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The development of fraud prevention policies in the public sector:
A bibliometric analysis

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ARTICLE INFO	ABSTRACT
	Fraud in the public sector has become a global issue that impacts national finances, institutional integrity, and public trust. This study aims to analyze fraud prevention strategies in the public sector through a bibliometric approach based on 61 Scopus-indexed articles published between 2015 and 2024. The methodology employed is bibliometric analysis with the help of VOSviewer software to identify research trends, influential authors, and key topics related to fraud prevention. The findings suggest that new technologies such as artificial intelligence (AI), blockchain, and data analytics play a crucial role in enhancing transparency and detecting fraud more effectively. Furthermore, an ethical organizational culture, strong leadership commitment, and robust internal control systems are important factors in mitigating fraud risks. This study concludes that an approach combining cutting-edge technology and strong governance is necessary for sustainable fraud prevention in the public sector.

Introduction

Fraud in the public sector continues to evolve into an increasingly complex and global issue. Not only does it result in financial losses for the state, but it also tarnishes the image of government institutions and undermines public trust in the government. The impact of such fraud can cause significant financial losses, operational disruptions, and even bankruptcy of public institutions, which in turn threatens the social and economic stability of the country (Alfian et al., 2023). According to the Report to The Nations (RTTN) published by the Association of Certified Fraud Examiners (ACFE) in 2024, more than 1,900 fraud cases were investigated across 138 countries, with total losses exceeding USD 3.1 billion. In the public sector, 296 fraud cases were reported in 2024, with an average loss of approximately USD 2,306,000 per case, distributed across various levels of government, from national to local (ACFE, 2024).

This situation illustrates the severity of the challenges faced by the public sector in addressing fraud. The vast scale of public fund management and the complex structure of government organizations exacerbate this issue, where the potential for fraud exists at every level of management and oversight. Referring to data from the World Bank (2021), More than USD 1 trillion is paid annually through bribes, and approximately USD 2.6 trillion is stolen through corrupt practices. This figure represents about 5% of the global annual Gross Domestic Product (GDP), a number that reflects the significant impact of fraud and corruption on the global economy. In developing countries, funds lost due to corruption are even estimated to be ten times the total Official Development Assistance provided, clearly indicating enormous financial and social losses (Zahari et al., 2022).

Fraud in the public sector often occurs due to conflicts of interest among various stakeholders, such as the public, regulatory institutions, and other relevant parties, which create conflicts of interest and reduce the effectiveness of internal control systems. The research by Levi and Doig (2020) states that one of the main challenges in preventing fraud at the local level is the inability to implement effective anti-fraud strategies. This is caused by a lack of a deep understanding of existing policies and weak collaboration between institutions. The policies designed are often fragmented, uncoordinated, and poorly sustained over time because no single institution has full control over the implementation of the strategies (Oommen & Buys, 2015).

In response to this challenge, digital technology emerges as both an opportunity and a new challenge. Increasingly sophisticated technology-based fraud forces the public sector to adapt to new ways of detecting and preventing fraud. Traditional control systems are often inadequate for identifying the increasingly complex fraud schemes. Technologies such as artificial intelligence (AI), blockchain, and data analytics offer great potential to enhance fraud detection systems and improve prevention efforts in the public sector (Haddad et al., 2024; Sood

et al., 2023). These technologies enable the analysis of large amounts of data more quickly and accurately, allowing for the identification of patterns that were previously difficult to detect.

However, the implementation of these technologies requires a solid infrastructure and well-developed human resource capacity to function optimally. The application of AI and blockchain, for instance, is not just about the technology itself, but also how existing policies support their implementation within the framework of good, transparent, and accountable governance. The technology deployed must align with the ethical values upheld by government institutions and be integrated with an organizational culture that proactively supports fraud prevention. The research by Levi and Doig (2020) highlights the importance of strategic ownership in implementing technology for fraud prevention and the importance of synergy between central and local governments to create an effective and sustainable system (Rashid et al., 2022).

The importance of owning anti-fraud strategies is also a key concern in this research. Strategic ownership refers to the strong commitment from responsible parties and the authority to ensure that policies are applied consistently and refined dynamically according to the field. However, as shown by Levi and Doig (2020), many anti-fraud policies fail to be effectively implemented because no institution truly takes full responsibility for their enforcement. Clear strategic ownership is essential to ensure that policies are not merely on paper but are also well implemented at the local level, where much of the fraud occurs.

Given the complexity of this issue, this research aims to address the gap in the literature, which has focused more on fraud detection rather than prevention. Fraud is often detected only after material losses occur, while a more effective approach would be prevention that can identify and reduce fraud risks before they happen. Therefore, this research proposes a preventive approach based on technology and policies that can minimize the potential for fraud at an early stage by strengthening existing internal control frameworks and integrating advanced technologies to enhance detection systems (Sood et al., 2023).

Technologies like AI, blockchain, and data analytics offer great potential for building more effective prevention systems that are responsive to the evolving fraud schemes. However, achieving this requires more than just the adoption of technology. It also requires strong management systems, an ethical organizational culture, and well-developed human resource capacity to ensure these technologies can function effectively and deliver optimal results. Therefore, this research also examines the importance of training and competency development to address technological challenges and integrate them with transparent and accountable governance in the public sector (Maulidi, 2023).

The primary issue addressed in this research centers on the questions: How can effective fraud prevention strategies be designed to address the complexity of modern fraud schemes in the public sector? And what role do technology, organizational culture, and governance play in shaping sustainable prevention systems? These questions serve as the foundation for exploring the potential of technology and policy-based approaches that can provide real solutions to reducing fraud in the public sector.

To achieve this, this research adopts a bibliometric analysis approach, analyzing 61 Scopus-indexed articles published between 2015 and 2024. The PRISMA method is used to identify key themes and trends in fraud prevention. The results of this study are expected to enrich the academic literature and provide practical guidance for policymakers and stakeholders in designing adaptive, relevant, and sustainable prevention strategies. This research seeks to bridge the gap between theory and practice as well as create a tangible impact on the public sector in combating the increasingly complex threat of fraud.

Research Method

This study used a bibliometric approach to analyze Scopus-indexed publications on fraud prevention in the public sector. The bibliometric approach allows the quantitative analysis of the research literature, identifying trends, patterns, and relationships among publications (Donthu et al., 2021). This analysis provides insights into temporal distributions, commonly used keywords, and collaboration patterns among researchers and institutions. Using this method, the study aims to offer a comprehensive understanding of key trends, collaborative networks, and the influence of authors and institutions on fraud prevention in the public sector. Data for this study ware collected from the Scopus database on December 29, 2024. Scopus was chosen because of its broad scope and reputation as a comprehensive citation database for academic research (Donthu et al., 2021).

For the process of searching articles on fraud prevention in the public sector, the PRISMA 2020 for Coverage Review (PRISMA-SCR) approach was used (Figure 1). The study includes articles that meet the following criteria: (1) originating from the fields of Business, Management, Accounting, Economics, Econometrics and Finance; (2) written in English; (3) published between 2015 and 2024; (4) available in full-text format; and (5) focused on fraud prevention in the public sector.

The selection of the 2015–2024 period is grounded in several key considerations. This period captures the latest developments in the application of digital technologies and new policies that have introduced major innovations in fraud prevention in the public sector. During this time, technologies such as artificial intelligence

(AI), blockchain, and data analytics have been widely applied for real-time fraud detection, offering new, more efficient, and effective approaches. In addition, this period reflects shifts in policies and practices in many countries regarding the management of public finances and government accountability, with a greater emphasis on fraud prevention and transparency in the public sector. Therefore, the 2015-2024 period was selected to reflect the latest developments in research and policy relevant to this field.

The exclusion criteria include articles lacking full text or abstracts, as well as documents such as instructions, book chapters, and conference materials. The main database used in this study is Scopus. The research topic of fraud prevention in the public sector was analyzed using the keyword "fraud prevention" in the Title-Abs_Key category on December 29, 2024. From the search, 163 relevant documents were found, and after the screening process, 61 of the most relevant documents, which made fraud prevention a key topic, were selected. The research trend can be seen in Figure 2. The researchers independently examined the abstract and article title to assess their suitability, retrieving the full text if the abstract or title was deemed potentially relevant. This process ensures that only articles that do not meet the inclusion criteria are excluded, while all eligible articles are analyzed in full text. Furthermore, a thorough review of all articles was conducted to ensure their content aligns with the research question.
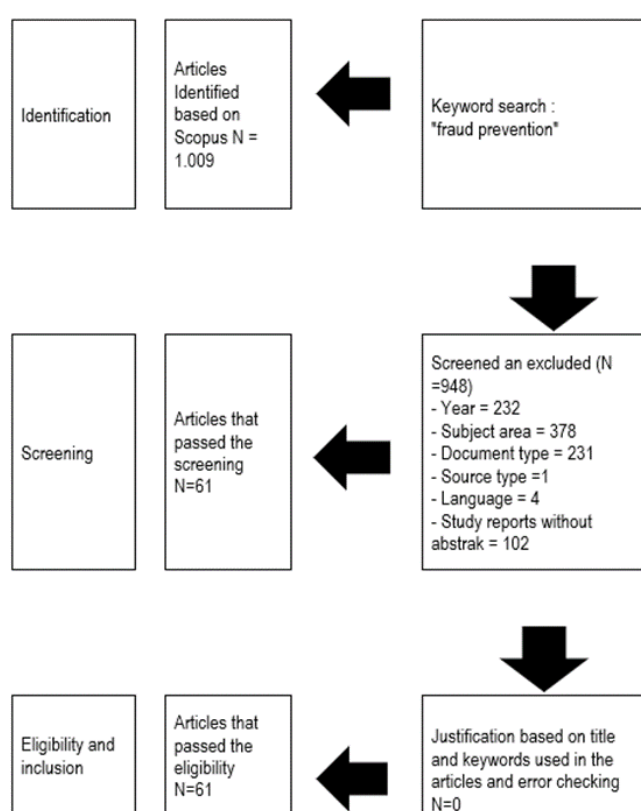

Figure 1. PRISMA Analysis
Source: Data processed in 2024

Stages of Data Analysis

The collected data were analyzed using various bibliometric techniques:
1. Descriptive Analysis
   The descriptive analysis in this study aims to provide an overview of the fundamental characteristics of the collected data, focusing on key elements such as the number of publications per year, the journals in which these publications appeared, and the identification of the most productive authors in the field of fraud prevention in the public sector. Initially, article searches were conducted through the Scopus database, with the search results filtered based on predefined criteria. Once the search was completed, the "Analyze Results" feature within Scopus was used to explore various descriptive metrics. This feature allows us to extract and examine data on publication trends by year, leading journals, and the most prolific authors in fraud prevention.
   This analysis is crusial as it not only helps us understand the growth and trends of fraud prevention research over time but also highlights the leading journals that drive discussions on this topic.
2. Citation Analysis
   The citation analysis in this study aims to understand the impact and influence of publications related to fraud prevention in the public sector, with the primary focus on keywords and main themes emerging in the literature,

rather than on individual authors or publications. While citation analysis is typically used to identify the most cited and influential authors or articles, this study focuses on the results of keyword analysis obtained through VOSviewer software.

Citation data were collected from the Scopus database, where relevant articles were filtered based on predetermined criteria (articles published between 2015 and 2024 and focused on fraud prevention in the public sector). Once the search results were obtained, analysis was conducted using VOSviewer to explore the relationships between keywords and the topics emerged. This software allowed the author to identify keywords that frequently appeared in publications related to fraud prevention, providing a clear picture of the evolving topics in this field.

Although citation analysis usually aims to assess the impact of articles based on the number of citations they receive, this study emphasizes the emergence of relevant keywords. These keywords reflect the trends and approaches currently being explored in fraud prevention in the public sector. By analyzing the most frequently appearing keywords, the research identifies the core concepts that researchers in this field are focusing on, such as using new technologies (artificial intelligence, blockchain), strengthening internal control systems, and fostering an ethical organizational culture.

It is important to note that while citations provide insight into academic influence, this analysis primarily emphasizes the emerging topics and keywords revealed by the VOSviewer analysis, which reflects the changing and developing approaches to fraud prevention. Therefore, the main focus of this research is on mapping the key themes in the literature, rather than identifying authors or individual publications that dominate the field.

3. Co-Occurrence Analysis
Co-occurrence analysis is used to explore the relationships between keywords that frequently appear together in the literature and to identify the main themes in fraud prevention research in the public sector. This approach allows researchers to understand the interconnections between related concepts and to observe how these concepts evolve over time in the existing research. The dependent variables in this study were ROA, ROE, and Earning Per Share. ROA is the company's ability to generate profit (return) on the total assets used in the company. ROE is the ability of a company to generate net income or net income with its own capital. Earning Per Share (EPS) is a profit rate that shows the net income obtained by investors or shareholders from each share.

In this research, the analysis was conducted using VOSviewer, a software tool designed to help researchers map the relationships between keywords that often appear together in selected articles. With VOSviewer, researchers can generate visual maps of keyword co-occurrence, illustrating how often specific terms are mentioned together in the same articles. These maps help identify keyword clusters that are closely related, which in turn reflect the primary themes or areas of research in fraud prevention in the public sector.

The analysis began by calculating the frequency with which keywords appear in the same context. Keywords that frequently appeared together were grouped into a cluster, representing the topics or approaches most commonly discussed in the literature. For example, if keywords such as artificial intelligence (AI), blockchain, and data analytics frequently appear together in the same articles, it indicates that these technologies are key focal points in fraud prevention research.

Moreover, co-occurrence analysis enables researchers to observe emerging trends and how new themes are developing. For example, the clustering of keywords can show whether new technologies like AI or blockchain are increasingly being discussed, or whether long-established themes such as strengthening internal controls and corporate governance remain central to fraud prevention efforts.

The results of this analysis provide deeper insight into the evolving direction of fraud prevention research. By mapping the relationships between keywords, researchers can not only identify the main themes in the literature but also recognize patterns that illustrate shifting focuses in the field. Furthermore, this analysis opens opportunities for researchers to explore areas that have not been thoroughly examined, offering guidance for future studies to delve deeper into relevant topics.

Overall, co-occurrence Analysis is a powerful tool for depicting the dynamics of fraud prevention research, helping researchers to see how key topics are interconnected and to identify themes that continue to evolve over time. Through this approach, this research provides valuable insights into technological innovations and emerging approaches that are shaping the way fraud prevention is tackled in the public sector.

The VOSviewer software application was used to visualize and analyze bibliometric data. VOSviewer is a widely used tool in bibliometric research to create visual maps, providing a representation of structure and relationships in the research literature (van Eck & Waltman, 2010). This software is used to map the relationship between keywords (co-occurrence), collaboration between authors (co-authorship), and citation network analysis.

Results and Discussion

This study highlights significant findings on the trends in fraud prevention research in the public sector based on Scopus-indexed publications. Based on bibliometric analysis, the publication of fraud prevention documents in the

public sector shows a significant upward trend in the number of scientific publications between 2015 and 2024, with a sharp increase in 2024. Despite the annual fluctuations, the overall trend indicates growing academic interest in line with the increasing complexity and evolution of fraud schemes. The increase in the number of publications can be attributed to several key factors, including technological advancements, increased awareness in the public sector of the importance of fraud prevention, and increased academic interest in the topic.

First, the rapid development of digital technologies, particularly in the application of artificial intelligence (AI), blockchain, and data analytics, has prompted researchers to explore how these technologies can help detect and prevent fraud in the public sector. This technology offers a more efficient approach to real-time fraud detection, which has improved the quality of research published during this period. Second, increasing government and public agency awareness of the challenges posed by fraud in the management of public finances has accelerated research in this area. As more and more public services are digitized, fraud prevention issues are increasingly becoming a top priority.

The sharp increase in 2024, as shown in Figure 2, reflects a remarkable surge in interest in this topic. One reason for this surge is the growing integration of technology into public policies within government systems, as well as the increasing challenges of fraud related to digitalization. Research focusing on the implementation of technology-based solutions provides new and relevant insights for developing more effective fraud prevention strategies in the public sector.
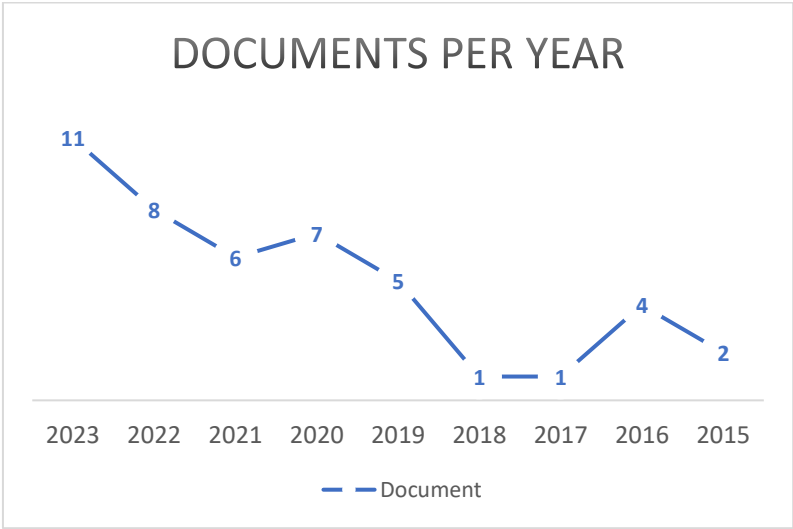

Figure 2. Document per year
Source: Data processed in 2024

In addition to the overall increase in publication volume, the distribution by journal reveals that most research is concentrated in a few leading journals that consistently address fraud prevention in the public sector. This dominance reflects the strategic role of these journals in shaping academic discourse. At the same time, the emergence of newer journals indicates a broadening of interest and the integration of interdisciplinary approaches. When examined by year, the contributions of each journal display varying publication patterns, with peak activity occurring in 2023 and 2024—signaling a heightened urgency and growing scholarly attention to this issue across academic platforms.

Table 1 highlights the Journal of Financial Crime as the most dominant publication outlet on fraud prevention in the public sector during the 2015–2024 period, with a total of 19 articles. Its consistent publication output across the years—particularly the significant peaks in 2018 and 2024—reinforces its position as a primary reference for scholarly discourse on financial misconduct and public sector governance. This dominance reflects the journal's strong focus on issues of integrity, accountability, and financial control that are central to government and policy contexts.

In addition, journals such as the Journal of Payments Strategy and Systems, Problems and Perspectives in Management, and the International Journal of Scientific and Technology Research also made noteworthy contributions, each publishing between 4 and 5 articles. While their total outputs are considerably lower than that of the Journal of Financial Crime, these journals began showing increased activity during the 2020–2024 period. This trend corresponds with the growing scholarly interest in topics such as digital transformation, governance reform, and emerging fraud risks in the post-pandemic public sector. It also suggests that fraud prevention is increasingly being examined through managerial and technological lenses—not solely from legal or financial perspectives.

Table 1. Distribution of Publications by Journal and Year (2015–2024)

Scopus Journal	Year										Number of Articles
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Journal of Financial Crime	2	2	1	4	1	3	1	0	1	4	19
Journal of Payments Strategy and Systems	0	0	0	0	1	1	0	0	0	3	5
Problems and Perspectives in Management	0	0	0	0	0	0	0	1	1	2	4
International Journal of Scientific and Technology Research	0	0	0	0	2	2	0	0	0	0	4
International Journal of Economics and Financial Issues	0	4	0	0	0	0	0	0	0	0	4

Figure 3 shows that scientific publications on the prevention of public sector fraud revealed an uneven geographical distribution. Indonesia leads with 49 publications, followed by Malaysia (24) and the United States (21), indicating the concentration of research in several countries. The UK, China, and India also contribute significantly, while most other countries have a much lower number of publications. This inequality can be influenced by a variety of factors, including corruption levels, access to research resources, and government policies. To address this gap, international collaboration and knowledge transfer are essential. Comparative research between countries can uncover best practices and key factors for the success of fraud prevention strategies. Therefore, further research needs to be focused on strengthening research capacity in countries with a limited number of publications, in order to develop more effective and comprehensive fraud prevention strategies around the world.
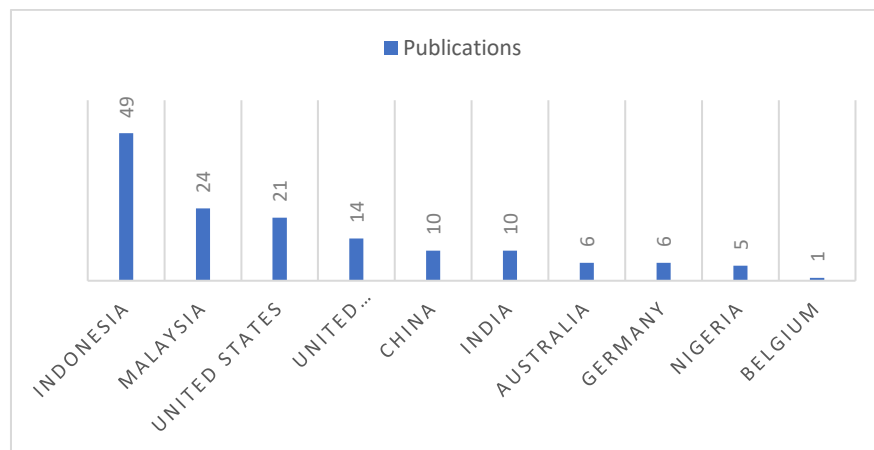

Figure 3. Publication by region/country
Source: Data processed in 2024

Figure 4. Network visualization for Fraud Prevention in the public sector
Source: Data processed by VOSviewer in 2024

The results of the network and overlay of the Fraud Prevention in the Public Sector research topic using the VosViewer software framework were then analyzed. Figure 4 shows 9 groups marked with red, green, purple, yellow, dark blue, light blue, mauve, orange, and gray. Each group shows the number of fraud prevention articles in the public sector, as shown in Table 2.

Table 2. Research Acceleration for Each Cluster

Number	Group	Number of Items	Keywords
1	Red	7	Fraud awareness, corporate governance, corporate fraud, internal control systems, financial crime, prevention, and disclosure
	Green	4	Fraud prevention and detection, internal controls, regulation, and fraud prevention
3	Purple	2	Blockchain, smart contracts, and blockchain technology
4	Yellow	3	Financial fraud, corruption, and crime
5	Dark blue	3	Data analytics, machine learning, and e-commerce
6	Light Blue	3	Audits, internal audits, and whistleblowing
7	Young Bronze	2	The triangle of fraud and fraud
8	Orange	2	Forensic accountability and accounting
9	Gray	1	Integrity

The network analysis and topic mapping of fraud prevention research in the public sector using VOSviewer (Figure 4) reveal several clusters of interrelated keywords. The research examined covers various aspects of fraud prevention and detection, including fraud awareness, corporate governance, corporate fraud, internal control systems, financial crime, prevention, and disclosure. Some research also focuses on specific aspects such as internal controls, regulation, and fraud prevention.

Cluster 1 discusses the importance of fraud awareness, good governance, and internal control systems as the pillars of fraud prevention. This cluster emphasizes the need to increase fraud awareness among employees (Subordinates/Staff) (Azhar et al., 2023; Shonhadji & Maulidi, 2021), the role of corporate governance in preventing corporate fraud (Khoufi & Khoufi, 2018; Rashid et al., 2022), as well as the importance of an effective internal control system (Ololade, 2025). The disclosure of information related to fraud is also put in the spotlight to increase transparency and accountability (Joseph et al., 2021; Madi et al., 2021).

Cluster 2 focuses on fraud prevention and detection mechanisms, the role of internal control systems, and the regulations that support them. Previous researchers have discovered various aspects of internal control systems and their effects on fraud prevention (Hariyani et al., 2024; Nyakarimi et al., 2020; Usman & Sundari, 2024), the role of regulation in preventing Maxwell (2024), as well as effective fraud detection methods (Bonrath & Eulerich, 2024; Naz & Khan, 2025).

Cluster 3 explores the potential of blockchain technology and smart contracts in fraud prevention. Although the number of contributions in this cluster is relatively small in the data provided, the implementation of blockchain technology has demonstrated its ability to improve transaction transparency and security, especially in the context of supply chains (Salmon et al., 2021; Wang & Kogan, 2018), and to reduce the risk of fraud in various sectors.

Cluster 4 covers various types of financial fraud, corruption, and related crimes. It addresses different forms of financial fraud (Othman et al., 2020; Rezazade et al., 2022; Timofeyev & Busalaeva, 2021), corruption in the public sector (Kartini, 2018; Mvunabandi & Nomlala, 2022; Wahyudi et al., 2019), as well as other financial crimes.

Cluster 5 emphasizes the role of data analytics and machine learning in fraud detection and prevention, especially in the context of e-commerce. It examines the application of data analytics and machine learning techniques to detect fraud in online transactions(Baesens et al., 2021; Chen et al., 2015; Loukili et al., 2024; Mappanyukki et al., 2024; Omerašević & Selimović, 2020; Rodrigues et al., 2022; Silalahi et al., 2023; Vandervorst et al., 2022; Zheng et al., 2024), as well as the challenges and opportunities in the application of this technology.

Cluster 6 highlights the role of internal audit and whistleblowing in fraud prevention, addressing the effectiveness of internal audits in detecting and preventing fraud (Kusumo et al., 2022; Lonto et al., 2023; Nadirsyah et al., 2024; Onoja et al., 2015; Putra et al., 2022; Rifai & Mardijuwono, 2020), as well as the role of the whistleblowing system in encouraging fraud disclosure (Kagias et al., 2024; Periansya et al., 2023; Shonhadji & Maulidi, 2021).

Cluster 7 focuses on the concept of fraud and fraud triangle (fraud triangle theory), discussing various aspects of fraud theory such as pressure, opportunities, and rationalization, and how these aspects relate to the occurrence of fraud (Abdullahi & Mansor, 2018; Anindya & Adhariani, 2019; Asmah et al., 2019; Kartini, 2018; Mandal & Amilan, 2024; Omar et al., 2016).

Cluster 8 discusses the role of accountability and forensic accounting in fraud prevention and investigation. Researchers have studied the importance of accountability in preventing fraud (Kartini, 2018; Mvunabandi & Nomlala, 2022), as well as the role of forensic accounting in investigating and preventing fraud (Afriyie et al., 2023; Alharasis et al., 2023; Haddad et al., 2024; Hashem, 2021; Naz & Khan, 2025).

Cluster 9 emphasizes the importance of integrity in fraud prevention which discusses the role of individual and organizational integrity in fraud prevention (Saputra et al., 2022).

Figure 5. Visualization of the Fraud Prevention Overlay in the public sector
Source: Data processed by VOSviewer in 2024

Figure 5 explains that in the period between 2020 and 2024, the focus was on the application of technologies such as blockchain, data analytics, and artificial intelligence (AI) in fraud prevention and detection. This can be seen from the number of publications in 2023 and 2024 discussing these topics, especially in the context of e-commerce, cross-border payments, and the financial sector. There has also been increased research on the role of digital transformation in reducing corporate fraud. Previous research has focused more on traditional aspects such as internal controls, corporate governance, and the fraud triangle. Although still relevant, this research is the basis for the development of more sophisticated methods using technology.

To determine an effective fraud prevention strategy in handling fraud cases in the public sector, an in-depth analysis of the article is needed. Table 3 outlines the specific aspects examined in each article to support this analytical process.

Fraud prevention research in the public sector has evolved significantly over the past decade. While many have provided valuable insights into various fraud prevention strategies, some methodological and theoretical gaps still need to be addressed to ensure that future research contributes more effectively to fraud prevention practices in the public sector. Most previous studies have used qualitative methods, such as case studies, interviews, and narrative analysis, to explore the factors that influence fraud prevention in the public sector (Caruso et al., 2023; Mappanyukki et al., 2024). Although this approach offers in-depth insights into the context and local factors that can influence the success of prevention strategies, a key limitation of qualitative research lies in its limited generalizability. Therefore, quantitative research that leverages big data and statistical techniques to evaluate the effectiveness of various fraud prevention strategies is becoming significantly important to identify broader trends and reduce contextual bias (Bryssinck et al., 2024).

One significant methodological gap is the lack of bibliometric methods applied to assess trends in the literature on fraud prevention in the public sector. Bibliometric analysis can help identify the polarization and focus of research on a particular topic and provide a more comprehensive understanding of how the literature has evolved over time (Donthu et al., 2021). This method can also reveal potential limitations in scope or an overly narrow focus within the topic under discussion. Therefore, future research should more often incorporate bibliometric analyses to get a clearer picture of the successes and failures of various strategies implemented in the public sector.

Table 3. Fraud Prevention Policy Model in the Public Sector

No	Fraud Prevention Model in the Public Sector	Reference
1	Utilization of Artificial Intelligence (AI) for Anomaly Detection	(Caruso et al., 2023; Sood et al., 2023)
2	Emotional Intelligence Analysis & Professional Commitment	(Ma et al., 2024; Mappanyukki et al., 2024)
3	Synthetic Data for Cross-Border Payments (Transformer Model)	(Bryssinck et al., 2024)
4	Strengthening Regulator Competence	(Odukoya & Samsudin, 2021)
5	Accounting Forensics & Data Analytics Development	(Afriyie et al., 2023; Haddad et al., 2024; Rodrigues et al., 2022)
6	Decision Making Model	(Alghamdi et al., 2024)
7	Strengthening Ethics & Organizational Culture	(Periansya et al., 2023; Prabowo, 2024; Saputra et al., 2022)
8	Strengthening Internal Audit & Leadership	(Khikmah et al., 2023; Lonto et al., 2023; Mandal & Amilan, 2024; Nadirsyah et al., 2024; Pramono, 2023)
9	Blockchain Technology, Cryptocurrency & Digital Transformation	(Amponsah et al., 2022; Haddad et al., 2024; Kramer et al., 2024; Shih et al., 2021; Wang et al., 2025)
10	Data Analytics, Machine Learning, & Data Mining	(Aboud & Robinson, 2022; Baesens et al., 2021; Button et al., 2024)
11	Internal Control System (SPI)	(Kusumo et al., 2022; Lubis et al., 2024)
12	Risk Management, Whistleblowing, & Big Data Analytics	(Putra et al., 2022)
13	Turnaround Strategy	(McKenzie & Marx, 2024)
14	Fraud Triangle & Cyber Fraud Response Framework	(Mandal & Amilan, 2024)
15	Use of Legal Entity Identifier (LEI)	(Rowley, 2024)
16	E-Commerce Regulation	(Haq, 2024)
17	Fintech & Machine Learning Technology	(Roszkowska, 2021)
18	Decision Tree	(Knuth&Ahrholdt,2022)

From a theoretical perspective, numerous fraud prevention models remain influential in current research, particularly the Fraud Triangle of Cressey (1950), which continues to serve as a foundational framework. The Fraud Triangle provides a basic framework that illustrates the three main elements playing a role in the emergence of fraud. They are Motivation/Pressure, Opportunity, and Rationalization. Each of these elements interacts with one another and creates a situation where individuals feel compelled to commit fraud. As depicted in Figure 6, these three elements form a triangle that clarifies the interrelationship between the factors that cause fraud.
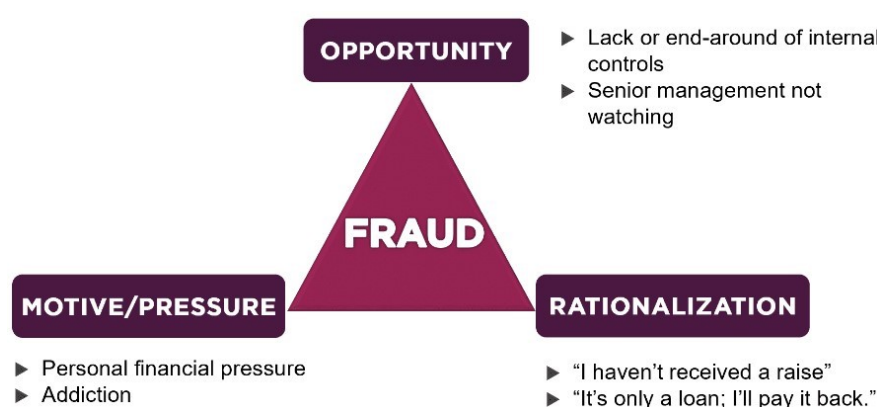

Figure 6. Fraud Triangle

However, the Fraud Triangle theory is insufficient to explain the more complex dynamics of fraud, especially in today's digital era. Fraud in the public sector has evolved far beyond traditional methods, and new technologies such as artificial intelligence (AI), blockchain, and data analytics offer more effective approaches to detect and prevent fraud. For instance, AI can be used to analyze fraud patterns in real-time and alert government

agencies even before fraud occurs. Unfortunately, this has not been adequately addressed in the existing theoretical framework (Haddad et al., 2024).

Additionally, many studies ignore the role of organizational culture and ethical leadership in fraud prevention. Existing research often focuses on internal factors such as control and audit systems, while overlooking the role of ethical culture and responsible leadership in promoting fraud prevention. For example, forensic accounting and internal auditing are often described as the primary solutions for detecting fraud, but the role of leadership in building an ethical organizational culture is often overlooked in many studies (Mandal & Amilan, 2024). Previous research has shown that leadership involvement in implementing ethical values is critical in creating an environment that prevents fraud (Alghamdi et al., 2024).

Another gap lies in the lack of research on digital fraud and cybersecurity. With the increasing adoption of digital technology in the public sector, fraud that occurs through cyberattacks, data theft, and internet-based fraud is becoming more frequent. However, most fraud prevention studies in the public sector still focus on fraud that occurs in traditional contexts, such as physical theft or misuse of funds. In reality, digital fraud requires a very different approach, addressing factors such as data security, privacy, and identity protection (Haq, 2024). Therefore, future research should focus on how security technology contributes to fraud prevention in the digital age.

To address the existing methodological and theoretical gaps, future research should emphasize the integration of technology with human-based approaches in fraud prevention. New technologies, such as AI and blockchain, can offer a more efficient and proactive approach. However, they must be combined with strong policies and strengthening of organizational culture in the public sector. Future studies should also combine more quantitative research and big data to evaluate the effectiveness of various fraud prevention strategies in a more objective and generalizable way across public sector contexts.

In addition, there is a significant need for the development of a more holistic theoretical framework that combines technological factors and organizational culture. Future research should aim to create a unified framework that combines these elements to provide a more comprehensive understanding of how best to prevent fraud in the public sector. In addition, longitudinal studies are needed to assess the sustainability and long-term success of various fraud prevention strategies implemented in the public sector, especially those involving technological innovation.

Conclusion

This research focuses on fraud prevention strategies in the public sector through a bibliometric analysis of 61 Scopus-indexed articles published between 2015 and 2024. Moreover, this research is driven by the significant impact of fraud on public finances, institutional reputation, and public trust. While many previous studies have focused on fraud detection, this research aims to fill the gap by examining fraud prevention strategies in a more systematic manner.

The main findings of this research show a sharp increase in publications related to fraud prevention, with a very significant spike in 2024. The Journal of Financial Crime is listed as the main journal that publishes articles on this topic. The analysis using VosViewer identified key thematic clusters, including fraud awareness, governance, internal control systems, and the application of new technologies such as blockchain, artificial intelligence (AI), and data analytics. This shows that fraud prevention now increasingly involves advanced technologies that can improve the effectiveness of detecting and preventing fraud.

Furthermore, this research reveals various prevention models that have been applied, such as the use of AI, emotional intelligence analysis, synthetic data, strengthening regulatory competence, and forensic accounting development. Geographic analysis shows that research in this area is concentrated in countries such as Indonesia, Malaysia, and the United States, highlighting the need for international collaboration to globally expand research and disseminate best practices.

However, there are some limitations to this research. First, the analysis relies solely on literature indexed in Scopus, which may exclude a broad spectrum of relevant studies, particularly those published in non-indexed journals or within grey literature. Second, although the research focuses on publications between 2015 and 2024, previous research that contributed significantly to the foundations of fraud prevention theory may not have been included. In addition, higher concentrations of research in certain countries may limit our understanding of how these strategies are applied in other regions.

In terms of implications, the findings emphasize that fraud prevention requires a holistic approach that integrates advanced technology with strong policies, a good ethical culture, and human resource capacity building in the public sector. Collaboration between technology and transparent, ethical governance is essential to reduce the risk of fraud. In addition, ethical leadership and organizational culture that supports ethical values will play a critical role in creating a more effective and sustainable fraud prevention system.

However, although this research provides valuable recommendations, it has not evaluated the practical effectiveness of the proposed prevention model in real-world settings. Therefore, further research is needed to

assess the real-world applications of the proposed technologies and policies, as well as their impact on the ground. Future research should also adopt a quantitative approach using big data to provide a more objective view of the effectiveness of various fraud prevention strategies.

Overall, the research provides valuable insights for the development of fraud prevention policies in the public sector. For future research, it is recommended to combine new technologies with more adaptive policies and use broader methodologies, including big data analysis and empirical studies, to assess the success of implementing fraud prevention strategies. Thus, future research can contribute more significantly to creating a more effective and sustainable fraud prevention system in the public sector.

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