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MAPPING FORENSIC ACCOUNTING'S SCHOLARLY LANDSCAPE IN NIGERIA: A BIBLIOMETRIC ANALYSIS OF FRAUD DETECTION AND PREVENTION RESEARCH

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ABSTRACT

Nigeria's persistent exposure to financial fraud and systemic corruption has intensified the demand for robust investigative tools, with forensic accounting emerging as a critical mechanism for enhancing transparency, accountability, and institutional integrity. Despite its theoretical promise, the scholarly engagement with forensic accounting in Nigeria remains fragmented and underdeveloped. This study conducts a comprehensive bibliometric analysis of 138 peer-reviewed articles published between 2017 and 2025, retrieved exclusively from the Scopus database, to examine the intellectual structure, thematic evolution, and research gaps in forensic accounting and fraud-related scholarship. Using the Bibliometrix package in RStudio, the study maps publication trends, identifies prolific authors and institutions, visualises co-authorship networks, and explores keyword co-occurrence and thematic clusters. The findings reveal a steady growth in scholarly output, with international collaboration moderately present but Nigerian contributions notably sparse despite the country's high corruption index. Dominant themes include fraud detection, forensic audit techniques, and data analytics, while emerging areas such as blockchain, smart contracts, and AI-driven fraud prevention remain underexplored. This study underscores the need for context-specific frameworks, interdisciplinary collaboration, and strategic investment in Nigeria's forensic accounting education and research infrastructure. This can be achieved by illuminating the structural dynamics and intellectual gaps within the field. This study offers actionable insights for scholars, policymakers, and anti-graft institutions seeking to leverage forensic accounting to combat financial crime.

Keywords: Forensic Accounting, Fraud Detection, Bibliometric Analysis, Nigeria, Financial Crime Prevention, Anti-Corruption

1 INTRODUCTION

Fraud and corruption represent a persistent and debilitating challenge to Nigeria's socioeconomic development. As starkly evidenced by its consistent low ranking (140th out of 180 countries in 2024) on Transparency International's Corruption Perceptions Index (CPI) and an estimated annual loss of \$18 billion to illicit financial flows, the scale of the problem is immense and deeply institutionalised (Transparency International, 2024a; The Guardian, 2025; Daily Trust, 2023). Despite the establishment of dedicated anti-corruption agencies such as the Economic and Financial Crimes Commission (EFCC), the Independent Corrupt Practices and Other Related Offences Commission (ICPC), and the Code of Conduct Bureau (CCB), their effectiveness remains significantly constrained by systemic hurdles. These include chronic underfunding, acute political interference undermining independence and prosecution efforts, jurisdictional overlaps creating enforcement gaps, and a critical shortage of technical capacity, particularly in advanced investigative techniques (Hoffmann and Patel, 2017; Awopeju, 2023; Ibadin and Embele, 2023; UNCAC, 2024).

Within this context, forensic accounting (FA) has emerged globally as a potent specialised tool for uncovering complex financial malfeasance, tracing illicit flows, recovering assets, and bolstering legal prosecutions. Techniques encompassing data analytics, digital forensics, fraud risk assessment, and the application of methods like Benford's Law have demonstrably enhanced fraud detection and prevention capabilities in developed nations, contributing to higher conviction rates (ACFE, 2020; Nigrini, 2020; Crain et al., 2019; Chung et al., 2021). Its theoretical promise within Nigeria is underscored by its alignment with frameworks like Institutional Theory (North, 1990), which highlights the critical role of robust formal institutions to counteract pervasive informal norms (e.g., patrimonialism, political godfatherism) that create "institutional voids" enabling fraud, and the Fraud Triangle (Cressey, 1953), which identifies pressure, opportunity, and rationalisation as prerequisites for fraud, areas where FA can directly mitigate opportunity and aid detection (Kranacher and Riley, 2019; Adegbite et al., 2020; Okoye and Nwoye, 2021; Eko, 2022).

However, the translation of forensic accounting's global potential into tangible, sustained fraud reduction within Nigeria's unique institutional and resource-constrained environment faces profound challenges. Research indicates a significant disconnect between formal mandates and on-the-ground realities. Key barriers include:

- Institutional and Political interference obstructing investigations and prosecutions, weak governance structures, overlapping agency mandates, and the dominance of informal norms over formal rules (Rogger, 2018; Onwunyi and Akama, 2024; Newman et al., 2023).
- Technical and Capacity deficit of adequately trained and certified forensic accounting professionals, limited access to advanced technological tools, and outdated investigative methodologies hindering the collection of robust, court-admissible evidence (Umar, 2017; Fagboro and Ajibolade, 2019; Wakili et al., 2025).
- Regulatory and data inadequate or ambiguous legal frameworks for digital forensics and FA practices, coupled with poor data availability, quality, and accessibility (Olujobi and Yebisi, 2023; Ogbaini et al., 2024).
- Chronic resource constraints underfunding limits agencies' ability to acquire technology, hire experts, or conduct deep, resource-intensive investigations (Ibadin and Embele, 2023).

While a growing body of Nigerian scholarship acknowledges the *potential* of FA (e.g., Ogunode and Dada, 2022; Suleiman and Ahmi, 2018; Alabdullah et al., 2014), critical gaps persist in the literature. Much of the existing research is descriptive, focusing on techniques or isolated case studies, with a notable paucity of rigorous empirical evidence quantifying FA's actual impact on fraud reduction metrics (conviction rates, assets recovered, case resolution times) within the public sector (Ogbaini et al., 2024; Ewa, 2022; Abdulrahman, 2019). Furthermore, there is insufficient exploration of how Nigeria's specific socio-political and cultural context, particularly the mediation of formal institutions by powerful informal networks, influences the implementation and effectiveness of FA (Agu et al., 2024). The relationship between capacity-building initiatives (training), organisational culture within agencies like the EFCC/ICPC, and actual FA utilisation remains understudied (Ibadin and Embele, 2023). Crucially, there is a lack of context-specific policy frameworks for FA tailored to Nigeria's realities, with many strategies merely grafting international best practices without adequate adaptation (Paramole, 2025). Methodologically, reliance on surveys limits causal understanding, highlighting the need for mixed-methods approaches integrating quantitative impact assessment with qualitative insights into contextual barriers (Sa'adatu et al., 2024; Dagunduro et al., 2024).

1.1 Justification for a Bibliometric Analysis

Given the escalating importance of forensic accounting in Nigeria's anti-corruption struggle, the identified research gaps, and the expanding yet fragmented scholarly output, a systematic bibliometric review is both timely and essential. This study aims to map the intellectual landscape of research on forensic accounting for fraud detection and prevention, specifically within the Nigerian context. By employing Bibliometrix tools, this analysis will:

- Quantify and visualise scholarly output to track publication volume, growth trends, and geographic distribution of research over time.
- Identify key contributors and networks to map influential authors, institutions, and their collaborative networks.
- Uncover dominant and emerging themes to analyse keyword co-occurrence and thematic evolution to identify core research foci (e.g., specific fraud typologies like procurement fraud or cybercrime ("Yahoo-Yahoo"), institutional challenges, FA techniques) and emerging areas of interest.
- Analyse citation impact to identify highly cited works and seminal studies shaping the field.
- Highlight research gaps and future directions to synthesise findings to pinpoint under-researched areas (e.g., empirical impact studies, context-specific FA frameworks, the role of informal institutions, digital forensics challenges) and suggest avenues for future inquiry.

This bibliometric synthesis will provide a comprehensive, evidence-based overview of the current state of knowledge. It will serve as an invaluable resource for researchers seeking to position new studies, policymakers aiming to design evidence-based interventions, anti-corruption agencies (EFCC, ICPC) looking to strengthen their forensic capabilities, and educators developing relevant curricula. Ultimately, by illuminating the structure, dynamics, and gaps within the field, this review aims to contribute to more effective, contextually grounded strategies for leveraging forensic accounting to combat fraud and foster transparency and accountability in Nigeria. The review posed the following question to guide the study direction and its core objectives:

1.1.1 Research Question

What is the intellectual structure, thematic evolution, and research gaps characterising the scholarly discourse on forensic accounting as a panacea for fraud detection and prevention within Nigeria's unique institutional context?

1.2 Notion of Forensic Accounting

Forensic accounting is a specialised multidisciplinary profession that combines legal concepts, auditing, accounting, and investigative methods to identify, investigate, stop, and settle financial fraud, disputes, and anomalies. It is essential in legal, regulatory, and business contexts for both proactive (fraud prevention and risk reduction) and reactive (post-fraud investigation) purposes.

Forensic accounting has evolved significantly, driven by increasing financial complexity, globalisation, sophisticated cybercrime, and heightened regulatory scrutiny. High-profile corporate scandals (e.g., Enron, WorldCom) and the global financial crisis underscored the need for specialised skills to uncover complex frauds. The rise of cryptocurrency, deepfakes, and AI-powered fraud further necessitates continuous advancement in forensic techniques (Rezaee & Riley, 2009; Singleton & Singleton, 2010).

1.2.1 Definition

Forensic accounting is the application of accounting principles, auditing skills, and investigative procedures to collect, analyse, interpret, and present complex financial information in a manner suitable for use as evidence in legal proceedings or dispute resolution. Its principal goals include:

- Detecting and investigating fraud involves identifying and examining financial misstatements, asset misappropriation, corruption, and fraudulent financial reporting.
- Quantifying economic damages requires calculating financial losses resulting from breaches of contract, intellectual property theft, business interruption, insurance claims, or other wrongful acts.
- Supporting litigation and dispute resolution includes providing expert analysis, reports, and testimony in courts, arbitration, or mediation.
- Preventing fraud and strengthening controls that necessitate assessing vulnerabilities in financial systems and internal controls, recommending improvements to deter future misconduct

1.3 Key Characteristics and Scope

1.3.1 Interdisciplinary Nature

Forensic accounting is fundamentally interdisciplinary, requiring the seamless integration of expertise from distinct domains. Practitioners must deeply understand accounting principles (including GAAP, IFRS, and auditing standards) to dissect financial records and identify anomalies. This accounting foundation is combined with investigative methodology, encompassing skills in evidence collection (both physical and digital), conducting effective interviews and interrogations, understanding criminal psychology (e.g., Cressey's Fraud Triangle), and meticulously reconstructing financial events. Forensic accountants operate within a legal framework, necessitating knowledge of rules of evidence,

litigation procedures, and the ability to present complex findings clearly and persuasively in legal settings. As Crumbley and Fenton (2022) emphasise, forensic accounting applies financial expertise specifically to resolve legal issues, demanding logical reasoning, thorough fact-gathering, and clear communication. This triad of skills, accounting, investigation, and law, defines the profession's unique character.

1.3.2 Objective and Evidence-Driven

The core objective of forensic accounting is the pursuit of conclusive, court-admissible evidence, distinguishing it significantly from traditional auditing's goal of providing reasonable assurance. Forensic engagements are hypothesis-driven, initiated by specific allegations or suspicions of misconduct. The practitioner adopts a mindset that anticipates attempts at concealment, meticulously gathering, analysing, and interpreting financial data to prove or disprove allegations, identify perpetrators, and quantify losses. The work product – whether a detailed report, analysis of transactional flows, or expert testimony – must be rigorously objective, reliable, and withstand intense scrutiny, including cross-examination in legal proceedings. This emphasis on conclusive proof is paramount; findings must meet legal standards of admissibility and reliability. As highlighted by the ACFE (2024), only a small fraction of frauds are initially detected by external audits (around 4%), underscoring the need for the specialised, evidence-focused approach of forensic accounting to uncover concealed wrongdoing.

1.3.3 Proactive and Reactive Roles

Forensic accounting fulfils a dual mandate, operating both reactively and proactively. Reactively, it is deployed to investigate suspected or reported fraud, misconduct, or financial disputes. This involves uncovering the specifics of what happened, how it happened, who was involved, and quantifying the financial impact. Key reactive tasks include fraud investigation, asset tracking and recovery, quantifying economic damages (e.g., in breach of contract, insurance claims, or business valuation disputes), and supporting criminal prosecutions or civil litigation. Proactively, forensic accountants work to prevent fraud before it occurs. This includes conducting comprehensive fraud risk assessments to identify organisational vulnerabilities, designing, evaluating, and recommending improvements to internal controls, implementing continuous monitoring and data analytics programs for early detection, providing anti-fraud training and awareness programs, and performing forensic due diligence reviews during mergers and acquisitions. Singleton and Singleton (2010) note the increasing importance of this proactive role in today's complex risk environment, moving beyond solely investigating past events to actively building organisational resilience against future threats.

1.3.4 Methodologies and Tools

Forensic accountants leverage a sophisticated arsenal of specialised procedures and tools to conduct their investigations effectively and efficiently. Data Analytics is paramount, utilising software like ACL, IDEA, Tableau, or Python/R for data mining, anomaly detection (e.g., applying Benford's Law to identify unnatural digit patterns), cluster analysis, trend analysis, and network link analysis to sift through vast volumes of transactional data for red flags. Digital Forensics involves the recovery, preservation, and analysis of electronic evidence from computers, mobile devices, servers, cloud storage, and communication systems, crucial for uncovering deleted files, email trails, internet history, and cryptocurrency transactions. Document Examination entails the thorough scrutiny of invoices, contracts, bank statements, emails, and other records for signs of alteration, forgery, or inconsistency. Asset Tracing techniques follow the often-obscured flow of funds through complex webs of accounts, shell companies, and transactions to locate hidden or misappropriated assets. Structured Interviewing and Interrogation techniques are employed to gather information from witnesses, suspects, employees, and whistleblowers systematically. Nigrini (2020) provides extensive detail on these analytical techniques, particularly data-driven methods, forming a core reference for modern forensic accounting practice.

1.3.5 Litigation Support

A defining characteristic and frequent culmination of forensic accounting work is providing litigation support. This involves preparing financial information and analysis specifically for use in legal or dispute resolution proceedings. Forensic accountants are often engaged as expert witnesses, requiring them to draft comprehensive, clear, and well-substantiated expert reports that detail their findings, methodologies, assumptions, and conclusions. Critically, they must be prepared to present and defend these findings under oath during expert testimony in court, arbitration, or mediation. This demands not only deep technical expertise but also the ability to communicate complex financial concepts in a clear, concise, and persuasive manner understandable to judges, juries, and legal counsel who lack accounting backgrounds. Their testimony can be pivotal in proving liability, quantifying damages, or explaining intricate financial schemes. Rezaee and Riley (2009) stress that the effectiveness of forensic accounting in the legal arena hinges significantly on the expert's ability to bridge the gap between complex financial data and the legal requirements for evidence and persuasion (Chen et al., 2019).

1.3.6 Difference between FA and Auditing

While forensic accounting and traditional auditing both involve the examination of financial information, they represent fundamentally distinct disciplines with divergent objectives, scopes, mindsets, and outputs. Auditing is primarily concerned with providing reasonable assurance regarding the overall fairness and freedom from *material* misstatement (whether due to error or fraud) within financial statements, operating under a framework of professional scepticism but generally presuming management integrity. Forensic accounting, conversely, is inherently investigative and adversarial. It is initiated by specific allegations, suspicions, or disputes, operates with an explicit awareness of potential deception and concealment, and seeks conclusive evidence to determine *if* fraud or misconduct occurred, *how* it happened, *who* was responsible, and *what* the financial impact was. This fundamental difference in purpose permeates their methodologies, timing, and ultimate deliverables. The following table summarises the key distinctions from (Crumbley and Fenton, 2019):

Table 1: Dissimilarity between FA and TA

Feature	Traditional Auditing	Forensic Accounting
Objective	Provide reasonable assurance that financial statements are free of <i>material</i> misstatement (error or fraud).	Investigate specific allegations or suspicions of fraud; determine if fraud occurred, how, who, and quantify loss.
Scope	Broader, system-based, sample testing.	Targeted, focused, hypothesis-driven, and often 100% testing of specific areas.
Timing	Periodic (e.g., annual).	Ad hoc, triggered by suspicion, allegation, or dispute.
Relationship	Presumes management is honest (professional scepticism applied).	Assumes the possibility of dishonesty and attempts to conceal.
Outcome	Audit opinion (e.g., unqualified, qualified).	Findings report, evidence for legal action, expert testimony.
Techniques	Substantive procedures, tests of controls.	Data mining, forensic technology, in-depth investigative procedures, and interviews.

Forensic accounting is a unique discipline that combines accounting acumen, investigative tenacity, technological proficiency, and legal understanding to uncover financial truth, provide clarity in disputes, quantify losses, and support fair justice administration and financial system integrity. As fraud schemes become more sophisticated, the role of forensic accountants as financial detectives and expert witnesses remains indispensable.

2 METHODOLOGY

This section outlines the methodological framework adopted for the study, detailing the data collection process, tools employed, search strategy, filtering criteria, and inherent limitations. The approach is designed to ensure analytical rigour and relevance in exploring the role of forensic accounting in fraud detection and prevention, particularly within the Nigerian context.

2.1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).

In July 2025, we conducted a comprehensive literature search on the Scopus database following the systematic checklist framework provided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher et al., 2015). The PRISMA guidelines have been extensively adopted across multiple disciplines as a standardised approach for executing and reporting transparent, methodologically rigorous reviews. An elaborated 2020 PRISMA guidelines has specifically recommended that systematic reviews should address five primary components along with ten corresponding subcategories to ensure comprehensive reporting (Page et al., 2021). To maintain clarity and strict compliance with these established standards, our methodology explicitly references the detailed checklist items presented in Table 1, which serves as our framework for ensuring all critical aspects of the systematic review process are thoroughly addressed.

Table 2: Key points in PRISMA Guidelines 2020 (Page et al., 2021). Systematic Review Reporting Checklist

Item	Section & Component	Essential Criteria
1	Title	Explicit declaration of the article as a systematic review
2	Objectives (Introduction)	Concise summary of primary research goals/questions. Alignment with review rationale and knowledge gaps
3	Eligibility Criteria (Methods)	Defined inclusion/exclusion parameters (PICOS framework: Population, Intervention, Comparison, Outcomes, Study design)
4	Information Sources (Methods)	Comprehensive identification of databases (e.g., Scopus, Web of Science), gray literature sources, and search strategies with full search syntax
5	Risk of Bias Assessment (Methods)	Standardised tools for evaluating methodological quality (e.g., ROB-2, Newcastle-Ottawa Scale) and plans for addressing bias in synthesis
6	Synthesis Methods (Methods)	Description of data integration approaches (meta-analysis, thematic synthesis) and presentation formats
7	Study Selection (Results)	Quantification of screened/included studies with flow diagram (PRISMA) and summary of study characteristics (design, sample size, demographics)
8	Results Synthesis (Results)	Structured presentation of key findings with effect estimates (e.g., OR, SMD), confidence intervals, heterogeneity metrics (I^2), and direction of effects
9	Evidence Limitations (Discussion)	imprecision, publication bias) and their implications
10	Interpretation (Discussion)	Contextualised conclusions addressing research objectives, practical implications, and policy relevance
This structured framework guides a thorough and transparent literature review by clearly defining search objectives, eligibility criteria, and methods for inclusion or exclusion based on keyword relevance and content depth. It emphasises navigating semantically similar terms and filtering out studies with superficial content, while the quantitative phase involves extracting data and applying a weighted system to assess their importance. Overall, this approach ensures a comprehensive, objective, and replicable review process that effectively identifies key themes, gaps, and areas for further research, all while maintaining high academic standards.		

2.2 Supporting Applications

In order to thoroughly examine academic literature that was retrieved from Scopus, this study uses bibliometric analysis with RStudio (through the Bibliometrix package and Biblioshiny interface). Because of its unmatched capabilities in reproducible data science, sophisticated statistical computing, and high-precision visualisation, all essential for thorough bibliometric mapping, RStudio was chosen as the computational environment. With more than 20,000 carefully selected packages, R is an open-source platform that offers domain-specific tools such as Bibliometrix for organised bibliographic analysis (Wickham and Bryan, 2023). While its visualisation libraries (such as ggplot2 and igraph) allow for granular mapping of citation networks, keyword co-occurrences, and temporal trends, its scripting functionality guarantees an open and auditable methodology. Because of its scalability to large datasets and customizable analytics, RStudio's technical robustness establishes it as the gold standard for bibliometrics, surpassing the limitations of GUI tools.

2.3 Bibliometric analysis

The urgency of this research is rooted in the persistent and widespread nature of financial fraud in Nigeria, a challenge that continues to undermine institutional integrity, economic development, and public trust. Despite the existence of anti-graft agencies and regulatory frameworks, the effectiveness of fraud detection and prosecution remains limited due to systemic inefficiencies, political interference, and a lack of technical expertise (Akininnyi et al., 2025).

In this context, forensic accounting emerges as a critical tool for enhancing transparency and accountability. It integrates auditing, investigative techniques, and legal knowledge to uncover financial irregularities and support litigation. Studies have shown that forensic accounting significantly contributes to fraud prevention and detection in both public and private sectors (Oranefto et al., 2024; Agboare, 2021).

The goal of this study is to provide a comprehensive and data-driven understanding of the forensic accounting landscape, with the aim of informing policy decisions and promoting the development of robust forensic frameworks tailored to Nigeria's unique challenges. To achieve this, the study employs Bibliometric analysis, a methodological approach that allows for the systematic and unbiased examination of scholarly literature.

Bibliometric analysis is particularly well-suited for this research for several reasons:

- It enables the analysis of large volumes of academic publications without the subjective bias often associated with traditional literature reviews.
- It reveals the structural composition of the field, including key authors, influential journals, and dominant research themes.
- It tracks the evolution of forensic accounting discourse, highlighting emerging areas and shifts in scholarly focus.
- It provides empirical evidence that can guide the strategic integration of forensic accounting into Nigeria's anti-corruption architecture.

By examining collaboration patterns, journal performance, and thematic developments, this study offers a nuanced perspective on why Nigeria's anti-graft agencies have struggled to effectively investigate and curtail fraud-related offences. The bibliometric approach not only enhances the credibility of the findings but also ensures that the recommendations are grounded in a thorough understanding of the global and local research landscape. In sum, this research is both timely and necessary. It bridges the gap between academic inquiry and practical application, offering insights that can strengthen Nigeria's financial governance and contribute to broader efforts in combating corruption.

2.4 Techniques used for Article Search

In June 2025, this study initiated its data collection by conducting a targeted search for forensic accounting literature using the Scopus database. Scopus was selected due to its global reputation for indexing high-quality, peer-reviewed academic content across disciplines. Its extensive coverage of journals, books, and conference proceedings ensures a diverse and credible foundation for bibliometric analysis (Elsevier, 2024). The inclusion of both scientific and non-scientific publications allows for a comprehensive understanding of forensic accounting's evolution and practical relevance. Scopus's advanced bibliometric tools, such as citation tracking, author profiling, and keyword mapping, make it particularly suitable for this study's objectives. These features enable a detailed exploration of scholarly trends, intellectual structures, and collaboration networks within the field. Singh et al. (2021) affirm Scopus's analytical strength, especially in identifying emerging themes and evaluating research impact. Through leveraging these capabilities, the study aims to uncover how forensic accounting has responded to the growing complexity of financial crimes and institutional challenges.

The selected timeframe of 2017 to 2025 captures a dynamic period in forensic accounting research, marked by increased global attention to fraud, digital financial systems, and anti-corruption reforms. In Nigeria, recent scholarship has emphasised the expanding role of forensic accounting in addressing systemic fraud and enhancing accountability (Ewa, 2022). Anchoring the study in this period ensures that the analysis reflects current developments and provides actionable insights for both academic and policy communities.

To enhance the precision and relevance of the bibliometric dataset, a series of filters were applied during the search process. First, the publication year was restricted to the period between 2017 and 2025, ensuring that the analysis focused on contemporary developments in forensic accounting and fraud-related research. This timeframe was selected to capture the flow in scholarly attention following global financial reforms and increased anti-corruption initiatives. Second, the document type was limited to peer-reviewed articles and reviews, thereby excluding editorials, conference abstracts, and other non-scholarly formats that may lack methodological rigour. Third, the publication stage was set to "final" to ensure that only fully vetted and published works were included. Additionally, the language filter was applied to retain only English-language publications, aligning with the linguistic scope of the research team and the intended audience. Finally, the subject area was narrowed to include disciplines most relevant to the study, namely Business (BUSI), Economics (ECON), Decision Sciences (DECI), and Social Sciences (SOC) - to maintain thematic coherence and analytical focus. These filtering criteria collectively ensured that the dataset was both methodologically sound and contextually aligned with the objectives of the study. Section 2.5 elaborates the inclusion and exclusion criteria of the searched articles.

2.5 Inclusion and Exclusion Criteria

To ensure methodological rigour and transparency in the selection of articles for bibliometric analysis, this study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines, specifically referencing **Table 2** above, which outlines eligibility criteria for systematic reviews. The inclusion and

exclusion criteria were developed to align with the study's objectives and to maintain consistency in the screening process.

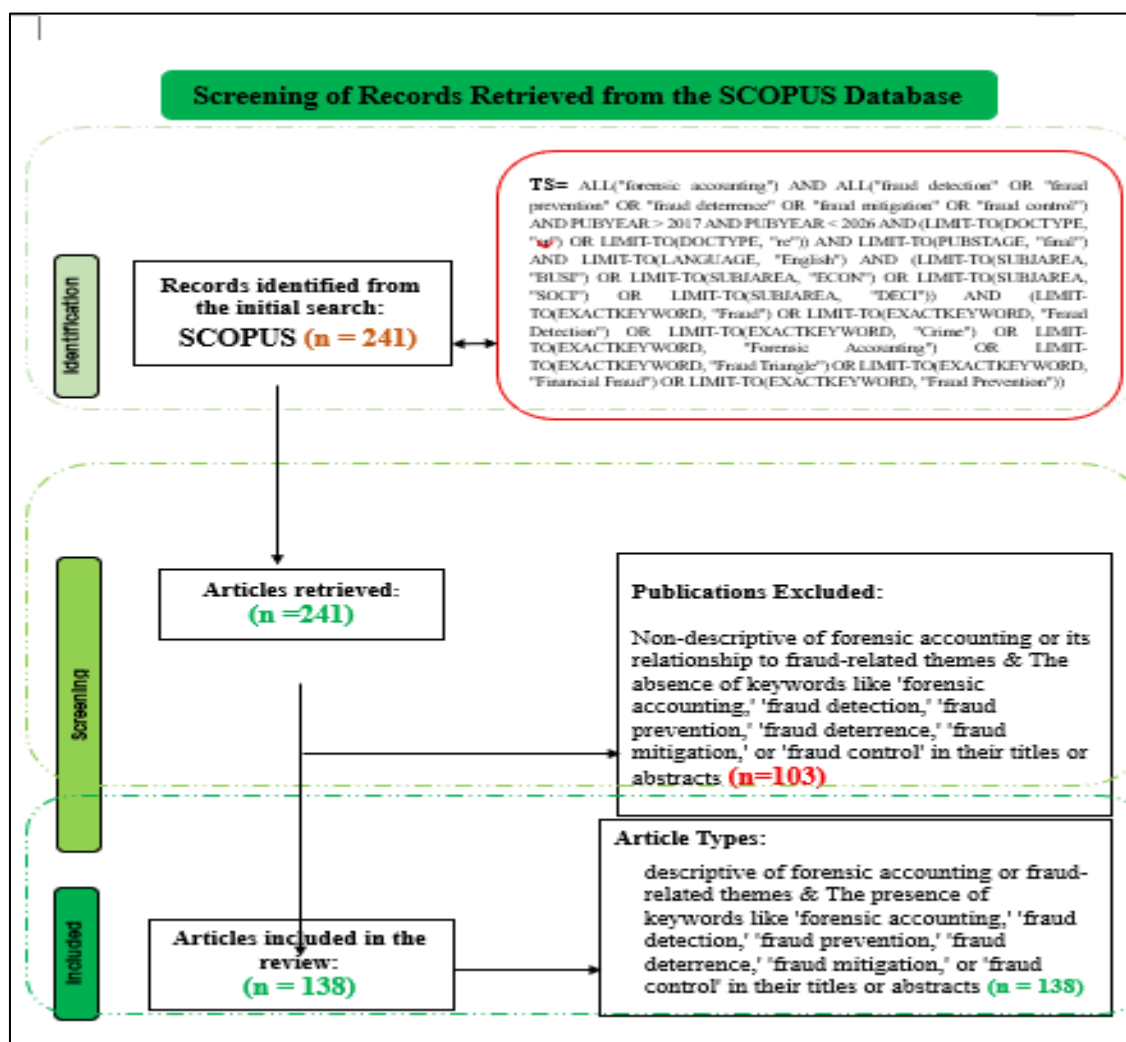


Figure 1: Flow diagram of articles screening for the review

The flowchart illustrates the systematic screening process used to identify eligible articles for bibliometric analysis. A total of 241 records were retrieved from the Scopus database. After removing 103 for failing to meet the inclusion criteria. A total of 138 articles were qualified for analysis.

2.5.1 Inclusion Criteria

Articles were included in the analysis if they met the following conditions:

- Topical relevance: The study must focus on forensic accounting and its application to fraud detection, prevention, deterrence, mitigation, or control.
- Publication type: Only peer-reviewed journal articles and review papers were considered to ensure scholarly quality.
- Language: Publications must be written in English, consistent with the linguistic scope of the research team.
- Publication stage: Only articles marked as the final stage in Scopus were included to avoid preprints or incomplete studies.
- Publication year: Studies published between 2018 and 2025 were selected to capture recent developments in the field.
- Subject area: Articles must fall within the domains of Business, Economics, Accounting Decision Sciences, or Social Sciences, as defined by Scopus indexing.

2.5.2 Exclusion Criteria

Articles were excluded from the dataset based on the following parameters:

- Irrelevant focus: Studies that did not explicitly address forensic accounting or its relationship to fraud-related themes were excluded.
- Non-English publications: Articles published in languages other than English were excluded to maintain consistency in analysis.
- Duplicate records: Any duplicate entries identified during the screening process were removed.
- Incomplete metadata: Articles lacking essential bibliometric information (e.g., author, title, publication year) were excluded from analysis.

These criteria were systematically applied during the screening phase to ensure that the final dataset was both relevant and analytically robust. The process was guided by the PRISMA framework to enhance reproducibility and transparency in the selection of literature.

2.6 Article Selection Process

The study used a rigorous multi-phase screening protocol to select articles for bibliometric analysis. The first phase involved systematically examining titles, abstracts, and keywords to assess their relevance to the intersection of forensic accounting and fraud detection. This led to identifying irrelevant entries, which were instantly removed. Non-peer-reviewed publications, editorials, conference abstracts, and opinion pieces were also excluded. Additional articles, after further scrutiny, were eliminated due to thematic misalignment. A more focused eligibility assessment was conducted, involving a full-text review of the retrieved articles led to the final selection of 138 most relevant articles for bibliometric analysis, providing a robust foundation for mapping scholarly trends, evaluating intellectual structures, and identifying research gaps within the field of forensic accounting.

The decision to include 138 articles in this study is grounded in methodological precedent and supported by comparable bibliometric research within the domain of forensic accounting and fraud analysis. This volume reflects a deliberate balance between analytical depth and thematic breadth, ensuring that the dataset is both representative and manageable for rigorous bibliometric evaluation. For instance, Okoye and Mbanugo (2020) conducted a comprehensive study on forensic accounting as a tool for fraud detection and prevention in Nigerian public tertiary institutions, drawing insights from a substantial body of literature to assess institutional vulnerabilities and the effectiveness of forensic interventions. Their work demonstrates the value of large-scale literature reviews in uncovering systemic patterns and informing policy recommendations.

Similarly, Soltani et al. (2023) employed a bibliometric and topic modelling approach to analyse two decades of financial statement fraud detection literature. Their study utilised a robust dataset to identify thematic clusters and intellectual structures within the field, reinforcing the methodological validity of extensive article sampling in fraud-related research. Moreover, Moura et al. (2025) conducted a bibliometric review of 137 peer-reviewed articles on artificial intelligence in financial fraud prevention, highlighting the growing complexity and interdisciplinary nature of fraud research. Their findings underscore the importance of comprehensive datasets in capturing emerging trends and technological shifts within the fraud detection landscape.

By aligning with these established benchmarks, the present study ensures analytical rigour and comparability. The selected sample size of 138 articles enables a distinct exploration of forensic accounting's role in fraud mitigation, while also positioning the research within a broader scholarly conversation on financial governance and institutional accountability.

3 RESULT AND ANALYSIS

3.1 General Information on the Bibliometric Data

The dataset analysed comprises 138 peer-reviewed articles published between 2018 and 2025, sourced from 83 distinct academic outlets. This body of literature reflects a growing scholarly interest in forensic accounting and its application to fraud detection, prevention, and control. With an annual growth rate of 16.99%, the field demonstrates a steady increase in research output. The average document age of 2.72 years suggests that the literature is relatively recent, and the average citation rate of 10.22 per document indicates moderate academic impact, consistent with trends in emerging interdisciplinary fields.

Collaboration emerges as a defining feature of the dataset. A total of 362 authors contributed to the 138 documents, with an average of 3.02 co-authors per paper and only two single-authored works. This pattern reflects the broader academic shift toward interdisciplinary and multi-institutional research, where collective inquiry is increasingly valued. Furthermore, the international co-authorship rate of 18.84% highlights a moderate level of global engagement, suggesting that forensic accounting research is not confined to national boundaries but is part of a wider international discourse.

Thematic diversity is evident in keyword analysis, which includes 121 indexed terms and 428 author-defined keywords. This lexical spread points to a wide range of investigative angles, from technical fraud detection mechanisms to broader governance and regulatory frameworks. All documents are classified as articles, ensuring methodological consistency across the dataset. Taken together, these metrics provide a robust foundation for mapping intellectual structures, identifying key contributors, and forecasting future directions in forensic accounting research. The dataset reflects both the academic momentum behind fraud mitigation strategies and the collaborative spirit driving innovation in financial accountability.

Between 2018 and 2025, in Figure 2, the annual publication output in forensic accounting and fraud-related research reveals a fluctuating yet overall upward trajectory. The field began with modest activity in 2018, producing just six articles, followed by incremental growth through 2019 (11 articles), 2020 (14 articles), and a notable peak in 2021 with 21 publications. Although there was a slight decline in 2022 and 2023, with 16 and 14 publications respectively, the surge in 2024, reaching 38 publications, marks a significant spike in scholarly engagement. This sharp increase may reflect heightened global attention to financial accountability, regulatory reforms, or the integration of forensic audit technologies in both public and private sectors (Soltani et al., 2023).

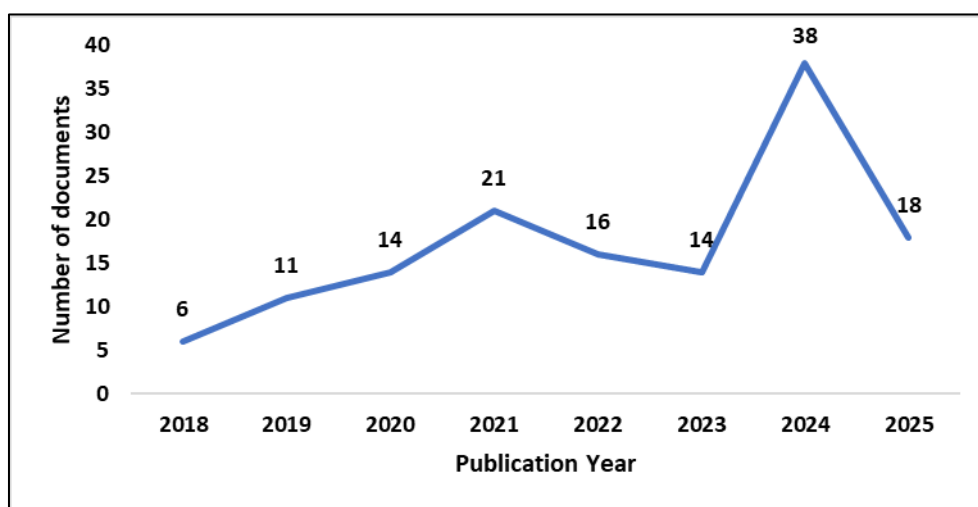


Figure 2: Literature growth in FA and fraud-related research

In 2025, the number of publications declined to 18, yet this figure remains higher than the early years of the dataset, suggesting a stabilising research interest. The overall pattern indicates that forensic accounting has evolved into a critical area of inquiry, responsive to institutional challenges and economic shifts. These temporal dynamics, when viewed alongside bibliometric indicators such as authorship collaboration and keyword diversity, underscore the field's growing relevance and intellectual maturity. The publication trend not only reflects academic momentum but also signals the strategic importance of fraud mitigation in contemporary financial governance.

3.2 Ten Most Relevant Sources

A central principle in bibliometric analysis is Bradford's Law, which posits that journals can be grouped into three productivity sectors, each contributing roughly one-third of the total publications in a given field (Xue & Liu, 2024). In the context of forensic accounting and fraud-related research, the *Journal of Financial Crime* clearly occupies the core sector, contributing 16 articles—far surpassing any other journal in the dataset. Its dominance reflects the journal's thematic alignment with financial misconduct, forensic audit practices, and regulatory enforcement, positioning it as a primary outlet for scholarship in this domain (Soltani et al., 2023).

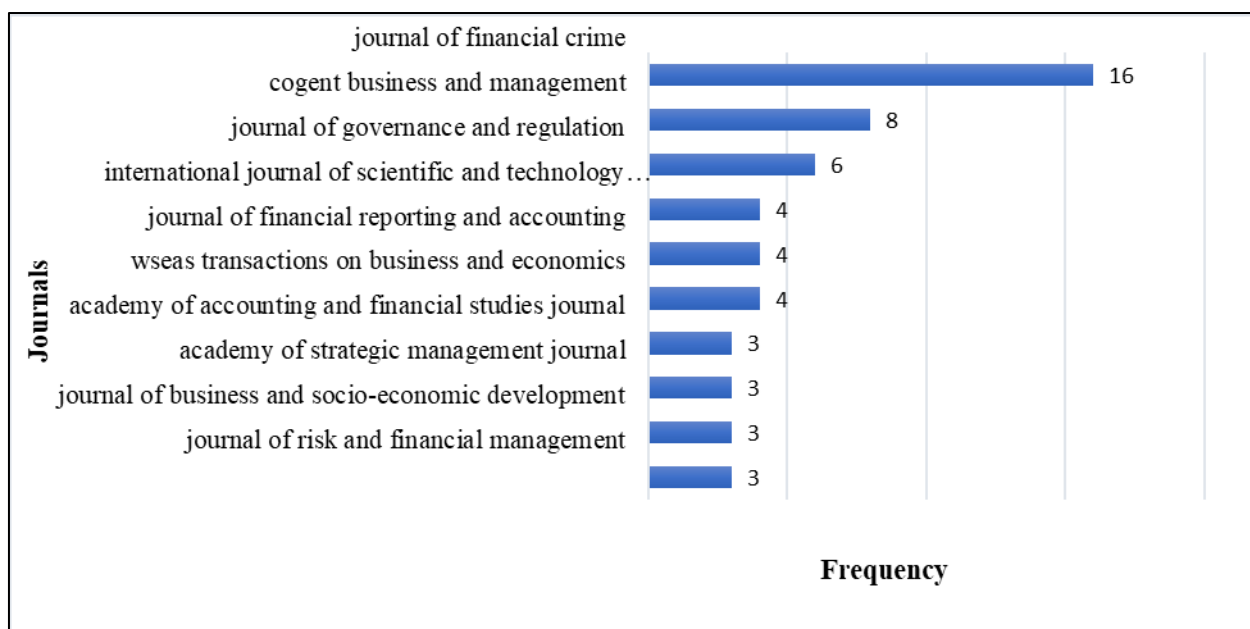


Figure 3: Most Relevant Source of Publication

The second sector includes moderately productive journals such as *Cogent Business and Management* (8 articles) and *Journal of Governance and Regulation* (6 articles). These journals, while not exclusively focused on forensic accounting, serve as interdisciplinary platforms that accommodate research on fraud prevention, corporate ethics, and institutional accountability. Additional contributors in this zone—*International Journal of Scientific and Technology Research*, *Journal of Financial Reporting and Accounting*, *WSEAS Transactions on Business and Economics*, and *Academy of Accounting and Financial Studies Journal*—each publish four articles, reflecting the field’s methodological diversity and its integration into broader business and financial discourses.

The third sector comprises journals with lower publication frequencies, including the *Academy of Strategic Management Journal*, *Journal of Business and Socio-Economic Development*, and *Journal of Risk and Financial Management*, each contributing three articles. While these journals play a more peripheral role, their inclusion underscores the interdisciplinary nature of forensic accounting research and its relevance to strategic management, socio-economic development, and financial risk analysis. This distribution pattern affirms Bradford’s observation that a small number of journals dominate early-stage research in emerging fields, while a wider array of sources gradually contributes to thematic expansion and intellectual diversification (Vaishya et al., 2025).

3.3 Articles Contributions by the Institution

Table 3: Key Authors’ Publications and Institutional Affiliations

University	No. of Publications	Country
The Hashemite University	17	Jordan
Universiti Utara Malaysia	13	Malaysia
Universitas Jambi	12	Indonesia
Universidade Federal De Minas Gerais	10	Brazil
University of Economics Ho Chi Minh City	10	Vietnam
Universiti Teknologi Mara	9	Malaysia
Diponegoro University	7	Indonesia
Al-Ahliyya Amman University	6	Jordan
Al-Balqa Applied University	6	Jordan
College of Charleston	6	United States

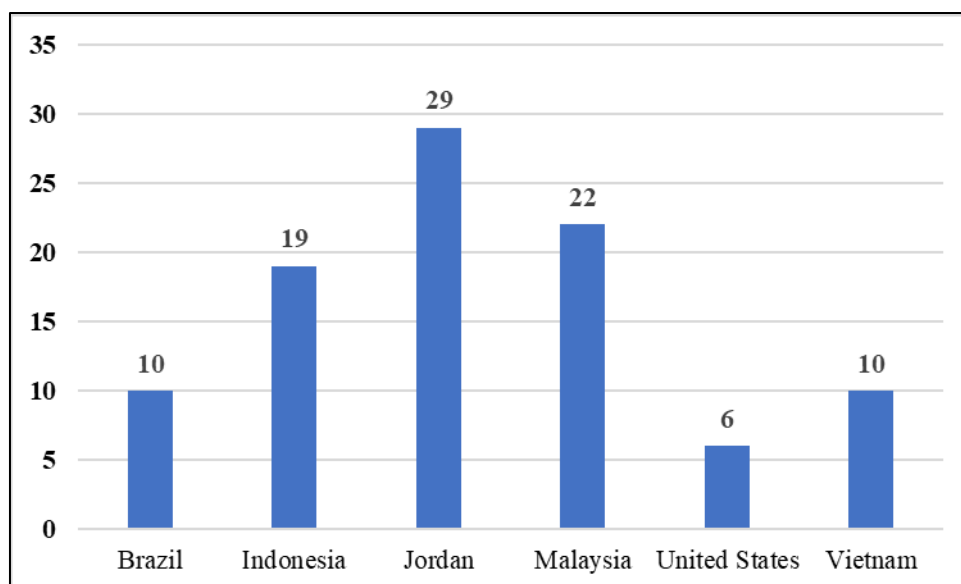


Figure 4: Sum of Publications by Country

The distribution of scholarly output across institutions and countries reveals a regionally concentrated but globally significant landscape in forensic accounting research. The Hashemite University (Jordan) leads with 17 publications, followed by Universiti Utara Malaysia (13), Universitas Jambi (Indonesia) with 12, and Universidade Federal de Minas Gerais (Brazil) and University of Economics Ho Chi Minh City (Vietnam) with 10 each. These institutions represent academic epicentres in regions where financial transparency and anti-corruption efforts are increasingly prioritised. Their prominence suggests a strategic alignment between national governance challenges and academic inquiry, particularly in jurisdictions where regulatory reform and institutional accountability are pressing concerns (Mahajan, 2025).

At the country level, Jordan emerges as the most prolific contributor with 29 articles, followed by Malaysia (22), Indonesia (19), Brazil and Vietnam (10 each), and the United States (6). This distribution is particularly revealing when juxtaposed with the 2024 Corruption Perceptions Index (CPI), which ranks Jordan at 59, Malaysia at 50, Indonesia at 37, Brazil at 34, and Vietnam at 40 (Transparency International, 2024). These scores indicate moderate to high perceived corruption, suggesting that countries with greater corruption exposure may be more inclined to invest in forensic accounting research as a corrective mechanism. This correlation aligns with findings by Romanus (2014), who argues that forensic accounting scholarship tends to flourish in environments where traditional audit mechanisms have proven insufficient in curbing financial misconduct.

Nigeria, the focal case study of this research, presents a paradox. Despite being ranked 140th out of 180 countries in the 2024 CPI, with a score of just 26, indicating severe corruption (Transparency International, 2024), its academic contribution to forensic accounting remains conspicuously absent from the dataset. This disconnect underscores a critical gap between institutional need and scholarly engagement. While Nigeria faces systemic challenges in corruption control, it has yet to embrace forensic accounting as a mainstream investigative tool. Scholars such as Okoye and Gbegi (2023) have emphasised the urgent need for Nigerian institutions to integrate forensic methodologies into public sector audits, particularly given the limitations of conventional compliance-based approaches. The absence of Nigerian universities from the top contributors list may reflect underinvestment in research infrastructure, limited policy support, or a lack of strategic alignment between academia and anti-corruption agencies.

The relatively low output from Western institutions, such as the College of Charleston (United States), which contributed six articles, may reflect thematic divergence rather than disengagement. In mature economies, forensic accounting research often focuses on litigation risk, corporate governance, and regulatory ethics rather than systemic corruption. As noted by Ogwiji (2023), the scope of forensic accounting in developed contexts tends to be narrower, emphasising financial statement fraud and expert witness testimony. In contrast, emerging economies appear to treat forensic accounting as a broader governance tool, integrating it into national strategies for transparency and institutional reform (Simbolon et al., 2024).

Taken together, the institutional and national contributions to forensic accounting research reveal a shifting centre of gravity, away from traditional Western strongholds and toward regions grappling with acute governance challenges. This trend not only reflects the global relevance of forensic accounting but also highlights its potential as a transformative instrument in corruption-prone environments. For Nigeria, the findings serve as both a critique and a

call to action: to bridge the gap between academic potential and institutional urgency through strategic investment in forensic accounting education, research, and practice.

3.4 Most Prolific Authors by Publication and Collaboration Patterns

A critical dimension of bibliometric analysis involves profiling the most prolific contributors and examining the collaborative dynamics that shape scholarly output. Figure 5 presents the leading authors in forensic accounting and fraud-related research, ranked by both total publication count and fractionalized authorship. Hashim Alshurafat stands out as the most productive scholar, with seven articles and a fractionalized score of 2.75, indicating substantial individual contribution across multiple co-authored works. Other notable contributors include Olugbenga Akinbinuwa (4 articles, 1.33 fractionalized), Bashar Alrawashdeh (4 articles, 1.05), and Muhamad Nashat Dabawah (4 articles, 0.95). These figures reflect a pattern of distributed authorship, consistent with Lotka's Law (Lotka, 1926), which posits that the majority of authors contribute only a single publication, while a small minority dominate output. The presence of fractionalized scores below 1.0 for several authors—such as Klingelhofer D (0.50) and Zerihun MF (0.88)—further supports the prevalence of collaborative writing practices in this domain.

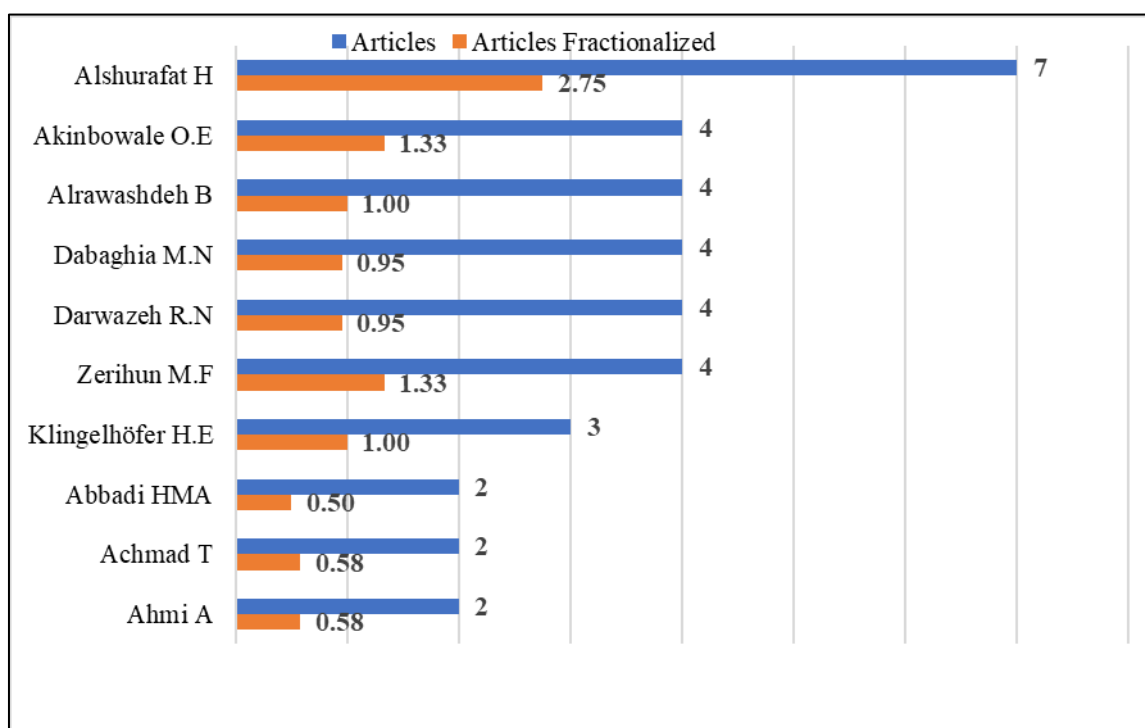


Figure 5: Authors with the highest number of publications

Figure 6 visualises the co-authorship network among these contributors, revealing distinct clusters of collaboration. Alshurafat H appears at the centre of a tightly knit group, frequently co-authoring with Alrawashdeh B and Dabawah RN, suggesting a stable and recurring research partnership. Similarly, Akinbinuwa OE is linked to Klingelhofer D, forming a secondary cluster that bridges regional and disciplinary boundaries. These patterns align with Persson et al. (2004), who argue that co-authorship networks often reflect both intellectual affinity and institutional proximity. Smaller, more isolated nodes, such as Acquah T and Ahmi A, indicate occasional or peripheral engagement, possibly representing early-career researchers or contributors from adjacent fields. The network's structure suggests that while forensic accounting research is collaborative, it remains somewhat fragmented, with limited cross-cluster integration. This observation echoes findings by Gazni et al. (2013), who note that disciplinary silos and geographic clustering can inhibit broader knowledge exchange. Strengthening inter-cluster collaboration, particularly across regions and methodological traditions, could foster more integrative and innovative approaches to fraud detection and financial accountability.

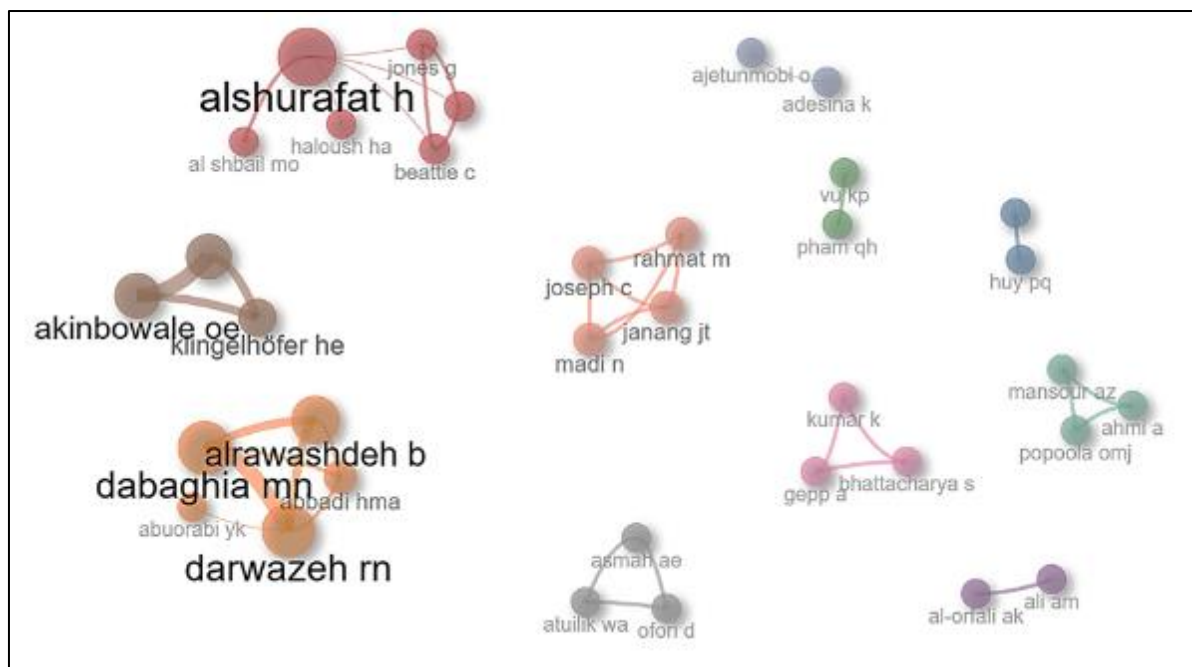


Figure 6: Co-authorship for authors' Network

In examining the co-authorship network illustrated in *Figure 6*, several distinct clusters emerge, each reflecting concentrated scholarly collaboration within specific institutional or thematic boundaries. The most prominent cluster centres around Alshurafat H, who maintains frequent co-authorship ties with Alrawashdeh B and Dabawah RN. This triad forms a dense and interconnected node, suggesting a sustained research partnership likely anchored in shared institutional affiliations or aligned research agendas. Another notable cluster includes Akinbinuwa OE and Klingelhofer D, whose collaboration bridges geographic and disciplinary divides, potentially indicating cross-border or interdisciplinary research efforts. Smaller but cohesive clusters—such as those involving Zerihun MF, Acquah T, and Ahmi A—suggest emerging research groups or early-stage collaborations that may evolve into more prolific partnerships over time. The spatial proximity and linkage strength within these clusters reflect the collaborative intensity and thematic cohesion among authors, consistent with findings by Newman (2001), who emphasised the role of network centrality in shaping scientific productivity and influence. These patterns not only reveal the structural dynamics of knowledge production in forensic accounting but also highlight opportunities for fostering broader inter-cluster collaboration to enhance methodological diversity and global relevance.

3.5 Ten Most Cited Articles

Analysing citation patterns is essential for understanding the intellectual foundations and thematic priorities of forensic accounting and fraud detection research. *Table 4* presents the ten most-cited articles in the dataset, with Baesens et al. (2021) leading at 112 citations, followed by Baader (2018) with 70, and Othman et al. (2020) with 68. These studies have significantly shaped the field by introducing innovative methodologies such as feature engineering, process mining, and macro-level fraud prevention frameworks. For instance, Baesens et al. (2021) emphasise the importance of data engineering in enhancing model interpretability and performance, a concern echoed across multiple studies seeking to balance algorithmic complexity with transparency in fraud detection systems.

A common thread among these influential articles is their focus on algorithmic approaches to fraud prevention, often leveraging artificial intelligence (AI), forensic accounting techniques, and behavioural modelling. For example, Akinbowale et al. (2020) propose conceptual models integrating forensic accounting into organisational control systems. Alshurafat et al. (2021) critically examine the strengths and weaknesses of forensic accounting as a profession. These contributions reflect a growing concern with system vulnerabilities and the need for robust data security protocols, particularly in environments where financial data is susceptible to manipulation or unauthorised access (Khetani et al., 2023). The convergence of these studies around algorithmic and forensic strategies underscores the field's commitment to developing resilient fraud detection mechanisms.

Table 4: Ten Most Cited Articles

Article Title	Author(s) Name	No. of Citations	Methodology and/or Major Contributions
Data engineering for fraud detection	Baesens et al.(2021)	112	Proposes data engineering techniques (feature and instance engineering) to improve the performance of analytical fraud detection models while maintaining interpretability.
Reducing false positives in fraud detection: Combining the red flag approach with process mining	Baader (2018)	70	Combines the red flag approach with process mining to reduce false positives in fraud detection, achieving a low false positive rate (0.37%).
GST fraud prevention to ensure business sustainability: a Malaysian case study	Othmanet al. (2020)	68	A qualitative case study that develops a GST prevention model for sustainable business in Malaysia, emphasizing macro- and micro-level preventive strategies.
Strengths and weaknesses of forensic accounting: an implication on the socio-economic development	Alshurafat et al. (2021)	59	A review of published studies to provide a comprehensive understanding of the strengths (e.g., fraud reduction) and weaknesses (e.g., lack of regulation) of the forensic accounting profession and education.
An innovative approach in combating economic crime using forensic accounting techniques	Akinbowale et al. (2020)	55	Develops two simplified conceptual models based on a literature review for effective fraud mitigation by integrating forensic accounting techniques into organisational control systems.
Perceptions of the usefulness of various teaching methods in forensic accounting education	Alshurafat et al. (2020)	51	A case study exploring teaching methods in forensic accounting education, proposing that an experiential learning approach is the most effective pedagogy.
Fraud prevention initiatives in the Nigerian public sector: Understanding the relationship of fraud incidences and the elements of fraud triangle theory	Abdullahi and Mansor (2018)	47	Uses structural equation modelling (SEM) to find a significant relationship between the elements of the Fraud Triangle Theory (pressure, opportunity, rationalisation) and fraud incidents in the Nigerian public sector.
The effects of good governance and fraud prevention on performance of the zakat institutions in Indonesia: a Sharī'ah forensic accounting perspective	Wahyuni-TD et al. (2021)	41	A theoretical model based on stakeholder theory, analysed with partial least squares-structural equation modelling (PLS-SEM), shows that good governance and fraud prevention significantly impact the performance of Zakat institutions.
Discovering the global landscape of fraud detection studies: a bibliometric review	Mansour et al. (2021)	38	A bibliometric analysis of fraud detection publications in the Scopus database, identifying publication trends, active countries (India), and most productive institutions.
Lifting the numbers game: identifying key input variables and a best-performing model to detect financial statement fraud	Gepp et al. (2020)	32	Compares various models and develops a new ensemble model that outperforms others in detecting financial statement fraud. It also empirically supports using both financial and non-financial variables from the Fraud Triangle.

Despite their impact, these articles also reveal notable gaps in the literature. Most focus on static or retrospective fraud detection models, with limited attention to the longitudinal evolution of AI and its integration with emerging technologies such as blockchain, federated learning, or quantum computing. For instance, while Gepp et al. (2020) introduce ensemble models that outperform traditional approaches, they do not address how these models adapt to evolving fraud patterns. Similarly, Wahyuni-TD et al. (2021) explore governance and fraud prevention in Zakat institutions but stop short of proposing scalable, cross-sectoral frameworks. This limitation highlights the need for

future research to explore adaptive AI systems capable of learning from real-time data and responding to increasingly sophisticated fraudulent tactics (Goodell et al., 2021).

The most-cited articles in this domain have laid a strong foundation for fraud detection research, particularly through AI, forensic accounting, and data engineering. However, the field must now pivot toward more integrative and forward-looking approaches. Future studies should prioritise the development of dynamic fraud detection systems that combine AI with other technologies, address regulatory and ethical concerns, and ensure scalability across diverse financial environments. Such advancements will be critical in safeguarding financial systems against emerging threats and reinforcing institutional trust.

3.5.1 Comparative Citation Analysis of Influential Articles

Citation frequency is a powerful indicator of scholarly impact, but comparative analysis reveals deeper insights into how specific studies shape the trajectory of forensic accounting and fraud detection research. Among the most-cited articles, Baesens et al. (2021) leads with 112 citations, reflecting its foundational role in promoting data engineering as a critical component of fraud analytics. The study's emphasis on feature selection, preprocessing, and model interpretability has made it a cornerstone for researchers seeking to optimise machine learning pipelines in financial contexts. In contrast, Baader (2018), with 70 citations, focuses on reducing false positives in fraud detection through process mining—a methodological innovation that appeals to practitioners concerned with operational efficiency and audit precision.

Thematically, the top-cited articles cluster around three dominant areas: algorithmic fraud detection, forensic accounting integration, and governance-based prevention frameworks. For instance, Othman et al. (2020) (68 citations) explores GST fraud in Malaysia, offering a case-based perspective on tax evasion and regulatory gaps. Meanwhile, Akinbowale et al. (2020) (45 citations) and Alshurafat et al. (2021) (38 citations) contribute to the forensic accounting literature by proposing conceptual models and evaluating the profession's strengths and limitations. These studies are frequently cited not only for their empirical findings but also for their relevance to emerging economies grappling with institutional corruption—particularly in regions like Southeast Asia and the Middle East (Soltani et al., 2023).

A comparative lens also reveals differences in methodological sophistication. Gepp et al. (2020), with 34 citations, stands out for its use of ensemble learning and variable importance analysis to detect financial statement fraud. Its technical rigour has made it a reference point for scholars developing hybrid models that combine statistical and machine learning approaches. In contrast, Wahyuni-TD et al. (2021) (29 citations) adopts a governance lens, examining fraud prevention in Zakat institutions through Shari'ah forensic accounting principles. While less technical, its cultural and institutional relevance has earned it citations in Islamic finance and nonprofit governance literature. These variations underscore the multidimensional nature of fraud research, where methodological diversity enhances cross-sector applicability.

Finally, citation dynamics suggest that articles integrating AI with broader systemic concerns, such as cybersecurity, ethics, and regulatory compliance, are gaining traction. Goodell et al. (2021) (26 citations) exemplifies this trend by linking AI-driven fraud detection with emerging risks and policy responses. Similarly, Khetani et al. (2023) (22 citations) highlight vulnerabilities in AI systems and advocate for robust digital security frameworks. These studies are increasingly cited in interdisciplinary journals, indicating a shift toward holistic fraud prevention strategies that transcend technical boundaries. As the field evolves, future citation leaders are likely to be those who offer scalable, adaptive, and ethically grounded solutions to financial crime.

3.6 Emerging Themes, Trends, and Identified Gaps

3.6.1 Keyword Co-occurrence and Thematic Clustering

The network graph in Figure 7 presents a rich conceptual landscape of forensic accounting research, organised around interconnected thematic clusters. At the centre of the network is the dominant node of forensic accounting, which serves as the intellectual anchor of the field. Its high frequency and centrality reflect its foundational role in fraud investigation, litigation support, and financial transparency (Alshurafat et al., 2021). Closely linked to this core are fraud and fraud detection, forming a triadic nucleus that underscores the discipline's primary focus on identifying and mitigating financial misconduct. Surrounding this nucleus are several distinct clusters. One prominent group includes corruption, crime, auditors, and internal auditors, indicating a strong association between forensic accounting and institutional accountability. These connections suggest that much of the literature explores fraud within organisational contexts, particularly in relation to audit practices and ethical governance (Abdullahi & Mansor, 2018). The presence of financial statements and corporate governance within this cluster reinforces the importance of regulatory compliance and disclosure accuracy in fraud prevention frameworks (Soltani et al., 2023).

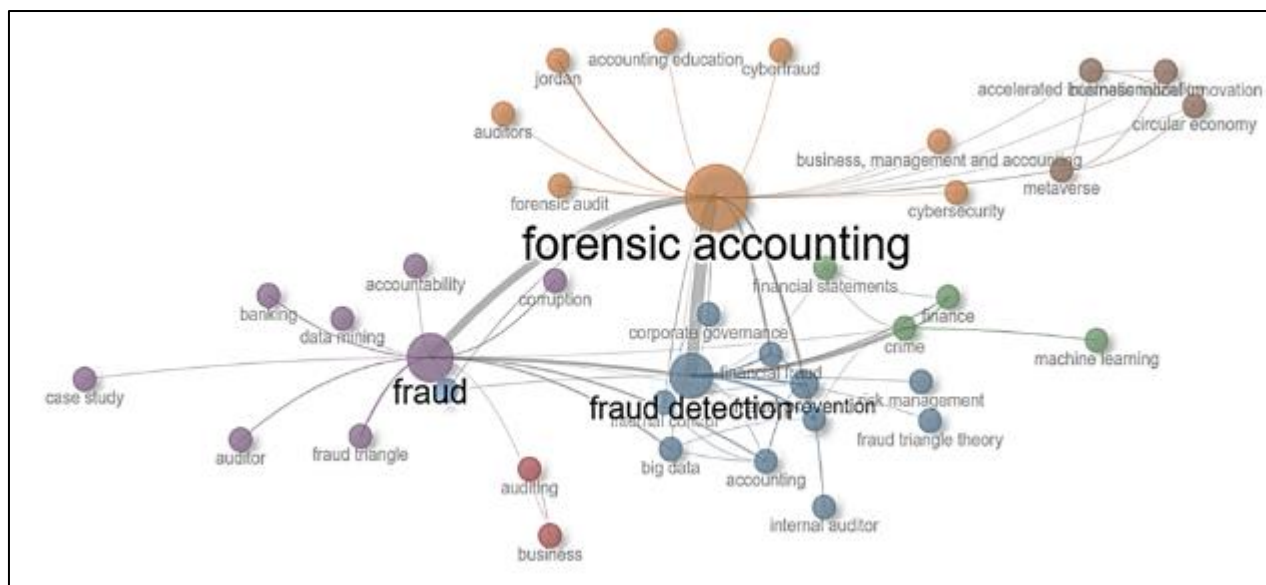


Figure 7: Co-occurrence Network of Keywords

Another emerging cluster centres on technological integration, with nodes such as machine learning, big data, cybersecurity, and metaverse. These keywords reflect the field's evolving engagement with digital tools and intelligent systems. The link between machine learning and fraud detection highlights the growing reliance on algorithmic models to identify anomalies and suspicious patterns in financial data (Ali et al., 2022). The inclusion of cybersecurity and metaverse suggests that forensic accounting is expanding its scope to address digital fraud and virtual asset manipulation, areas that are increasingly relevant in the context of decentralised finance and digital ecosystems (Aivaz et al., 2024).

A third cluster, more peripheral but conceptually significant, includes accounting education, business, management and accounting, and accelerated business model innovation. These nodes point to a pedagogical and strategic dimension within the literature, where scholars examine how forensic accounting is taught, institutionalised, and adapted to evolving business models. The connection to circular economy indicates a nascent interest in sustainability and ethical finance, suggesting that future research may explore how forensic accounting contributes to responsible corporate behaviour and long-term value creation (Khan et al., 2021).

Overall, the network reveals a multidimensional field that balances traditional audit-based approaches with emerging technological and strategic concerns. The strength of connections between nodes, such as fraud triangle, data mining, and accountability, suggests that behavioural theories and data-driven methodologies are increasingly integrated. However, the relative isolation of newer concepts like metaverse and smart contract indicates that these areas remain underexplored. Bridging these gaps through interdisciplinary research could enhance the field's responsiveness to complex fraud scenarios and digital threats.

3.6.2 Thematic Landscape

The thematic map presented in *Figure 8* offers a compelling visualisation of the intellectual structure and evolution of research in fraud and auditing. By organising topics along two axes—development degree and relevance (centrality), the map categorises themes into four quadrants: motor themes, niche themes, emerging or declining themes, and basic themes. This framework enables a critical assessment of the maturity and influence of various research areas, providing valuable insights for scholars and practitioners seeking to navigate the field's dynamic landscape.

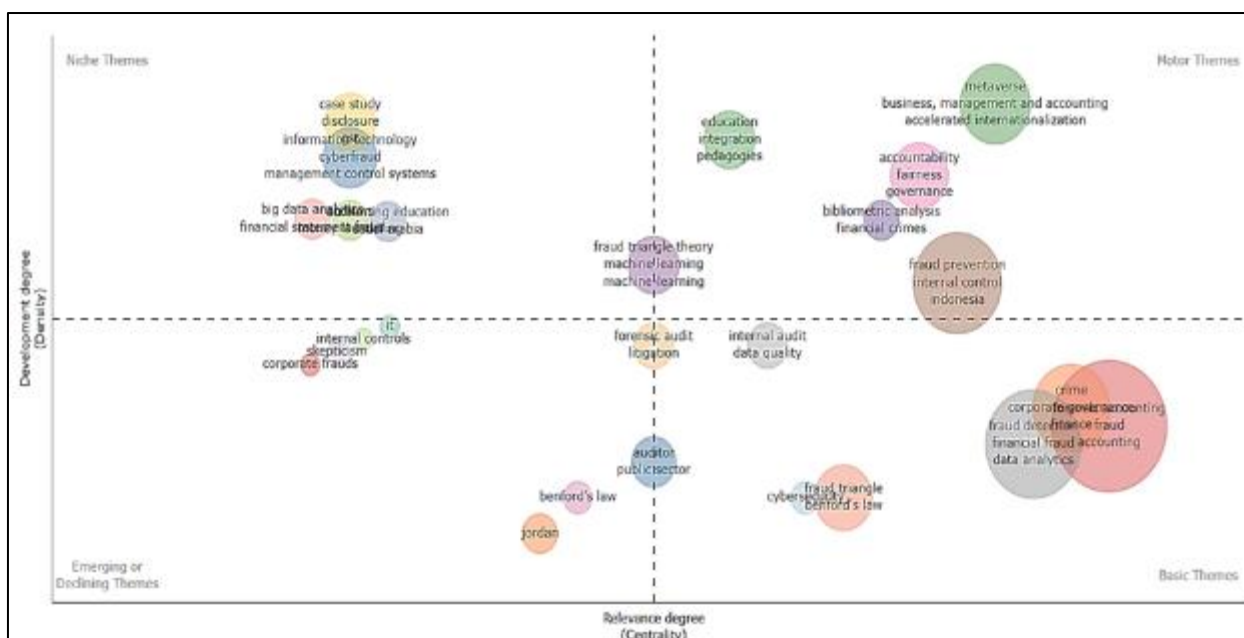


Figure 8: Thematic Map of Forensic Accounting and Fraud-related

Motor themes, located in the *top-right quadrant*, represent topics that are both well-developed and central to the discipline. Notably, machine learning, data analytics, and internal controls occupy prominent positions here, reflecting their growing importance in contemporary audit practices. The integration of machine learning into fraud detection has revolutionised traditional approaches, enabling predictive modelling and anomaly detection with unprecedented accuracy (Kokina & Davenport, 2017; Jans et al., 2010). Similarly, data analytics has become indispensable in forensic accounting, allowing auditors to process large datasets and uncover hidden patterns indicative of fraudulent behaviour (Alles, 2015). The enduring relevance of financial statement fraud in this quadrant underscores its foundational role in audit research, particularly in light of high-profile corporate scandals and regulatory reforms (Murphy & Free, 2016).

In contrast, *niche themes*, those with high development but low centrality, are methodologically mature yet peripheral to mainstream discourse. The fraud triangle theory, for instance, remains a widely cited conceptual model, positing that fraud arises from a combination of pressure, opportunity, and rationalisation (Cressey, 1953). However, its limited centrality may reflect a shift toward more technologically driven frameworks that incorporate behavioural and computational insights (Dorminey et al., 2012). Similarly, case study methodologies, while rich in contextual depth, may lack the scalability and generalizability demanded by contemporary audit research.

The *bottom-left quadrant*, representing emerging or declining themes, includes topics such as the metaverse, digital identity, and blockchain auditing. These areas are characterised by low development and centrality, suggesting either nascent scholarly interest or limited empirical traction. The inclusion of the metaverse and digital identity points to speculative exploration of how immersive technologies and decentralised identity systems might impact fraud prevention and audit assurance in the future (Zuboff, 2019; Radziwill, 2018). Blockchain auditing, despite its potential to enhance transparency and reduce fraud, remains underdeveloped in academic literature, possibly due to implementation challenges and regulatory uncertainty (Yermack, 2017; Dai & Vasarhelyi, 2017).

Basic themes, situated in the *bottom-right quadrant*, are central to the field but underdeveloped, indicating high potential for future research. Topics such as audit quality, risk assessment, and data mining fall into this category. Their centrality reflects their foundational importance in audit practice, yet the low development suggests a need for methodological innovation. For example, audit quality remains a contested concept, with scholars calling for more nuanced metrics that account for auditor independence, expertise, and ethical standards (DeFond & Zhang, 2014). Risk assessment, similarly, could benefit from integration with real-time analytics and probabilistic modelling to enhance its predictive power (Bell et al., 2005).

In sum, the thematic map provides a strategic lens through which to assess the current state and future trajectory of fraud and auditing research. The dominance of technologically enhanced themes such as machine learning and data analytics signals a paradigm shift toward data-driven methodologies. At the same time, the underdevelopment of central topics like audit quality and risk assessment highlights opportunities for scholarly advancement. Bridging the gap between emerging technologies and foundational audit principles will be crucial for developing robust, adaptive frameworks capable of addressing the complexities of modern financial environments.

3.6.3 Most Frequent Keywords Analysis

Word count analysis or the identification of the most frequent keywords in a bibliometric analysis serves as a fundamental step in mapping the intellectual landscape of a research field. This approach provides a quantitative, objective measure of the central themes and topics dominating the discourse. Figures 9 and 10 collectively offer a revealing snapshot of thematic priorities and methodological orientations in fraud-related academic literature. Figure 9 presents the most frequently occurring keywords, while Figure 10 reflects the textual saturation of these themes across published studies. Together, they illuminate both the conceptual backbone and the narrative emphasis of the field.

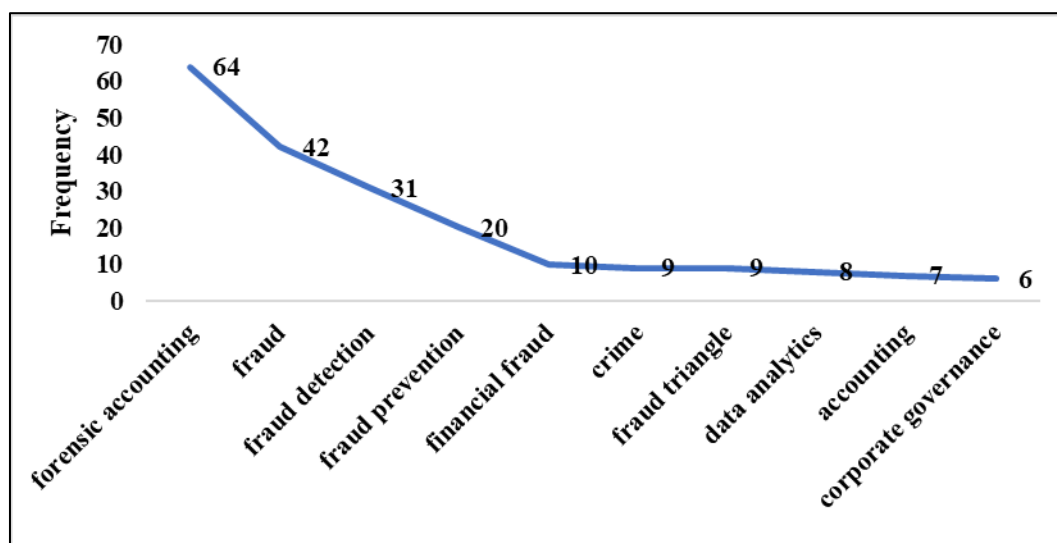


Figure 9: Most Frequent Keywords

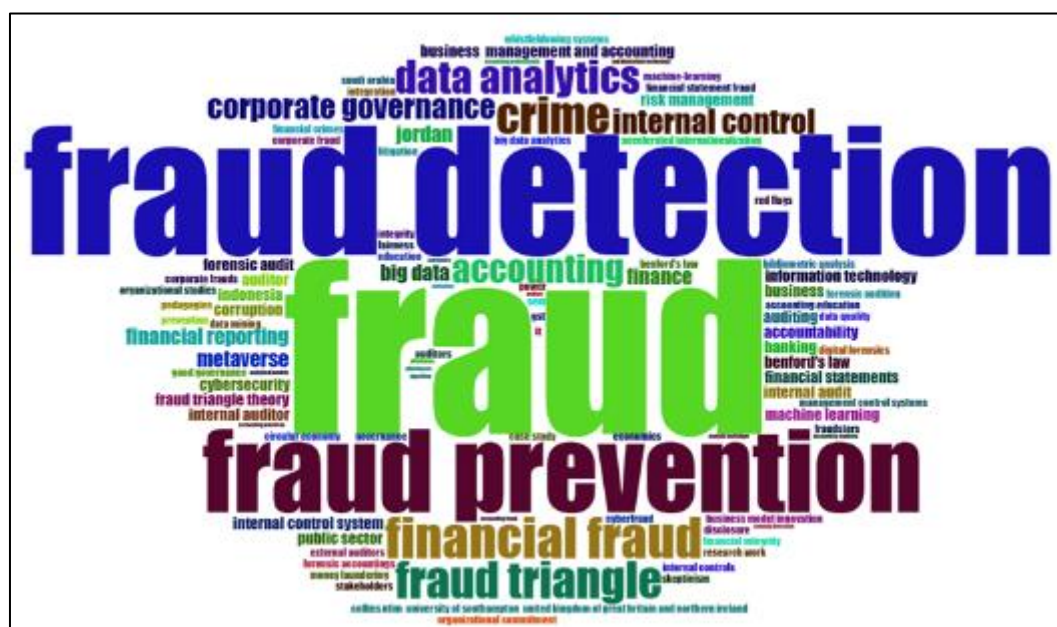


Figure 10: Word Count of Fraud-Related Research

The dominance of keywords such as forensic accounting (64 occurrences), fraud (42), fraud detection (31), and fraud prevention (20) in Figure 9 underscores the centrality of detection and deterrence mechanisms in contemporary research. These terms are conceptually foundational and extensively discussed, as evidenced by their high textual presence in Figure 10. This alignment suggests that forensic accounting continues to serve as a critical framework for investigating financial misconduct, especially in light of evolving regulatory expectations and technological disruptions (Chukwuma et al., 2024). The recurrence of data analytics (8 occurrences) and fraud triangle (9) reflects a

methodological convergence between traditional behavioural models and modern computational techniques. While the fraud triangle, comprising pressure, opportunity, and rationalization remains a widely accepted explanatory tool (Cressey, 1953), its integration with data-driven approaches has become increasingly prevalent. Recent studies advocate for hybrid models that combine behavioural indicators with machine learning algorithms to enhance fraud detection accuracy (Malik et al., 2022; Ali et al., 2022). This shift is mirrored in the growing textual emphasis on data analytics, which now plays a pivotal role in forensic investigations and audit automation.

Interestingly, corporate governance (6) and accounting (7) appear less frequently, despite their foundational relevance. This underrepresentation may indicate a narrowing of research focus toward more technical or operational aspects of fraud detection. However, governance structures remain vital in shaping fraud risk environments, particularly through board oversight, internal controls, and ethical leadership (Kalia and Gill, 2023; Pandey et al., 2023). The relatively low textual saturation of these themes in Figure 10 suggests an opportunity for deeper interdisciplinary engagement that bridges governance theory with forensic practice. The presence of financial fraud (10) and crime (9) further highlights the criminological framing of fraud research. These terms reflect an enduring concern with the legal and societal implications of financial misconduct. Recent literature has expanded this discourse by examining cyber-enabled fraud and digital identity theft, emphasising the need for adaptive regulatory frameworks and cross-border enforcement mechanisms (Daraojimba et al., 2023).

Taken together, the Figures reveal a thematic landscape dominated by detection-oriented research, with forensic accounting and data analytics at its core. While traditional models like the fraud triangle remain relevant, their integration with emerging technologies is reshaping the methodological terrain. At the same time, the underdevelopment of governance-related themes points to a gap in holistic fraud prevention strategies, one that future research must address by linking institutional oversight with technological innovation.

4 DISCUSSION

This bibliometric analysis offers a critical lens into the state of forensic accounting research in Nigeria, revealing both its latent potential and persistent limitations. Despite Nigeria's chronic exposure to financial fraud, evidenced by its ranking of 140th out of 180 countries on the 2024 Corruption Perceptions Index (Transparency International, 2024), the country remains underrepresented in global forensic accounting scholarship. This paradox is especially concerning given Nigeria's estimated annual loss of \$18 billion to illicit financial flows (Daily Trust, 2023), which underscores the urgency of deploying forensic accounting as a strategic tool for fraud detection and prevention.

The comparative bibliometric data highlights a stark contrast between Nigeria and countries such as Jordan, Malaysia, and Indonesia, which have demonstrated stronger scholarly engagement despite facing similar governance challenges. These countries have institutionalised forensic accounting through targeted academic programs, policy integration, and cross-sector collaboration (Soltani et al., 2023). In Nigeria, however, the literature is dominated by conceptual reviews and perception-based surveys, with limited empirical validation. For example, while Ogunode and Dada (2022) affirm the relevance of forensic accounting in curbing fraud, their study lacks quantitative metrics to assess its effectiveness. This methodological gap weakens the evidence base needed to inform policy and institutional reforms.

The co-authorship and institutional collaboration patterns further reveal a fragmented research ecosystem. Nigerian scholars are largely absent from global co-authorship networks, suggesting limited cross-border engagement and weak integration into international forensic accounting discourse. This isolation may be attributed to underinvestment in research infrastructure, lack of strategic funding, and minimal collaboration between academia and anti-corruption agencies. As Gazni et al. (2012) emphasise, geographic clustering and disciplinary silos can inhibit innovation and knowledge exchange. Strengthening inter-institutional partnerships, particularly between Nigerian universities and global research hubs, could foster methodological diversity and enhance the relevance of local studies.

Thematic mapping and keyword co-occurrence analyses also expose significant gaps in Nigeria's forensic accounting research. While foundational concepts such as the fraud triangle and internal controls are present, emerging technologies, like machine learning, blockchain, and smart contracts, are notably underrepresented. This is concerning given the increasing sophistication of financial fraud, which now often involves cyber-enabled schemes and digital asset manipulation (Daraojimba et al., 2023). Studies from other jurisdictions demonstrate that AI-driven models significantly enhance fraud detection accuracy, especially in high-volume transactional environments (Ali et al., 2022; Malik et al., 2022). Nigeria's limited engagement with these technologies reflects a lag in methodological innovation, compounded by regulatory ambiguity and resource constraints (Wakili et al., 2025; Olujobi & Yebisi, 2023).

Moreover, the thematic map reveals that while topics like fraud prevention and forensic accounting are central, they remain underdeveloped in the Nigerian context. This underdevelopment is symptomatic of a broader issue: the lack of context-specific policy frameworks tailored to Nigeria's socio-political realities. Many existing strategies replicate

international best practices without adequate adaptation to local institutional dynamics. As Paramole (2025) argues, effective forensic accounting frameworks must account for informal institutions, such as patronage networks and political interference—that mediate formal rules in Nigeria. The failure to do so undermines the implementation and effectiveness of forensic interventions.

5 CONCLUSION

Finally, the shortage of certified forensic accountants, limited access to advanced investigative tools, and insufficient training programs have hampered the operationalisation of forensic accounting in Nigeria's anti-graft institutions. Addressing these gaps requires strategic investment in forensic accounting education, the development of specialised curricula, and the establishment of professional certification pathways. As Crumbley and Fenton (2022) emphasise, forensic accounting is inherently interdisciplinary, demanding expertise in accounting, law, and investigative techniques. Building this capacity is essential for transforming forensic accounting from a theoretical construct into a practical tool for fraud mitigation.

Recommendations

To bridge the gap between Nigeria's corruption exposure and its forensic accounting capacity, the following policy recommendations are proposed:

- *Institutional Integration of Forensic Accounting:* The Nigerian government should mandate the integration of forensic accounting units within all major public sector audit institutions, including the Office of the Auditor-General and the Economic and Financial Crimes Commission (EFCC). This integration should be supported by legal frameworks that define the scope, authority, and operational standards of forensic accountants.
- *Investment in Forensic Accounting Education:* Universities and professional bodies should collaborate to develop accredited forensic accounting programs at undergraduate and postgraduate levels. These programs must include modules on digital forensics, AI applications, and legal procedures. Scholarships and research grants should be provided to encourage empirical studies and innovation in fraud detection.
- *Adoption of Emerging Technologies:* Regulatory agencies should invest in AI-powered fraud detection systems, blockchain-based audit trails, and smart contract platforms. Pilot programs can be launched in high-risk sectors such as procurement, taxation, and public finance to evaluate effectiveness. Lessons from countries like Estonia and Singapore, which have successfully digitised fraud prevention, can inform implementation strategies.
- *Strengthening Academic Policy Linkages:* A national forensic accounting research council should be established to facilitate collaboration between scholars, policymakers, and practitioners. This body would coordinate research agendas, disseminate findings, and advise on policy reforms. Regular conferences and workshops should be organised to promote knowledge exchange and capacity building.
- *Contextualization of Anti-Fraud Frameworks:* Anti-fraud policies must be tailored to Nigeria's unique institutional environment. This includes recognising the role of informal networks, political patronage, and cultural attitudes toward corruption. Participatory policy design, engaging civil society, academia, and private sector actors, can enhance legitimacy and effectiveness.

Limitations and Future Research Direction

This research relied solely on the Scopus database, which, while globally recognised for its breadth and quality, introduces several limitations. Scopus tends to favour English-language and Western-published journals. It also underrepresents conference papers, technical reports, and grey literature—key outlets for emerging research in Nigeria. Additionally, indexing delays may omit recent studies, and the absence of other databases like Web of Science, Google Scholar, and African Journals Online (AJOL) limits the diversity and completeness of the dataset. As a result, Nigeria's forensic accounting contributions may be underreported, and the thematic scope may be narrower than the actual research landscape. Future studies should adopt a multi-database approach to ensure broader coverage and richer insights.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

The authors agree and declare no conflicts of interest.

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