly in the implementation of public procurement, a more comprehensive understanding of research trends is necessary to deepen knowledge in the field of public-sector accounting.

This study aims to analyze the development of research on public procurement fraud over time. It is expected to systematically identify research gaps, trends, and patterns in previous studies. Furthermore, this study may serve as a reference for the development of research in public-sector accounting as well as in the broader field of accounting.

METHODS

This study employs a bibliometric analysis approach using bibliographic data collected through Publish or Perish version 8, with Google Scholar serving as the database for data retrieval. The accessibility and availability of articles relevant to the research theme and keywords were the primary considerations for selecting Google Scholar as the database. The articles retrieved from Google Scholar were published between 2020 and 2025 and identified using the keywords “procurement fraud,” “fraud pengadaan,” and “pengadaan barang dan jasa.” The study focuses specifically on the field of accounting by selecting only articles published in accounting journals.



Source: Research Data, 2026

Figure 1. PRISMA Flow Diagram

The data collection process employed a systematic approach based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. As illustrated in Figure 1, the first stage was identification, in which the search for relevant articles was limited to publications from 2020 to 2025 using the keyword “procurement fraud.” This search resulted in 501 identifiable articles. The specified publication period was intended to ensure that the analysis reflected recent developments in research on procurement fraud.

In the screening stage, a filtering process was conducted to ensure that only research articles were included in the analysis. This step was necessary to maintain the consistency, uniformity, and validity of the scientific data. Through this process, 156 articles met the established criteria. Other types of documents, such as book chapters, conference papers, and review articles, were excluded from the dataset to avoid duplication and ensure consistency in the types of publications analyzed (Filatova & Tumpach, 2023).

The study further focused on the accounting field by selecting only articles published in accounting journals. The dataset was restricted to the “Business, Management and Accounting” journal category to maintain alignment with the research objectives. All data that met these criteria were subsequently included in the bibliometric analysis. Based on the keyword search and the specified selection criteria, a total of 54 articles were obtained and subsequently saved in CSV format.

VOSviewer version 1.6.18 was used to analyze the dataset previously collected and stored in CSV format using bibliometric methods. VOSviewer was selected because it is capable of analyzing relationships between different units and representing these relationships through network visualizations. The software can transform bibliographic data into network maps and supports various bibliographic data formats. Two metrics, namely Citations and Co-Occurrence of Authors' Specific Keywords, were employed in the bibliometric network analysis.

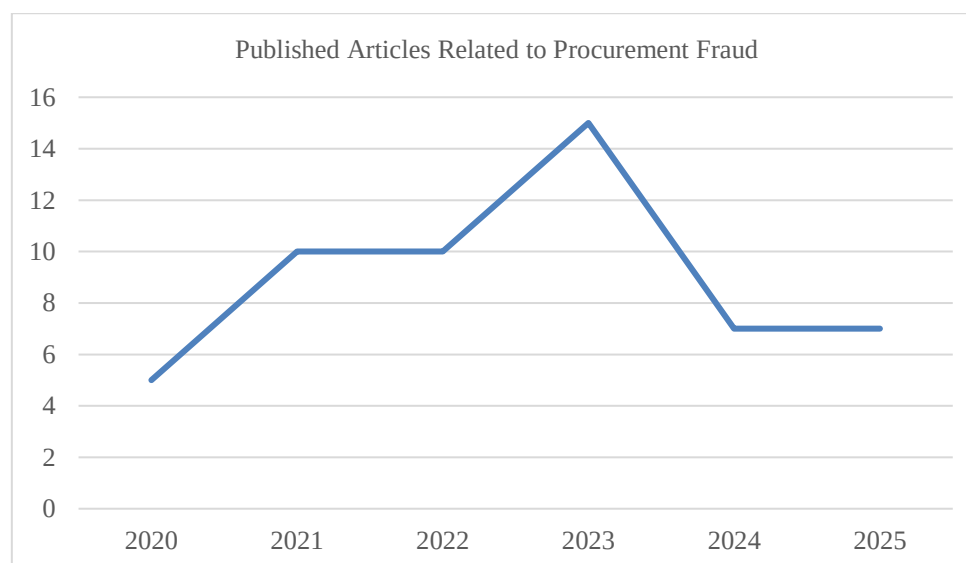
The articles included in the dataset had a minimum citation threshold of zero, allowing all documents to meet the specified threshold. The visualization parameters were set using the default values, with a variation in label and circle size of 0.50, a maximum line length of 30, a line-size variation of 0.50, a minimum link strength of 0, and a maximum number of lines of 1,000.

RESULTS AND DISCUSSION

Results

Publication Trends in Procurement Fraud Research

The development of publications on the topic of “procurement fraud” or procurement-related fraud from 2020 to 2025 is presented in Figure 2.



Source: Research Data, 2026

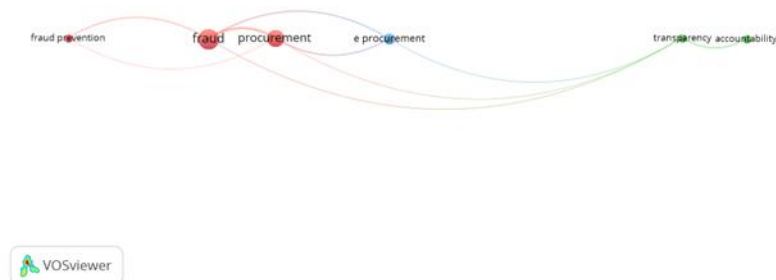
Figure 2. Development of Procurement Fraud Publications, 2020–2025

Based on Figure 2, it can be observed that over the five-year period from 2020 to 2025, the number of accounting articles focusing on procurement fraud changed from year to year. This indicates that procurement fraud remains a relevant and interesting topic for further investigation, particularly in line with the continuous development of technology supporting the procurement of goods and services in the government sector.

To obtain a more comprehensive understanding of publication trends in accounting research related to procurement fraud, bibliometric network analysis can be conducted by examining specific keywords appearing in the titles and abstracts of the 54 articles collected through Google Scholar. The results of the bibliometric network analysis are presented through three types of visualizations: network visualization, overlay visualization, and density visualization. Each visualization provides a different perspective on the publication data and can be used to identify the development of research on procurement fraud over time, as well as the terms most frequently associated with procurement fraud.

Network Visualization

The first bibliometric network analysis generated using VOSviewer is the network visualization, presented in Figure 3.



Source: Research Data, 2026

Figure 3. Network Visualization

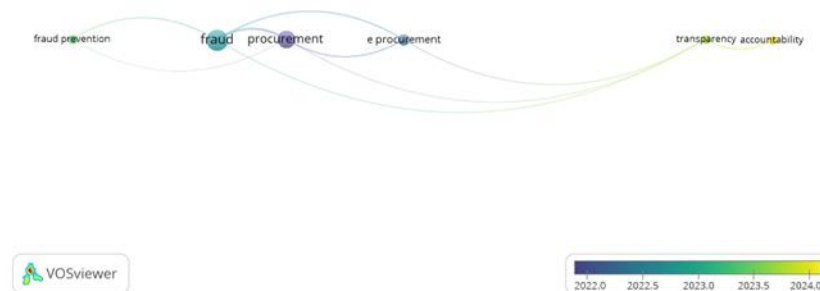
Figure 3 presents the network visualization, which illustrates the relationships or linkages among terms through a co-occurrence network. Each node represents a keyword frequently used in the research, while the lines connecting the nodes indicate how frequently the terms appear together within the same document. The larger node sizes of the terms “fraud” and “procurement” indicate the dominance of these two topics, with strong connections to the terms e-procurement and good governance. This finding suggests that procurement fraud is increasingly understood not merely as an individual-level problem but also as an issue closely associated with the quality of public services and the implementation of good governance systems.

The network presented in the network visualization also illustrates the emergence of a sub-cluster of terms, such as transparency and accountability, on the right side of the graph. The relationship between the main cluster (fraud–procurement) and this group illustrates the evolution of research toward public accountability and transparency in procurement processes as mechanisms for preventing fraud. The network also demonstrates cross-thematic connections, with e-procurement serving as a bridge between digital governance and fraud

prevention efforts. Thus, the network visualization indicates that contemporary accounting research is increasingly oriented toward the integration of technology, integrity, and effective oversight within public procurement systems.

Overlay Visualization

The second bibliometric network analysis generated using VOSviewer is the overlay visualization, presented in Figure 4.



Source: Research Data, 2026

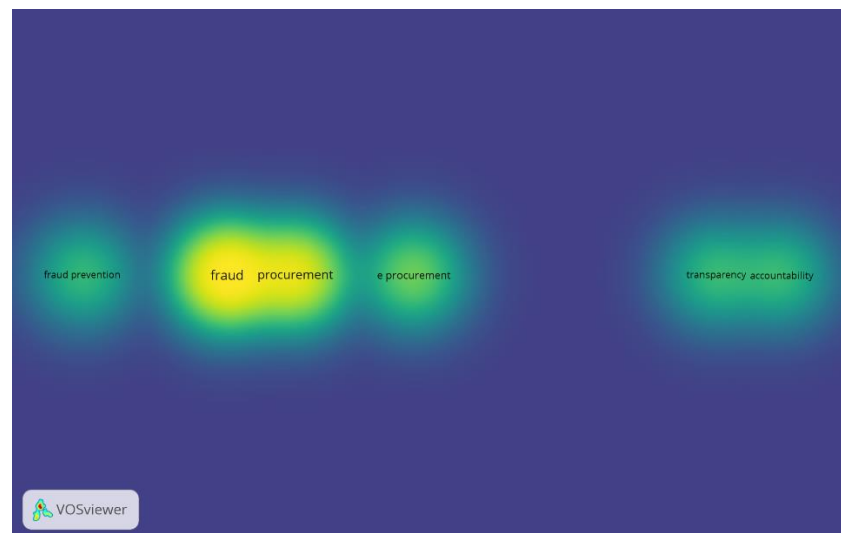
Figure 4. Overlay Visualization

Figure 4 presents the overlay visualization, which adds a temporal dimension to the network of terms. The color of each node represents the average year in which a particular term appeared in the literature. Blue represents the earlier years (2020–2021), green represents the middle period (2022–2023), and yellow represents the most recent themes (2024–2025). Based on Figure 3, the terms “fraud” and “procurement” appear in bluish colors, indicating that these are established topics that have been extensively studied since the beginning of the observation period. Other terms, such as transparency and accountability, appear in yellowish colors, indicating that recent research has increasingly focused on transparency and accountability as emerging research trends in public accounting and government-sector auditing.

The transition in colors from blue to yellow reflects a shift in research focus from traditional fraud detection toward system-based prevention and digital governance. Themes such as e-procurement and digital governance emerge as conceptual bridges between these two generations of research. Therefore, the overlay visualization not only demonstrates the relationships among terms but also illustrates the temporal evolution and direction of research development in the field of forensic accounting. Research is increasingly emphasizing a collaborative approach involving technology, accountability, and public integrity as mechanisms for minimizing the risk of fraud in the procurement of goods and services.

Density Visualization

The third bibliometric network analysis generated using VOSviewer is the density visualization, presented in Figure 5.



Source: Research Data, 2026
Figure 5. Density Visualization

Figure 5 presents the density visualization, which illustrates the density of terms frequently appearing in research on procurement fraud. The bright yellow area at the center represents the terms with the highest frequency, namely “fraud” and “procurement,” which function as the central focus of the research. The brighter the color, the higher the frequency and degree of interconnectedness of the respective terms among the analyzed articles. This indicates that accounting research during the five-year period remains focused on the core issue of fraud in the procurement of goods and services, particularly with regard to the identification of fraud schemes, underlying causes, and oversight mechanisms.

Green to light-blue areas represent terms that occur with moderate to low frequency, such as transparency, accountability, and fraud prevention. This distribution indicates that research during the 2023–2025 period has increasingly moved toward emerging themes emphasizing fraud prevention based on public accountability and transparency. Thus, the density map illustrates a shift in research from conventional studies focusing on fraud detection toward a systemic approach based on good governance, procurement digitalization, and the strengthening of ethics and integrity within public organizations in Indonesia.

Discussion

Based on the aggregate bibliographic analysis processed using VOSviewer and the discussion of the resulting visualizations, accounting publications focusing on procurement fraud or procurement-related fraud demonstrate a shift toward emerging themes alongside the growing digitalization of government-managed procurement processes in Indonesia. To facilitate the identification of future research trends concerning procurement fraud and provide references for future research directions, Table 1 summarizes the visualizations, dominant terms, main trend periods, research focuses, and directions of research development related to procurement fraud from 2020 to 2025.

Table 1. Research Development Based on Bibliometric Visualization Results

Cluster / Visualization	Dominant Terms	Main Trend Period	Main Research Focus	Direction of Research Development (2020–2025)
1.Density visualization	Fraud, Procurement, Good	2020–2023	Research was dominated by themes	The focus shifted from identifying fraud cases toward

(Keyword Density)	Governance, E-procurement, Indonesia		concerning fraud in the procurement of goods and services and the implementation of good governance principles.	strengthening system-based governance and ethics within public organizations.
2.Density visualization (Moderate Supporting Terms)	Transparency, Accountability, Fraud Prevention	2023–2025	Emerging themes emphasized transparency and accountability as mechanisms for preventing fraud.	Research began to examine the integration of internal auditing, public data transparency, and technology-based evaluation of oversight effectiveness.
3.Network visualization (Term Network)	Fraud, Procurement, Good, Service, E-procurement	2020–2024	Strong relationships were identified between fraud, procurement, and good governance, with research developing toward improvements in public service efficiency.	Research increasingly examines the relationship between governance quality, public services, and fraud risk in the government sector.
4.Network visualization (Emerging Sub-themes)	Transparency, Accountability, Study	2023–2025	Emerging sub-themes explain the relationship between public transparency and fraud prevention through e-procurement.	Research is moving toward greater integration between forensic accounting approaches and digital governance.
5.Overlay visualization (Temporal Map)	Fraud, Procurement (blue)	2020–2022	These represent classical and fundamental themes in public-sector accounting research.	These themes provide a conceptual foundation for subsequent research on e-procurement and governance.

Source: Research Data, 2026

Based on the clusters and visualizations presented, the development of research on procurement fraud during the 2020–2025 period demonstrates a progressive and interconnected evolution of research themes. During the 2020–2022 period, the terms fraud and procurement emerged as the dominant core themes. Research during this period primarily focused on identifying patterns, schemes, and factors contributing to fraud in public-sector procurement. Good governance served as the primary normative framework for explaining weaknesses in internal controls and the high risk of irregularities.

As e-procurement systems developed, research during the 2020–2023 period increasingly positioned electronic systems not merely as administrative tools for the procurement of goods and services but also as components of public-sector control strategies. Although e-procurement has become part of control strategies, early findings indicate that the digitalization of procurement processes does not automatically eliminate fraudulent practices when it is not accompanied by stronger organizational ethics, internal controls, and accountability among system operators. This can be observed from the strong relationships among the terms fraud, procurement, and good governance in the network visualization. The relationships among these terms emphasize that governance quality is a key factor in reducing fraud risk.

Entering the 2023–2025 period, the density visualization demonstrates the increasing prominence of transparency, accountability, and fraud prevention as major supporting themes related to procurement fraud. During this period, the research focus shifted from merely mapping the problem toward evaluating the effectiveness of prevention mechanisms. Transparency and accountability were increasingly understood substantively in terms of procurement data disclosure, traceability of procurement decisions, and the role of technology-based internal auditing in addressing information asymmetry and opportunities for collusion.

The emergence of new sub-themes in the 2023–2025 network visualization indicates an integration between forensic accounting approaches and digital governance. Research on the procurement of goods and services is no longer limited to procedural compliance but has increasingly examined how e-procurement systems, data-based oversight, and forensic auditing can contribute to improving public service quality while reducing the risk of fraud. Based on the observed shifts in research themes, the development of research in this field is increasingly moving toward a more systemic, preventive, and technology-based approach to public-sector procurement governance.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The results of the bibliometric analysis of research on procurement fraud published in accounting journals during the 2020–2025 period indicate significant developments in terms of research focus, context, and methodology. The keywords “fraud” and “procurement” emerged as the central terms in the network, indicating substantial scholarly attention to procurement fraud issues within the fields of forensic accounting and public governance. The density visualization demonstrates the evolution of research toward concepts such as good governance, e-procurement, and fraud prevention, highlighting a shift in research focus toward systemic prevention and procurement digitalization.

From a temporal perspective, the overlay visualization illustrates a shift in research paradigms from fraud detection-oriented studies during 2020–2022 toward transparency, accountability, and digital transformation during 2023–2025. Terms such as accountability and transparency reflect an emerging research orientation that positions information technology as an important mechanism for fraud prevention, particularly in Indonesia's public sector, which has been implementing e-government initiatives and bureaucratic reforms.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the bibliographic data used in this study were obtained exclusively from Google Scholar through the Publish or Perish 8 application. The use of a single database may limit the coverage and representativeness of the articles included in the analysis, as relevant publications indexed in other academic databases may not be captured. Consequently, the findings may not fully represent the overall development of research on procurement fraud in the accounting

literature. Future studies are therefore encouraged to use multiple bibliographic databases, such as Scopus, Web of Science, and other relevant academic databases, to obtain a broader and more comprehensive dataset and to enable comparisons across databases.

Recommendations

Future research may be directed toward several areas: (1) evaluating the effectiveness of e-procurement systems through forensic digital accounting and data analytics approaches, including machine learning techniques for anomaly detection; (2) integrating governance theories with behavioral fraud theories, such as Fraud Diamond Theory and Technology Threat Avoidance Theory (TTAT); and (3) conducting cross-sectoral and cross-country comparative studies to examine variations in the effectiveness of anti-fraud governance mechanisms. In addition, future research should strengthen policy evaluation and auditing based on digital governance to ensure that research findings are not merely descriptive but can also provide practical recommendations for improving the integrity and transparency of public procurement systems.

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