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Bibliometric Analysis of Audit Analytics

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ABSTRACT

The rapid advancement of digital technologies has significantly transformed auditing practices, leading to the emergence of audit analytics as an important research domain that integrates accounting, auditing, and data science. This study aims to examine the evolution, intellectual structure, influential contributions, and emerging research trends in audit analytics through a bibliometric analysis approach. Data were collected from the Scopus database using relevant keywords related to audit analytics and analyzed using VOSviewer to perform citation analysis, keyword co-occurrence analysis, density visualization, and collaboration network analysis. The findings indicate that audit analytics research has experienced substantial development, particularly with the increasing adoption of big data analytics, artificial intelligence, machine learning, predictive analytics, blockchain, and automation technologies. Citation analysis identifies key contributions focusing on the role of big data and artificial intelligence in improving audit quality, audit judgment, fraud detection, and decision-making processes. The keyword analysis reveals that recent research trends have shifted from traditional analytical methods toward intelligent and automated audit systems that support continuous auditing and risk-based decision-making. Furthermore, collaboration analysis demonstrates the global nature of audit analytics research, with the United States emerging as the most influential contributor and strong research connections among countries and institutions. This study contributes to the literature by providing a comprehensive understanding of the development trajectory of audit analytics and identifying future research opportunities related to generative artificial intelligence, explainable AI, cybersecurity, and digital audit transformation.

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1. INTRODUCTION

Audit analytics has become one of the most important topics in terms of accounting and auditing research in relation to the growing use of data analytics as a tool for improving the audit process. Traditional methods of conducting audits, traditionally based on manual approaches and the verification of compliance, have gradually progressed towards the use of advanced techniques capable of processing large amounts of data [1], [2]. The reason for this is the development of new technologies, such as big data, artificial intelligence (AI), and

machine learning (ML), allowing auditors to detect suspicious activity and identify possible misstatements [3], [4]. In the light of an ever-growing importance of advanced data systems, the application of audit analytics becomes indispensable not only for ensuring accuracy of financial data but also for making informed decisions and complying with regulations [5].

As audit analytics have found their way into auditing practice, the increasing need for studying the effect it has on the quality and efficiency of audit process became apparent. Research findings show that the implementation of AI and data analysis helps auditors better understand the risks associated with financial reporting and possible fraudulent activities, making audit processes more timely and accurate [6], [7]. At the same time, the use of analytics allows performing audit in real time, which means that the auditor can identify the areas that are most at risk and avoid using labor-intensive methods of sampling and testing [8], [9], [10].

Even though audit analytics have significant real-world importance, there still exists a fragmented state of affairs in this field of research. Current literature is characterized by scattered information on audit analytics, which is spread out among several topics, research methods, and settings. Although current studies can be useful for understanding certain features of audit analytics, such as AI implementation, forecasting models, or effectiveness of analytical techniques in different audit areas, they cannot provide researchers with a full understanding of the intellectual structure and topic dynamics of audit analytics research area.

Bibliometric analysis is an approach that provides a robust and empirical method to fill this knowledge gap. Through studying patterns of publications, citations, co-occurrences of keywords, and co-authorships, bibliometrics helps scholars track the evolution of a scientific field and analyze its knowledge structure [11]. Bibliometric approaches are especially useful for fields, which evolve quickly due to constant innovation and change in regulations, such as audit analytics. Through analyzing prevailing trends, influential works, and cooperation in the field, bibliometric studies can help identify directions for future research.

Another reason why audit analytics play an important role is due to the increasing use of predictive and automatic audit methods. In light of the increasing presence of big data sets in organizations and digital reports, the task of analyzing data and evaluating risks and compliance become more complicated for the auditor [12]. Using data analysis methods based on AI allows auditors to gather information from different sources, analyze patterns related to fraud and errors, and make decisions more accurately. Moreover, with the development of machine learning models in the audit field, the auditor gets a chance to create adaptive models that continuously get better with the increase in the volume of data [13], [14], [15].

Moreover, the rise in interdisciplinary audit analytics research highlights the intersection between accounting, information system, and management sciences [16]. Research on various applications of audit analytics has been conducted including financial statement analysis, credit risk assessment, operational audit, and fraud detection by utilizing computational methodologies for improving accuracy and efficiency. These researches do not only contribute to theoretical development of audit but also solve organizational problems of material misstatement detection, audit resource allocation, and regulation adherence among others. The increasing number of audit analytics literature emphasizes the significance of audit analytics in academia and audit profession.

Although the amount of audit analytics research has increased steadily over time, the structure and development of audit analytics literature has been inconsistent. Audit analytics publications have been scattered in different topics, journals, and methodology types, making it hard to detect significant trends, key literature pieces, and emerging topics within the field. As a result, researchers and professionals are unable to understand the development pattern,

collaboration pattern, and topic clusters within the audit analytics research field. Due to the absence of this structural analysis, it becomes impossible to direct the future research efforts, match the studies with technology and regulations, and efficiently apply audit analytics in organizational practices [17]. This paper aims at carrying out a bibliometric analysis of the audit analytics research literature.

2. METHODS

Bibliometric research design has been adopted in this study to carry out an analysis of the development, trends, and intellectual structure of audit analytics research. Bibliometric analysis involves an assessment of scientific publications to examine the patterns of scientific outputs, authorship, citation connections, and evolution of thematic focus [17]. The application of bibliometric methodology in this study will enable the identification of the intellectual structure through dominant themes, authors, and journals in the field, as well as future research trends. The adoption of bibliometric methodology is appropriate for the audit analytics research area considering the rapidly increasing number of articles dealing with artificial intelligence, data analytics, and automation.

The dataset for this study has been retrieved from Scopus database, which is considered to be one of the biggest and most comprehensive databases of peer-reviewed research works in the area of accounting, auditing, and associated disciplines. A strategic search technique was used through the use of keyword searches like "audit analytics," "data driven auditing," "AI in auditing," "machine learning audit," and "financial statement analysis." The data search was restricted to journal articles, conference papers, and review articles available in English until July 2026 to maintain the consistency of the data quality and comparison. The search output was then filtered to remove duplicate, unrelated, and out-of-auditing-and-accounting-related works from the list.

The bibliometric analysis was performed through VOSviewer which is a software program specifically designed to build and visualize bibliometric networks. The VOSviewer was used to conduct analysis based on co-authors, citations, keywords co-occurrences, and clusters to identify the research themes. The co-author analysis enabled the identification of the network of collaboration of authors and organizations while citation analysis focused on highlighting the influential authors, journals, and articles in the field. The analysis of keywords co-occurrences and clusters gave insight into thematic structures showing how the audit analytics literature evolved and new topics were introduced, such as applications of AI, predictive modeling, and fraud detection.

3. RESULTS AND DISCUSSION

3.1 Network Visualization

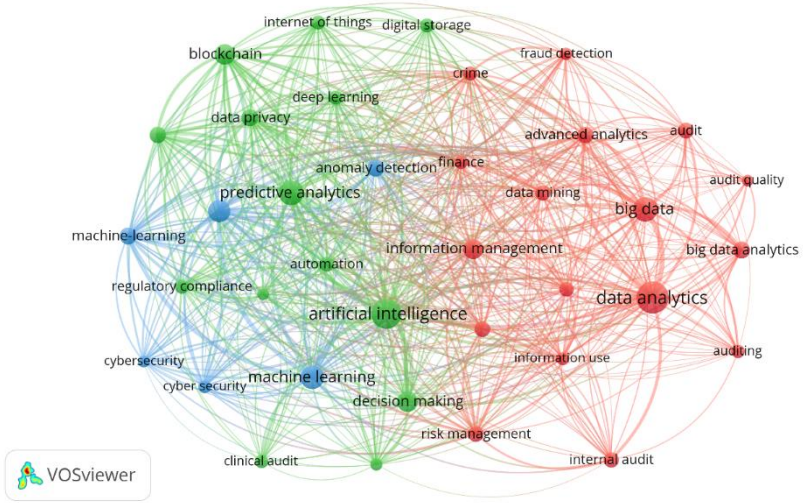

Figure 1. Network Visualization
Source: Data Analysis Result, 2026

Figure 1 illustrates the intellectual structure and thematic relationships within the field of audit analytics research. The visualization identifies several interconnected clusters represented by different colors, where each node indicates a keyword, the size of the node represents its frequency of occurrence, and the connecting lines demonstrate the strength of relationships among keywords. The dense connections among major keywords such as data analytics, big data, audit, artificial intelligence, and machine learning indicate that audit analytics has developed as an interdisciplinary research area combining accounting, information systems, and emerging digital technologies.

The red cluster is a representation of the dominant theme concerning the impact of data-driven auditing on audit performance. The key terms data analytics, big data, big data analytics, audit quality, auditing, internal audit, advanced analytics, and data mining feature prominently in this cluster. This implies that most of the research done in audit analytics deals with the impact that massive data analysis has on audit processes, audit quality, risk assessment, and detecting irregularities in the audits. The link between data analytics and audit quality implies that researchers are now viewing data analytics as a critical tool in boosting audit efficiency.

The green cluster emphasizes the technological change aspect of audit analytics, especially with regards to the use of artificial intelligence and digital technologies. The keywords such as artificial intelligence, deep learning, blockchain, Internet of things, automation, predictive analytics, and data privacy show an increasing interest towards the use of intelligent technology within the audit process. The green cluster clearly shows that the scope of audit analytics has extended from the traditional statistical analysis to intelligent technology that can handle sophisticated and dynamic data. The presence of blockchain and Internet of things keywords suggests the futuristic discourse on data security and transparency.

The blue cluster highlights the significance of machine learning, cybersecurity, and predictive methods in audit decision making. Machine learning, machine learning, cybersecurity, regulatory compliance, and decision making are some keywords which show that researchers are exploring the ways to help auditors in finding patterns and predict the risks through the use of computational algorithms. Machine learning and predictive analytics relation shows that audit analytics studies now pay more attention towards proactive auditing approach where financial irregularities, compliance issues, and risks are predicted before causing any severe effect.

Through bibliometric mapping, it becomes apparent that the audit analytics discipline is advancing based on the following three dimensions: (1) enhancement of audit quality using big data analytics and data mining techniques, (2) integration of artificial intelligence and digital technologies into audit practices, and (3) development of prediction models and automated decision-support systems for auditing. The high degree of clustering connectivity clearly suggests that audit analytics is a multi-disciplinary area and is no longer confined to accounting only. Rather, it is an area comprising IT, data sciences, cybersecurity, and risk management. Future research could revolve around some of the emerging technologies like generative artificial intelligence, explainable AI, continuous auditing, and blockchain-based assurance.

3.2 Overlay Visualization

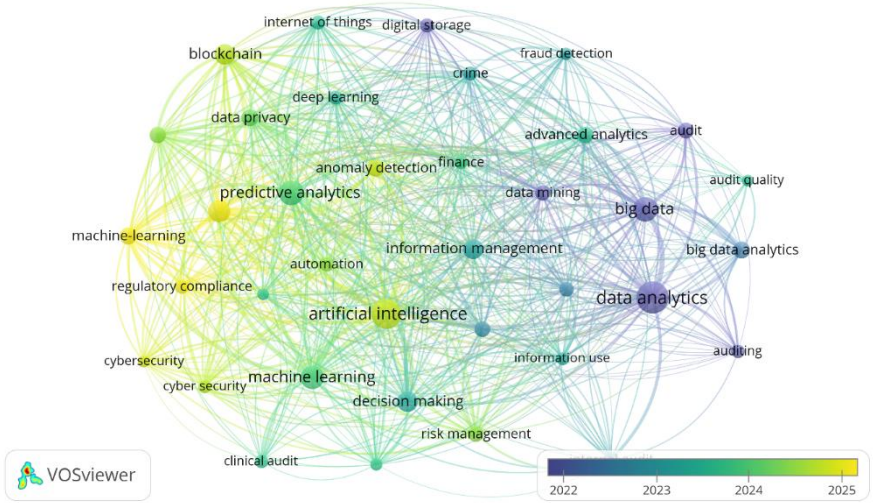

Figure 2. Overlay Visualization
Source: Data Analysis Result, 2026

Figure 2 depicts the time-related development of research themes in audit analytics using keywords. Color coding shows the average publication year of keywords, from older themes (blue-purplish; 2022) to new themes (green-yellow; 2024-2025). The chart reveals the shift in audit analytics research from conventional data-focused audit concepts to technological advances in audit research. Data analytics, big data, auditing, and audit quality are some examples of keywords found in the early stages of research showing the interest of early studies in the use of analytics for improved audits.

Current research trends are depicted by the green and yellow regions below, reflecting the rising trend of focusing on the fields of artificial intelligence, machine learning, predictive analytics, blockchain, and cybersecurity. Terms such as machine-learning, artificial intelligence, deep learning, blockchain, data privacy, and predictive analytics are featured as emerging themes, indicating that present researches are moving towards intelligent auditing methods. These developments can be attributed to the changing nature of auditing, as auditing has changed from analytical techniques to technological tools with capabilities of detecting, predicting, and decision-making for real-time audit practices.

It can be seen from the temporal mapping that the research into audit analytics is experiencing technological growth at a fast pace. The early studies were concerned with the usage of big data and analytics to improve auditing, but in the latter studies, attention was given to the integration of technology to improve audit intelligence and reliability. It is anticipated that future research will be based on the use of generative artificial intelligence,

explainable AI, automation in audit, and digital infrastructure for auditing.

3.3 Citation Analysis

Table 1. Top Cited Research

Citations	Authors and year	Title
451	[18]	The Ethical Implications of Using Artificial Intelligence in Auditing
422	[19]	Big data in accounting: An overview
353	[20]	Detecting and Preventing Cyber Insider Threats: A Survey
334	[1]	Big data and analytics in the modern audit engagement: Research needs
318	[21]	Robotic process automation for auditing
312	[22]	Behavioral implications of big data's impact on audit judgment and decision making and future research directions
311	[23]	Big data analytics in financial statement audits
294	[24]	Towards an Autonomous Industry 4.0 Warehouse: A UAV and Blockchain-Based System for Inventory and Traceability Applications in Big Data-Driven Supply Chain Management
222	[25]	'Big data' for pedestrian volume: Exploring the use of Google Street View images for pedestrian counts
201	[26]	Using machine learning to detect misstatements

Source: Scopus, 2026

Table 1 presents the most influential publications in the field of audit analytics based on citation frequency, reflecting the intellectual foundation and major research directions within this domain. The most cited article is [18] entitled "The Ethical Implications of Using Artificial Intelligence in Auditing" with 451 citations, indicating strong academic attention toward the ethical challenges associated with AI adoption in auditing, including issues of transparency, accountability, and auditor responsibility. The second most cited study, [19] on "Big data in accounting: An overview" with 422 citations, highlights the fundamental role of big data technologies in transforming accounting and auditing practices. Other highly cited studies focus on the application of analytics in modern audit engagements, such as [27] regarding big data and analytics in audit processes, [23] on big data analytics in financial statement audits, and [22] examining the behavioral implications of big data on auditor judgment and decision-making. Furthermore, research on emerging technologies, including robotic process automation [21] and machine learning for detecting financial misstatements [26], demonstrates the increasing integration of intelligent technologies into audit practices.

3.4 Density Visualization

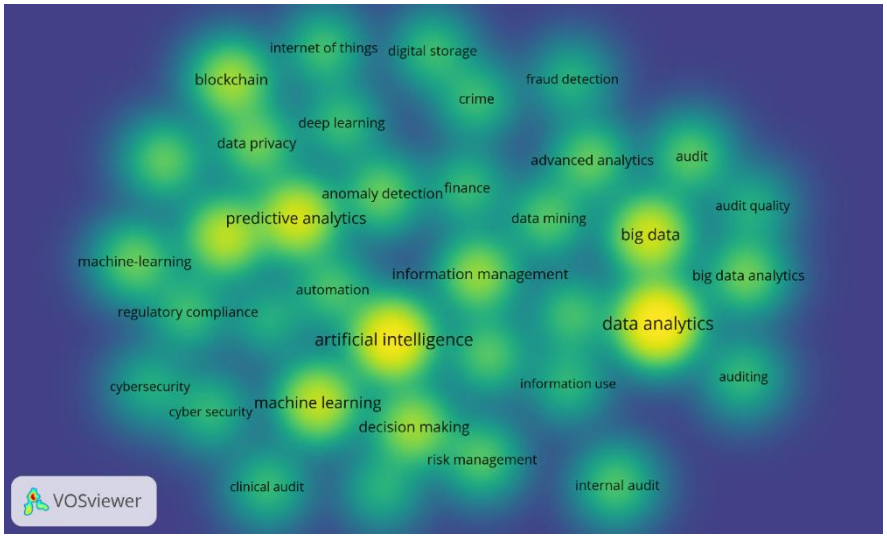

Figure 3. Density Visualization

Source: Data Analysis Result, 2026

Figure 3 shows the intensity of the research topics in the audit analytics field. The level of color intensity denotes the level of the keyword occurrence, where the presence of brighter colors means that the particular keyword appears more often and has more attention paid to it by the researchers. The most vivid parts of Figure 3 center on keywords such as data analytics, big data, artificial intelligence, machine learning, and predictive analytics, which proves that these notions form the core of the audit analytics knowledge structure. The high concentration on data analytics and big data shows that a significant number of researchers work on applying large data processing in audit practices.

Moreover, the visualisation illustrates the development of interconnected themes associated with the use of advanced technology like blockchain, deep learning, automation, cyber security, and fraud detection. These themes have a medium to high frequency occurrence, which implies growing academic interests in using intelligent systems in auditing. Keywords associated with risk management, internal audit, anomaly detection, and regulatory compliance further suggest that audit analytics studies have moved away from conventional financial statement auditing.

3.5 Author Visualization

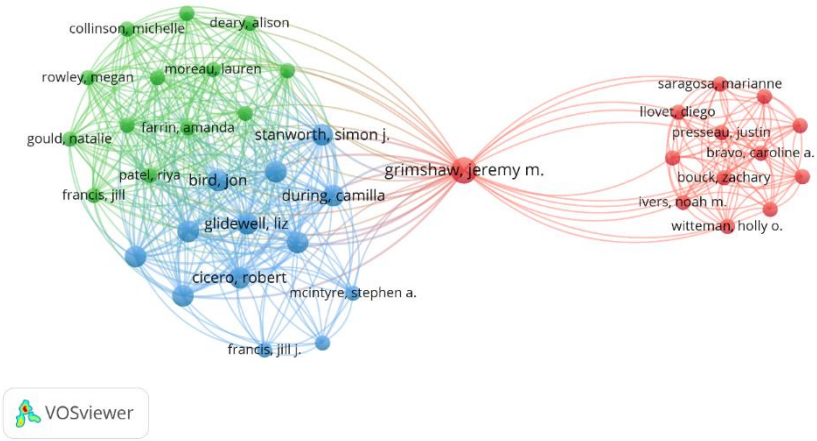

Figure 4. Author Visualization
Source: Data Analysis Result, 2026

Figure 4 represents the collaboration behavior and intellectual relations between scientists in the sphere of audit analytics. In the network, we can distinguish a few clusters which are marked with different colors, implying certain groups of researchers who work in cooperation or have similar ideas for research. As it is seen from Figure 4, Grimshaw, Jeremy M. is located in the center of the network and has connections with different groups of authors; hence, this scientist acts as a bridge between different research communities. The green cluster is a good example of a big collaboration network made up of authors like Collinson, Michelle; Deary, Alison; Moreau, Lauren; Farren, Amanda; and Rowley, Megan, suggesting that the researchers have a very close relationship. The blue cluster is another good example of a large collaboration network with authors like Glidewell, Liz; Durning, Camilla; Cicero, Robert; and McIntyre, Stephen A. On the other hand, the red cluster with authors such as Saragosa, Marianne; Ilovet, Diego; Presseau, Justin; and Wittman, Holly O. seems to be less connected but still linked by key authors like Grimshaw.

Figure 5. Institution Visualization
Source: Data Analysis Result, 2026

Figure 5 depicts the connections between organizations that participate in the research in the domain of audit analytics. One can notice that the collaboration network is not highly developed; however, there are several organizations that are linked together via their research activities. It can be seen that one of the key nodes on the diagram is Clinical Epidemiology Program, Ottawa Hospital Research Institute that serves as a link between different organization groups owing to its bigger size and stronger links. Also, the network illustrates relationships between Intelligent Healthcare, Coventry University and the Department of Epidemiology, Faculty via the core institution. Even though the number of institutions illustrated on the network diagram is not many, the strength of the connections proves that collaboration takes place among some particular academic institutions.

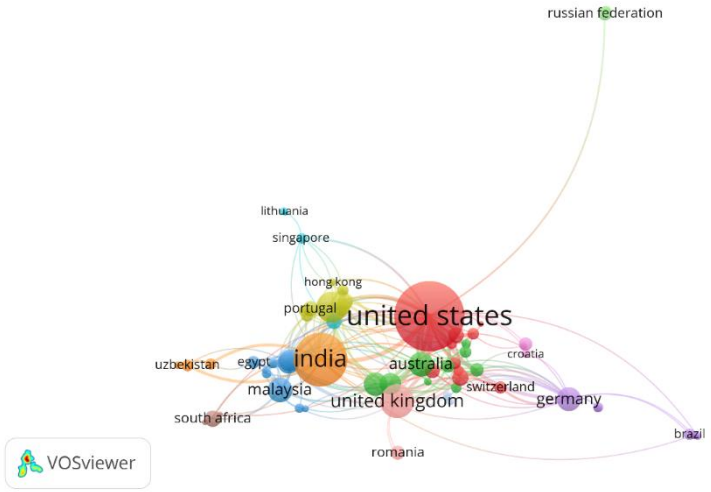

Figure 6. Country Visualization
Source: Data Analysis Result, 2026

The distribution of countries worldwide and their collaborative interactions for conducting research on audit analytics are shown in Figure 6. From the figure, it can be seen that the USA is the most influential and central country, as indicated through the larger size of its node and connections to other countries. It means that the USA has the highest productivity of research and dominates in intellectual growth in audit analytics research. Countries like India, the United Kingdom, Australia, Germany, and Switzerland, which are well-connected, are also significant contributors to audit analytics research.

From the visualization above, several regions where collaboration occurs can be seen. In the red cluster, which is made up of nations such as the United States, the collaboration occurs within a significant research community that has links with other nations such as the United Kingdom, Australia, Romania, and Russia. Orange cluster includes nations such as India and several others from Asia like Malaysia, Singapore, and Hong Kong, and the collaboration is the increasing role played by developing nations in audit analytics.

4. CONCLUSION

This bibliometric study provides a comprehensive overview of the intellectual development, research trends, and collaboration patterns within the field of audit analytics. The findings demonstrate that audit analytics has evolved from traditional data analysis approaches toward more advanced technology-driven auditing practices

involving big data analytics, artificial intelligence, machine learning, predictive analytics, blockchain, and automation. Citation analysis reveals that influential studies have primarily focused on the integration of big data and AI technologies into auditing processes, while also addressing important issues related to ethical considerations, auditor judgment, audit quality, and risk management. Keyword mapping further confirms that current research is increasingly centered on developing intelligent and automated audit systems capable of improving fraud detection, anomaly identification, decision-making, and continuous auditing capabilities. The collaboration analysis indicates that audit analytics research is globally developed, with the United States serving as the leading contributor, supported by growing international collaboration among countries, institutions, and research communities.

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