

A BIBLIOMETRIC ANALYSIS OF TITLE TERMS IN ARTIFICIAL INTELLIGENCE AUDITING RESEARCH

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Abstract

This paper is a systematic Bibliometric survey of artificial intelligence (AI) auditing research to identify the intellectual structure underlying it, as well as its thematic development and patterns. The study applies a quantitative and descriptive research design which considers bibliometric methods, data was extracted in the period 1982-2026 through the use of the dimensions database. After data cleaning, 2,443 documents were analyzed by using performance analysis and science mapping techniques namely, key-word co-occurrence, thematic evolution and analysis of conceptual structure using Biblioshiny (R-Studio). The results show that research production, in general, and especially after 2020, demonstrates a significant rise in research output. The industry is dominated by the major themes of artificial intelligence, auditing, and accounting, and the newer domains of machine learning, digital transformation, fraud detection, and robotic process automation are showing a trend towards more technologically advanced applications. The interdisciplinary and globally cooperative character of the domain, with input by a number of different countries, institutions, and journals have also been identified as a focal point in the study. In addition, thematic evolution suggests a shift to conceptual research to application-oriented and implementation-focused research. Although significant progress has been made, the paper shows major gaps regarding empirical validation, ethical implications, and absence of common frameworks of AI adoption in the field of auditing. The study concludes that AI auditing research is a rapidly evolving and dynamic field, offering significant opportunities for future research, policy development, and professional transformation.

Keywords: Artificial Intelligence; Auditing; Bibliometric Analysis; Machine Learning; Digital Transformation.

INTRODUCTION AND LITERATURE REVIEW

The swift growth of the field of artificial intelligence (AI) has drastically influenced a great number of areas of business and management, and auditing has become one of the most affected fields. Conventionally, auditing used to be full of manual processes and professional judgment and sample-based verification methodology. Nonetheless, the growing complexity of financial operations, the fast paced growth of data volumes and the need to be assured in real time have necessitated the use of high technological instruments. Here, AI technologies like machine learning, natural language processing, and robotic process automation are starting to be effectively employed in the process of auditing to increase efficiency, accuracy, and fraud detection capacity. Although the amount of research on the subject is slowly increasing, the area of AI in auditing has been fragmented and requires organized synthesis and detection of gaps in the research. The study fills this gap by presenting an extensive bibliometric analysis of title term terms, thus revealing the intellectual organization and theming development of AI auditing studies. The results of this research will likely play a role in the academic literature by providing a clear roadmap on future studies, as well as helping practitioners and policymakers to comprehend the transformative potential of AI in auditing.

Artificial intelligence (AI) integration into auditing has become a prominent topic over the last few years, which is fuelled by the growing complexity of financial systems, expansion of big data, and need of improved quality of auditing. The preliminary studies on this field were directed to expert systems and rule-based models to aid in making audit decisions (Miklos A. Vasarhelyi & Michael G. Alles, 2008). With the development of AI technologies over time, especially machine learning and data analytics, the possibilities of auditing practices have been greatly expanded. One of the key channels of literature elucidates the contribution of AI to enhance audit efficiency, as well as effectiveness. With AI-enabled tools, a large amount of structured and unstructured data can be processed, which provides an opportunity to conduct continuous auditing and evaluate the risk in real time (Jun Dai and Miklos A. Vasarhelyi, 2016). Fraud detection and anomaly identification have been very popular uses of machine learning techniques to overcome the shortcomings of traditional audit techniques (Efstathios Kirkos et al., 2007). These changes have turned auditing into a retrospective into more of a predictive and proactive discipline.

One more significant aspect of the literature is concentrated on audit quality and assurance. Research indicates that AI supports improvements in the quality of the audit as it reduces human error, increases consistency, and

facilitates complete analysis of the data (Joshua Kokina & Thomas H. Davenport, 2017). Better quality of financial reporting and financial reporting compliance are also supported using AI-driven systems and improve stakeholder confidence in audited information. The literature further emphasizes the role of digital transformation in reshaping auditing practices. Block-chain, robotic process automation (RPA), and natural language processing (NLP) are the technologies that become more and more involved in the audit processes. Block-chain ensures greater visibility and impossibility of financial records alteration, and RPA automatizes repetitive audit processes (Luca Appelbaum et al., 2017). These developments conform to the wider Industry 4.0 paradigm, with intelligent automation only remaking the business environment.

Besides technological innovations, a number of research find out what the AI should be able to offer to the auditing profession. Using AI will require new skills sets, including accounting skills and data analytics, as well as programming skills (David Y. Chan & Kristen A. Vasarhelyi, 2018). Moreover, the ethical issues, including algorithmic bias, data privacy, and transparency have turned out to be critical issues. Explainable AI has become a significant field to hold the AI-based audit decision-making accountable and trustworthy (Luciano Floridi et al., 2018). An emerging literature takes the form of bibliometric and systematic review that synthesize AI auditing developments. The aim of those studies is to chart the intellectual landscape, define significant research clusters, and identify new tendencies (Donato M. Malerba et al., 2022). The complexity and interdependence of the area by the appearance of the terms like machine learning, fraud detection, audit quality, and digital transformation in the results of the key words analysis can be discussed as the results of the digitalization process.

Notwithstanding the developments, literature depict a number of research gaps. Numerous studies are conceptual, and few studies verified empirically the use of AI applications in the real-world auditing scenarios. Also, unified structures and lack of sufficient attention to regulatory and ethical aspects are absent. These gaps bring in the need of a comprehensive study of bibliometrics to coin in all the knowledge that has been established and to steer issues towards research.

METHODOLOGY

The present study adopts a quantitative and descriptive research design based on Bibliometric analysis to examine the intellectual structure and evolving trends in artificial intelligence (AI) auditing research. The primary objective of the study is to analyze research growth, identify dominant keywords and thematic patterns, and explore authorship, collaboration, and publication trends in the field. The data were sourced from the Dimensions database on March 05, 2026, using the search query “Artificial Intelligence in Auditing,” and a purposive sampling technique was employed to ensure relevance by including publications from fields such as accounting, finance, management, and artificial intelligence, restricted to articles, book chapters, and conference proceedings published between 1982 and 2026. Initially, 2,502 records were retrieved; after data cleaning, including the removal of missing titles and abstracts, a final sample of 2,443 documents was selected for analysis. The study utilizes both performance analysis (annual scientific production, citation analysis, authorship patterns) and science mapping techniques (keyword co-occurrence, thematic evolution, and conceptual structure mapping) to derive meaningful insights. Data pre-processing involved standardization of keywords, removal of duplicates, and refinement of bibliographic information to ensure analytical accuracy. The analysis was conducted using Biblioshiny (R-Studio), a widely recognized tool for bibliometric and scientometric analysis, which enabled visualization through word clouds, thematic maps, network diagrams, and trend analyses. The overall methodological framework follows a systematic process comprising data collection, data cleaning, bibliometric analysis, visualization, and interpretation, ensuring logical consistency, reliability, and replicability of results, thereby providing a comprehensive and structured understanding of research developments in AI auditing.

DISCUSSION AND ANALYSIS

Table 1: Main Information of the Collected Data

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1982:2026
Sources (Journals, Books, etc)	1105
Documents	2428
Annual Growth Rate %	13.14
Document Average Age	3.54
Average citations per doc	20.38
References	57324
DOCUMENT CONTENTS	
Keywords Plus (ID)	1
Author's Keywords (DE)	1
AUTHORS	
Authors	7181

Authors of single-authored docs	495
AUTHORS COLLABORATION	
Single-authored docs	545
Co-Authors per Doc	3.45
International co-authorships %	18.37
DOCUMENT TYPES	
article	2428

The acquired data on artificial intelligence auditing study are mainly described by the statistics shown in Table 1. The investigation covers between the year 1982 and the year 2026 of a total of 2,428 papers issued during the period between the year 1982 and the year 2026 of the 1,105 periodicals and related venues with a striking annual rate of growth of 13.14. It is based on high intellectual influence with a means of 20.38 citations in each and every document and with a total of 57,324 references. It is also demonstrated in the study that the research is actively collaborated with 7181 authors with an average of 3.45 co-authors to each document and 18.37% international collaboration, which is an indicator of the global and multidisciplinary nature of the topic.

Table 2: Top 10 Years Scientific Production

Year	Articles
2025	780
2024	494
2023	263
2026	229
2022	216
2021	137
2020	64
2019	40
2018	30
2016	16

Diagram 1: Yearly Scientific Production

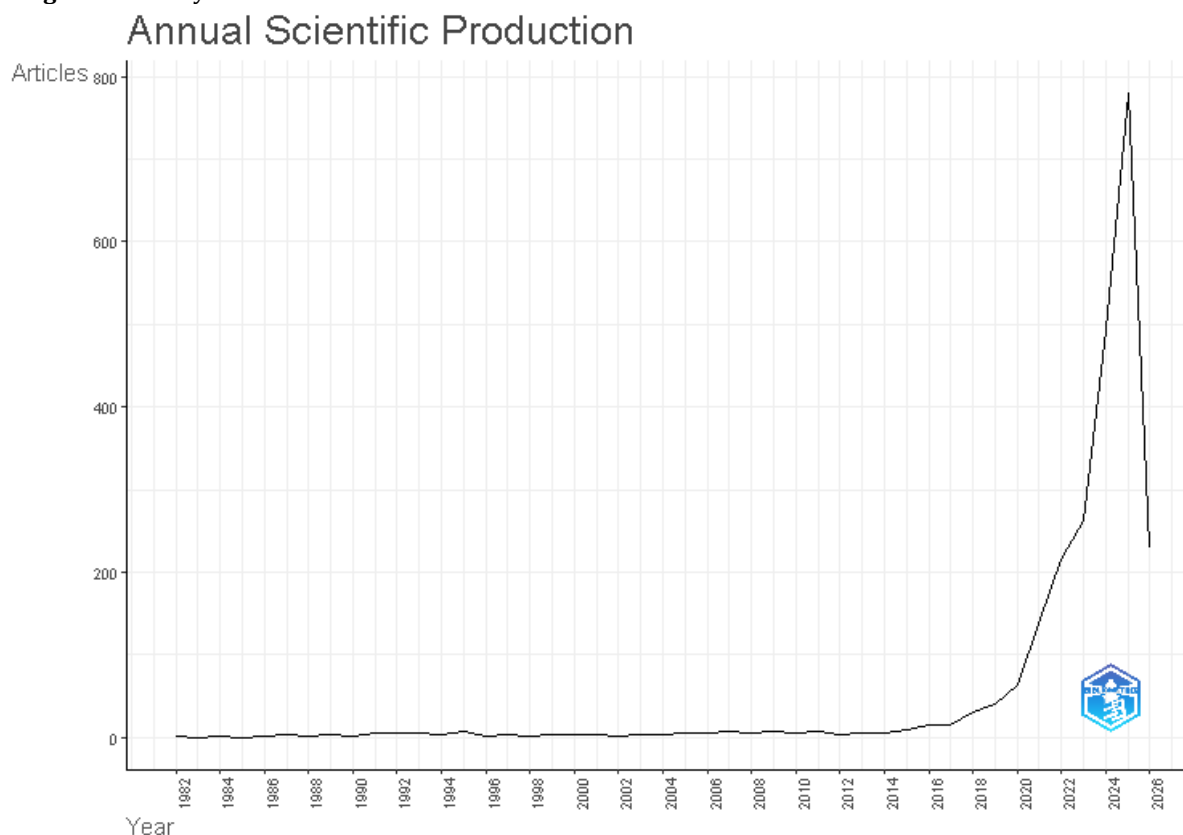


Table 2. The scientific productivity in AI auditing studies on yearly basis. As it is indicated in Table 2, the count of publications in the last several years has been skyrocketing. Frequently, 2025 (780 articles) followed by 2024 and 2023 and this indicates a boosted advancement in the research. This tendency has been especially

rising since 2020, reflecting the newly-grown applicability and acceptability of artificial intelligence in auditing practices. Combined, the data can be seen as a growing, swiftly advancing area of research.

Table 3: Top 10 Average Citation Per Article

Year	MeanTCperArt	N	MeanTCperYear	CitableYears
2001	153.25	4	5.89	26
2016	110.75	16	10.07	11
2017	108	15	10.8	10
2007	100.5	8	5.03	20
2006	93.67	6	4.46	21
2020	90.66	64	12.95	7
1998	71.5	2	2.47	29
2019	65.12	40	8.14	8
2008	62.4	5	3.28	19
2012	59.5	4	3.97	15

Diagram 2: Average Citations Per Year

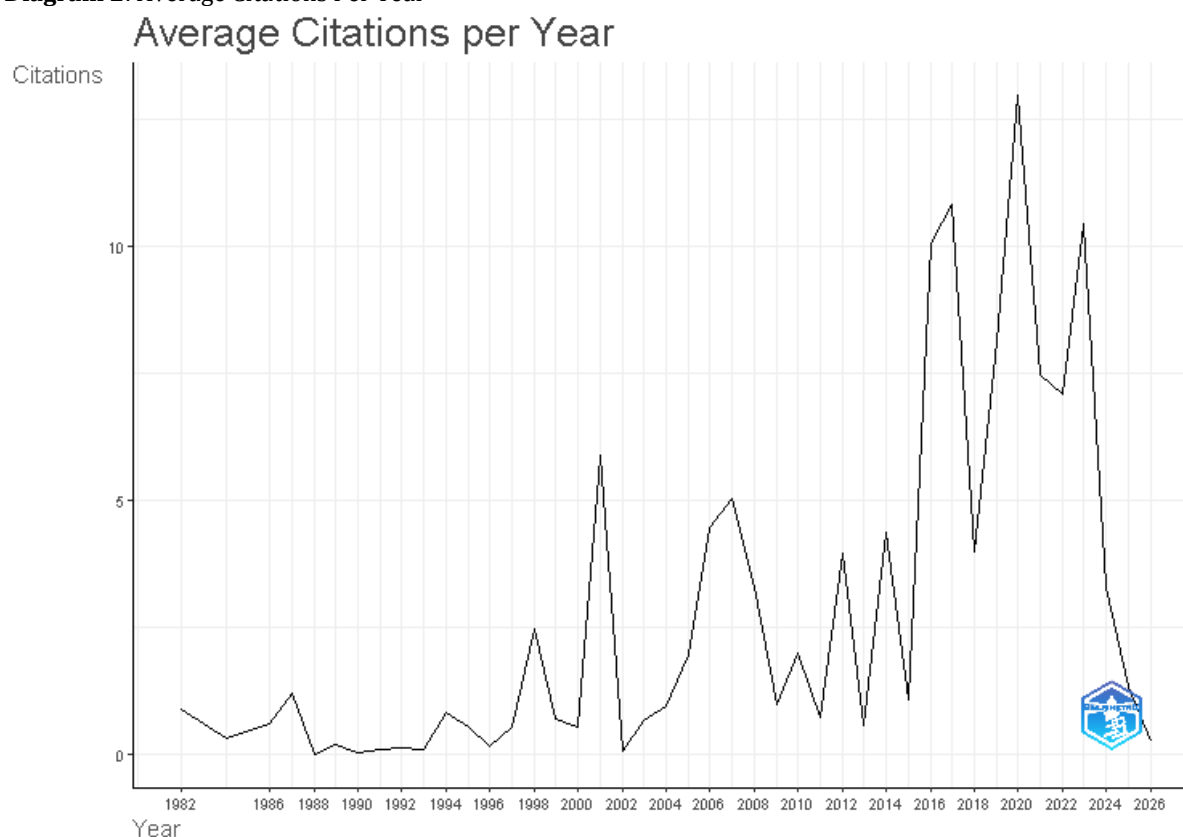


Table 3 presents the average citations per article across selected years, indicating the impact and influence of publications over time. Earlier years such as 2001 and 2007 show higher average citations per article, reflecting their long-term scholarly influence. Recent years like 2020 also demonstrate strong citation performance on a per-year basis, indicating growing relevance and rapid knowledge diffusion. Overall, the data highlights both foundational contributions from earlier studies and increasing impact of contemporary research in AI auditing.

Table 4: Top 10 Journals

Sources	Articles
PLOS ONE	62
SCIENTIFIC REPORTS	62
STUDIES IN SYSTEMS, DECISION AND CONTROL	57
LECTURE NOTES IN NETWORKS AND SYSTEMS	55
FRONTIERS IN ARTIFICIAL INTELLIGENCE	51
HELIYON	39
EDPACS	26
JOURNAL OF RISK AND FINANCIAL MANAGEMENT	24
AI AND ETHICS	23

Diagram 3: Most Relevant Sources / Journals

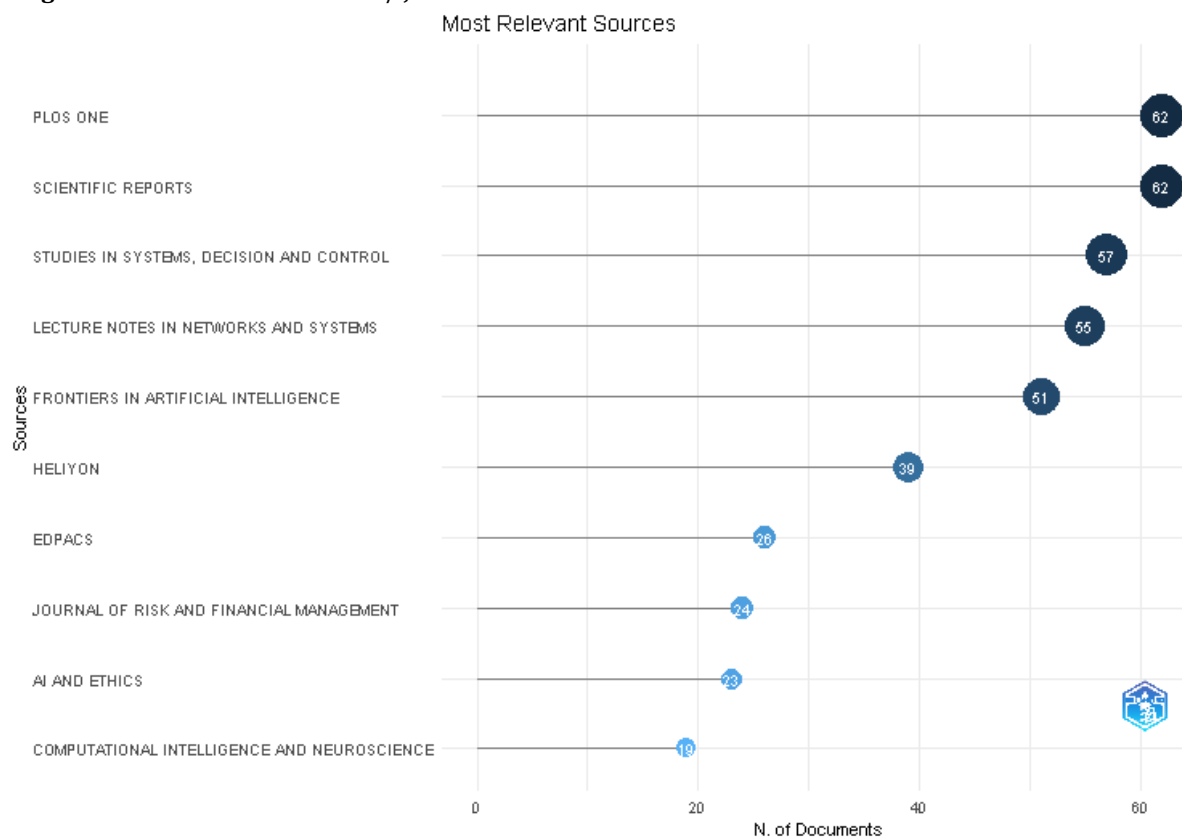


Table 4 presents the most prolific journals within the area of the research on AI auditing. The first is PLOS ONE in which there are the most number of articles (62 each), followed by Scientific Reports in which the number of articles in each is highest (62 each). This can also be observed in more multidisciplinary publications, such as Frontiers in Artificial Intelligence and AI and Ethics that serve as indicators of the cross-domain nature of the field. Comprehensively, the distribution reveals that AI auditing research is widely published in a variety of scientific and technology publications.

Table 5: Top 10 H-Indexed Journals

Source	h_ind ex	g_ind ex	m_ind ex	TC	N P	PY_st art
HELIYON	18	31	2.57	1011	39	2020
AI AND ETHICS	14	23	2.33	1234	23	2021
JOURNAL OF EMERGING TECHNOLOGIES IN ACCOUNTING	14	14	0.70	1871	14	2007
FRONTIERS IN ARTIFICIAL INTELLIGENCE	13	25	2.60	645	51	2022
INTERNATIONAL JOURNAL OF ACCOUNTING INFORMATION SYSTEMS	13	19	0.72	1756	19	2009
PLOS ONE	13	19	1.18	479	62	2016
SCIENTIFIC REPORTS	12	24	2.40	634	62	2022
INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH	11	14	0.85	431	14	2014
ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH	10	13	1.67	493	13	2021
JOURNAL OF BIOMEDICAL INFORMATICS	10	12	0.45	359	12	2005

Diagram 4: Sources Local Impact by H Index

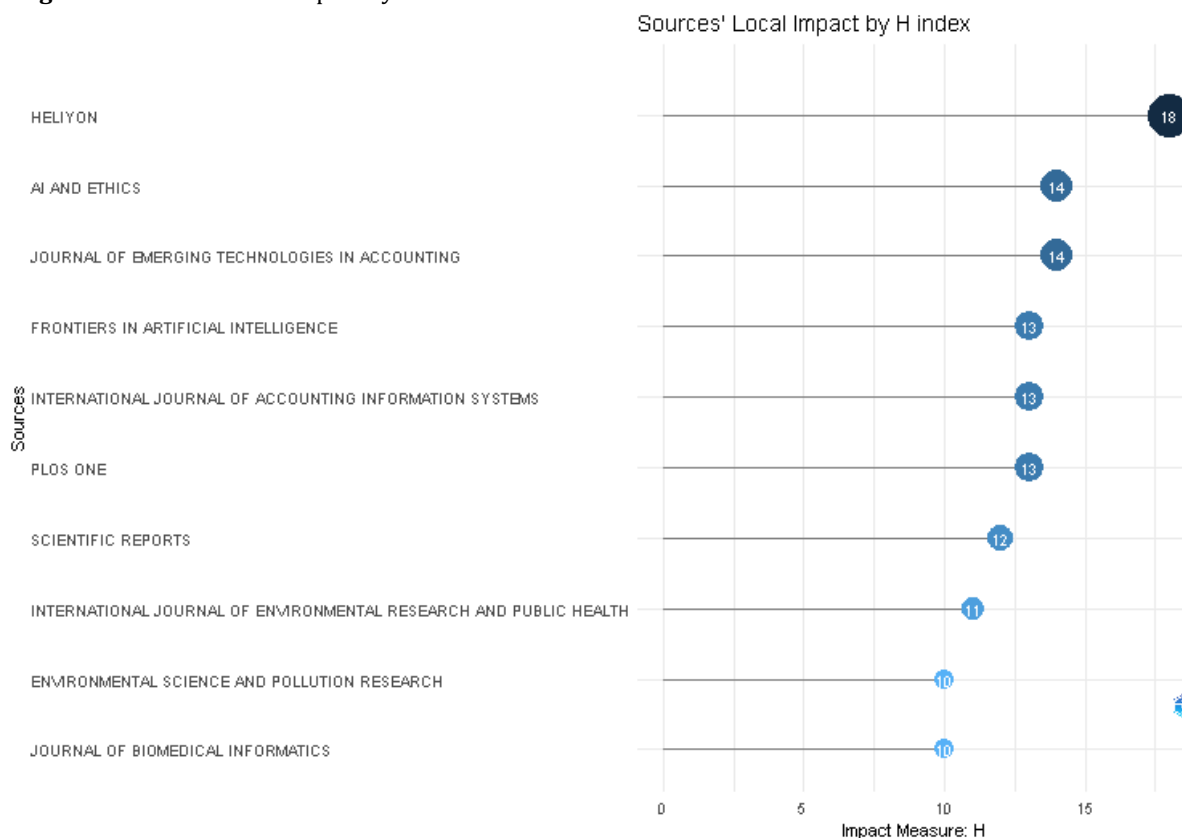


Table 5 shows the best H-indexed journals, and it is possible to conclude that they are relevant and pertinent to the research on AI auditing. Heliyon and journal of emerging technologies in accounting, have a good performance in terms of citation and significance, that is, both have the highest H-index [18]. The publications in such journals as International Journal of Accounting Information Systems and Frontiers in Artificial Intelligence support the idea of the continuous presence of new interdisciplinary directions in the field. In all, the findings suggest that journal articles that are accounting oriented and technology focused will play an important role in development of high impact research within the sphere.

Table 6: Top 10 Authors

Authors	Articles	Articles Fractionalized
WANG Y	15	3.63535354
LI Y	14	4.35
WANG X	12	4.02539683
ZHANG Y	11	3.38333333
LI X	10	5.23809524
HANDOKO BL	9	3.16666667
LI J	9	3.12857143
LIU Y	9	2.10744048
VASARHELYI MA	9	3.45
ZHANG H	9	3.78333333

Diagram 5: Most Relevant Authors

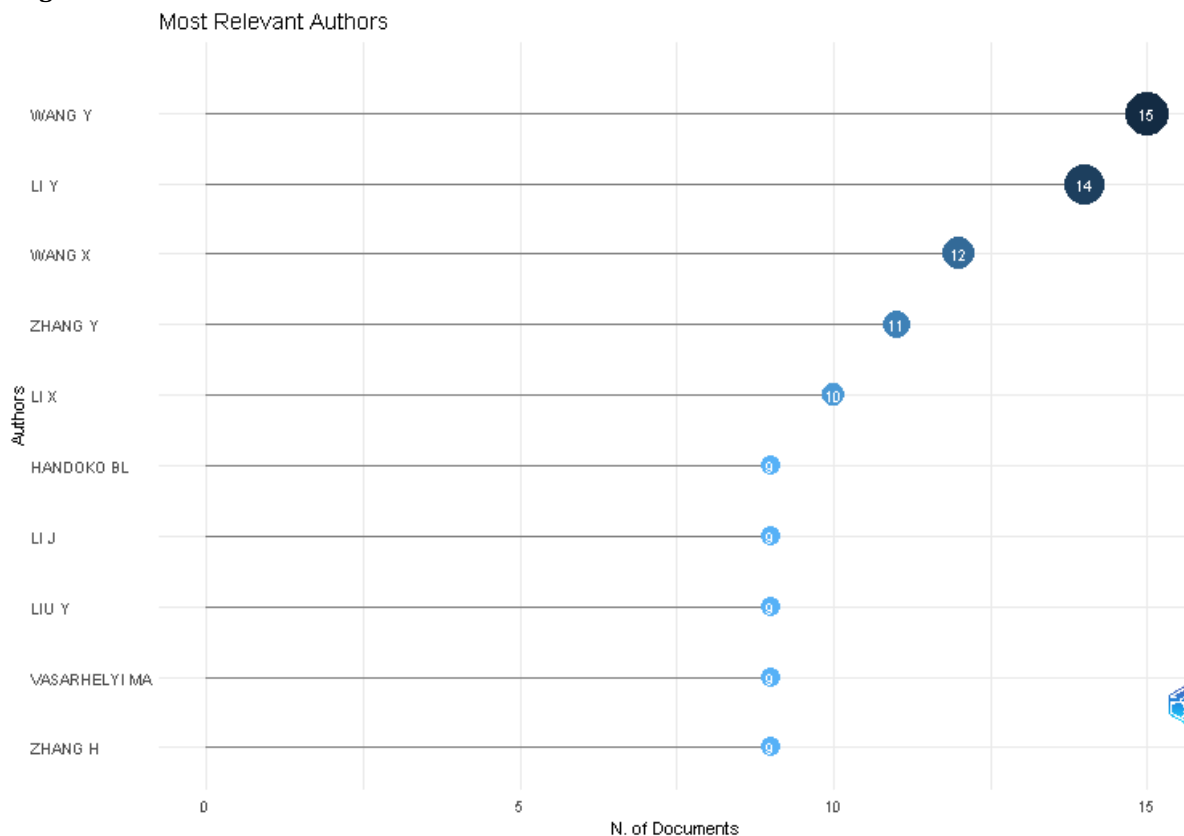
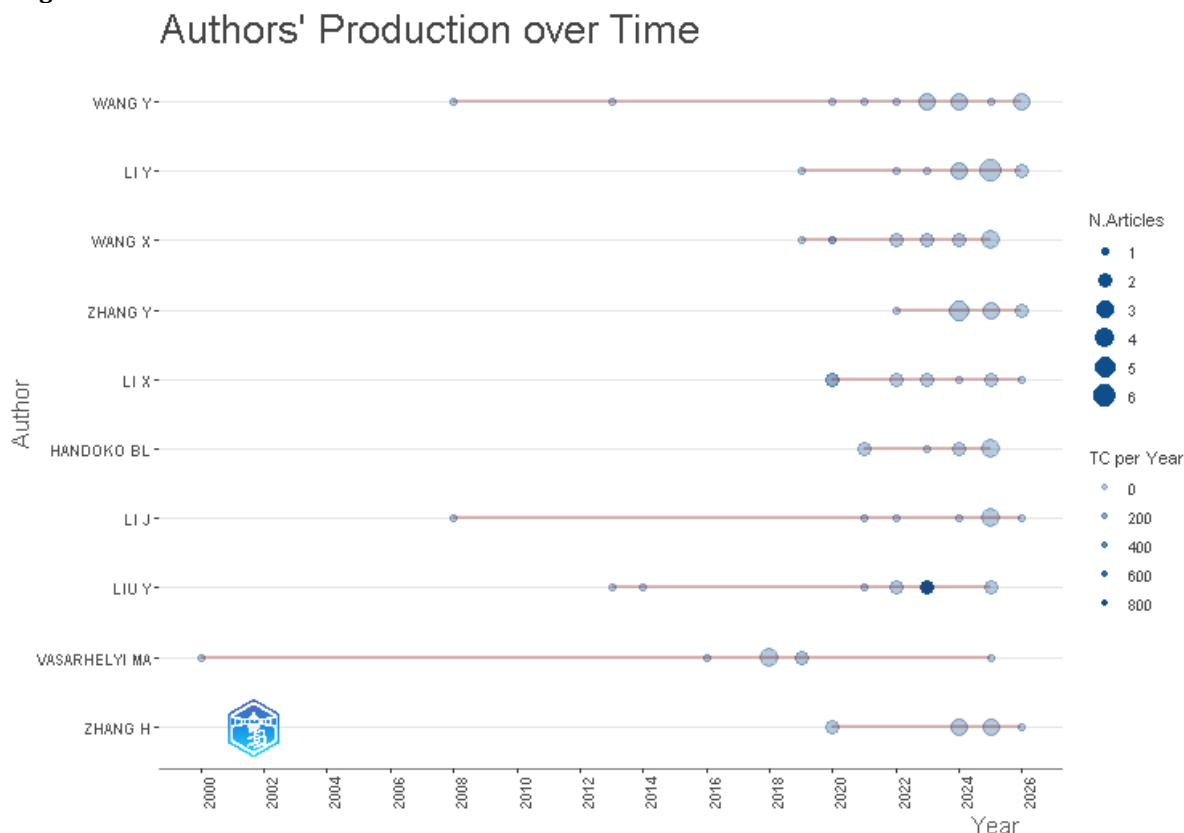


Diagram 6: Authors Production Over Time



The most productive authors that contribute to the research in AI auditing are highlighted in Table 6. WANG Y has the largest number of publications followed by Li Y and Wang X, which means that there is a strong research activity among these scholars. VASARHELYI MA is a contributor that truly reflects the writings of the

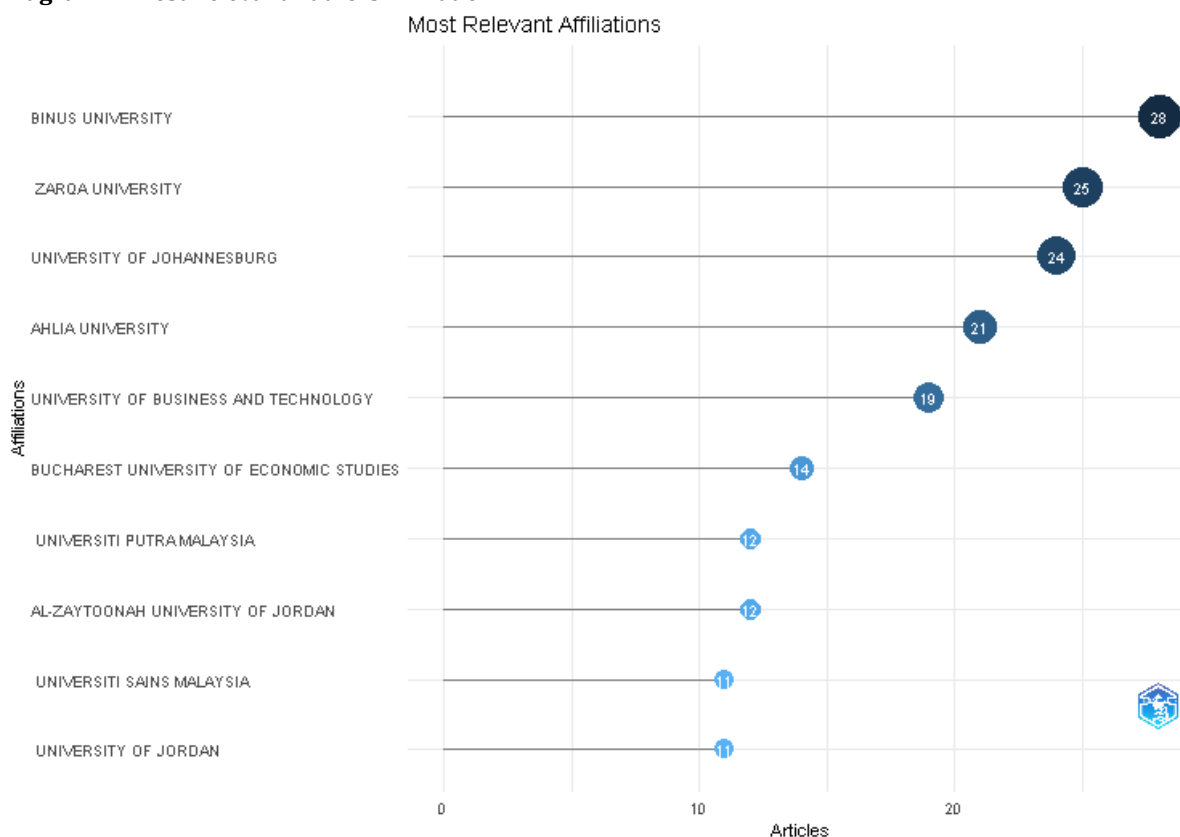
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well-known researchers in the domain. As the production of the authors has shown over time, there has also been an evident and growing annual publication trend of a number of authors in recent years. In general, the distribution indicates a combination of very active participants as well as long-term collaborative research activities that are forming the field.

Table 7: Top 10 Authors Affiliations

Affiliation	Articles
BINUS UNIVERSITY	28
ZARQA UNIVERSITY	25
UNIVERSITY OF JOHANNESBURG	24
AHLIA UNIVERSITY	21
UNIVERSITY OF BUSINESS AND TECHNOLOGY	19
BUCHAREST UNIVERSITY OF ECONOMIC STUDIES	14
UNIVERSITI PUTRA MALAYSIA	12
AL-ZAYTOONAH UNIVERSITY OF JORDAN	12
UNIVERSITI SAINS MALAYSIA	11

Diagram 7: Most Relevant Authors Affiliation



The Table: 7 presents the author affiliations with the highest number of publications in AI auditing research. The major universities in terms of most publications are BINUS University, Zarqa University and University of Johannesburg that demonstrate the large publication output of the institutions. In this study, Asian, Middle East and European institutions are involved, which indicates the global scholarly interest in this subject. Finally, the research results demonstrate that the developments in the field of AI auditing are backed up by numerous international organisations and the number of collaborative contributions tends to increase.

Table 8: Top 10 Countries

region	Freq
USA	297
CHINA	146

UK	144
INDIA	141
JORDAN	101
INDONESIA	97
SAUDI ARABIA	86
MALAYSIA	81
ITALY	66

Diagram 8: Global Scientific Production

Country Scientific Production

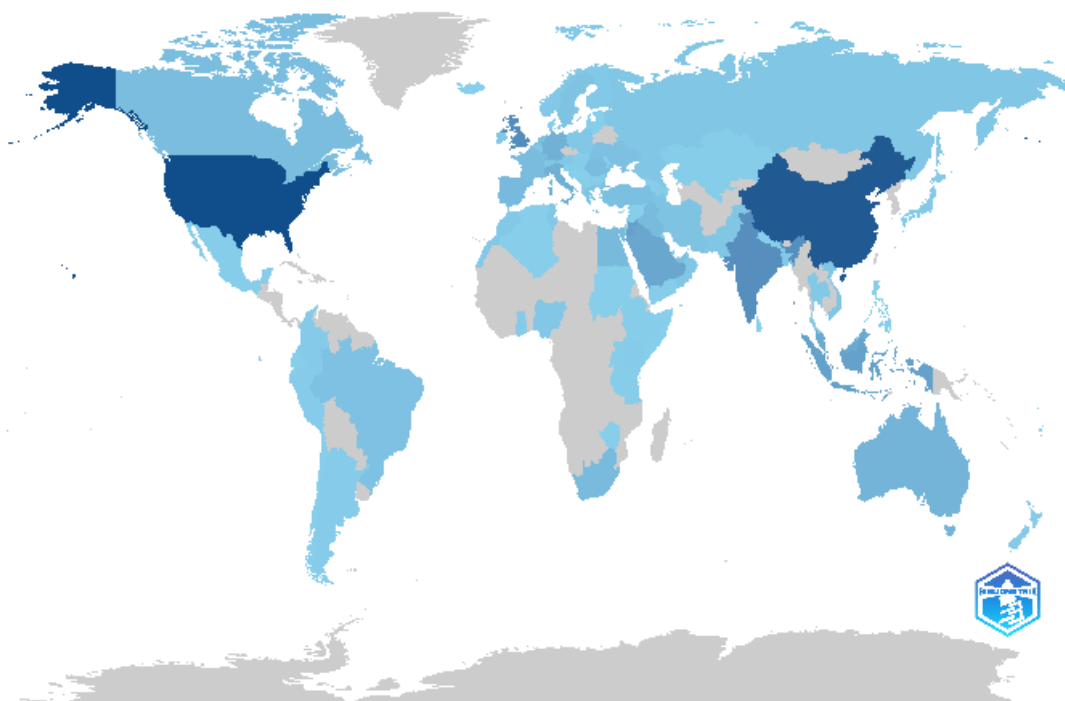


Diagram 8 and Table 8 indicate the global spread of scientific publications in AI auditing studies. The United States leads the list with the largest number of publications; followed by China, the United Kingdom and India; this indicates that not only the established nation is contributing in the publications but also the developing nation. Another geographical visualisation that leads to the great amount of research work in Asia, Europe and the Middle East. The overall findings are that AI auditing is an internationally-important topic of research, with an increasing international presence and collaboration.

Table 9: Most Cited Countries

Country	TC	Average Article Citations
GERMANY	96	48
USA	58	29
UNITED KINGDOM	31	31
NETHERLANDS	19	9.5
ROMANIA	2	2

Diagram 9: Most Cited Countries

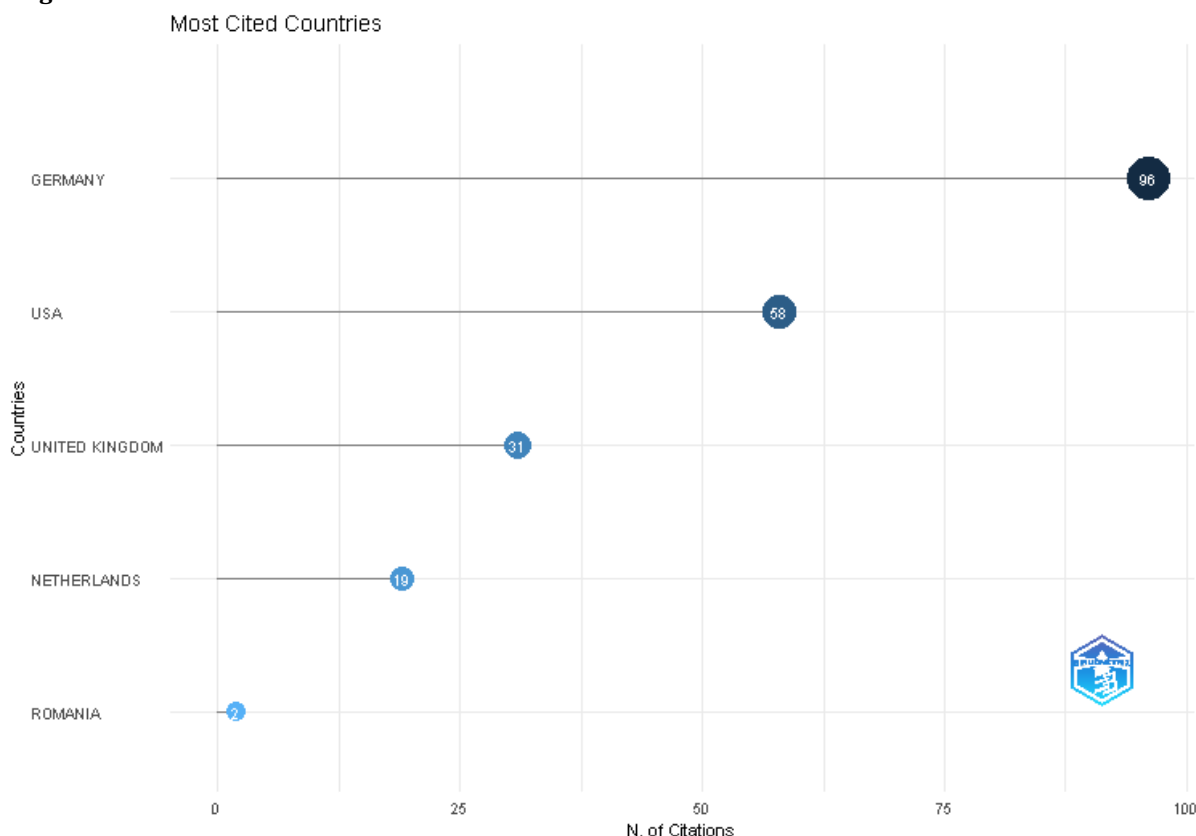


Table 9 and Diagram 9 presented the top referenced nations in research on AI auditing, thereby demonstrating their impact in the academic community. Germany was ranked topmost in terms of overall citations (27,382) and average citations per article (49.50), indicating a very strong scientific impact with a correspondingly low number of publication. The USA, and the United Kingdom also have high citation effect, as they are determined to find high-quality research. Overall, the findings suggest that the concentration of the citation effect is concentrated among a few countries focusing on the quality and impact of research, but not their quantity.

Table 10: Most Global Cited Documents/ Research Papers

Paper	Total Citations	TC per Year	Normalized TC
SINGHAL K, 2023, NATURE	3198	799.50	76.59
MOOR M, 2023, NATURE	1568	392.00	37.55
DUTTA P, 2020, TRANSPORTATION RESEARCH PART E LOGISTICS AND TRANSPORTATION REVIEW	1438	205.43	15.86
CHRISTENSEN HB, 2021, REVIEW OF ACCOUNTING STUDIES	1358	226.33	30.29
BURGER B, 2020, NATURE	1285	183.57	14.17
DÍAZ-RODRÍGUEZ N, 2023, INFORMATION FUSION	650	162.50	15.57
FLORIDI L, 2016, PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES	635	57.73	5.73
KOKINA J, 2017, JOURNAL OF EMERGING TECHNOLOGIES IN ACCOUNTING	578	57.80	5.35
KIRKOS E, 2007, EXPERT SYSTEMS WITH APPLICATIONS	572	28.60	5.69
MOLL J, 2019, THE BRITISH ACCOUNTING REVIEW	565	70.63	8.68

Diagram 10: Most Global Cited Documents

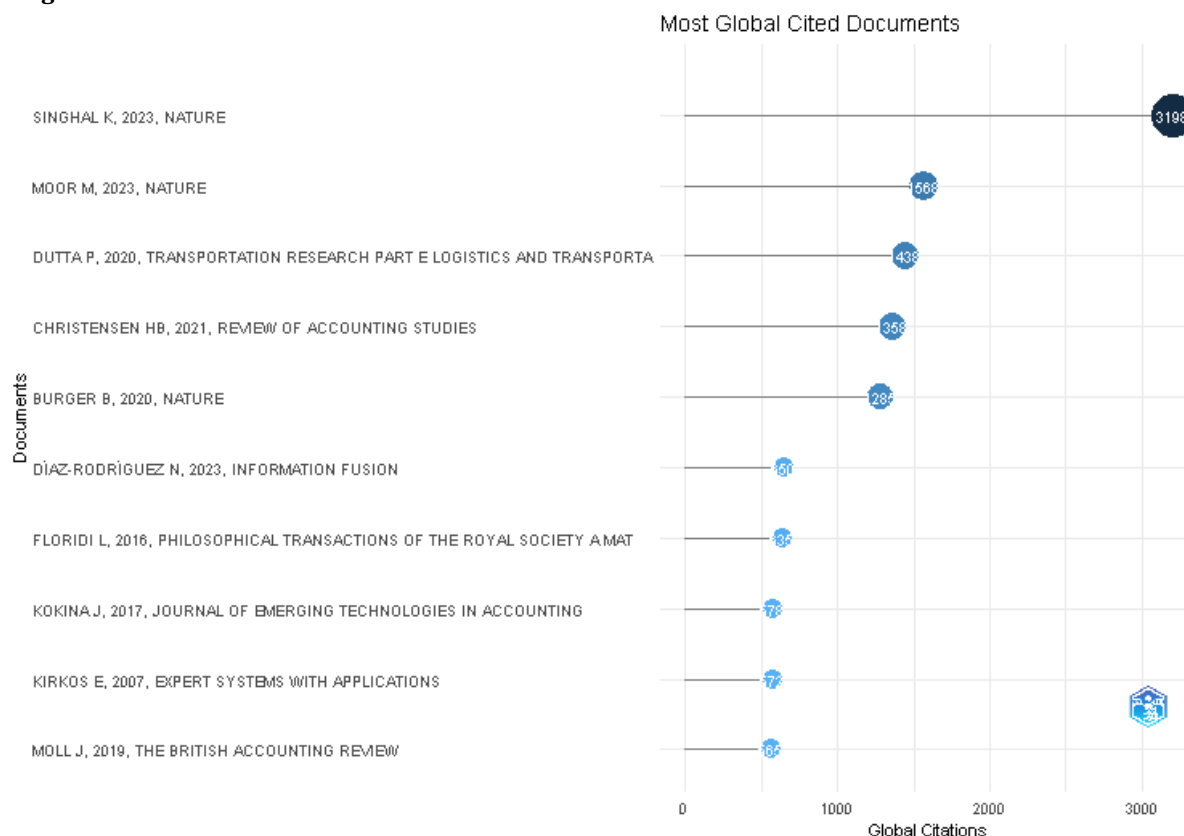


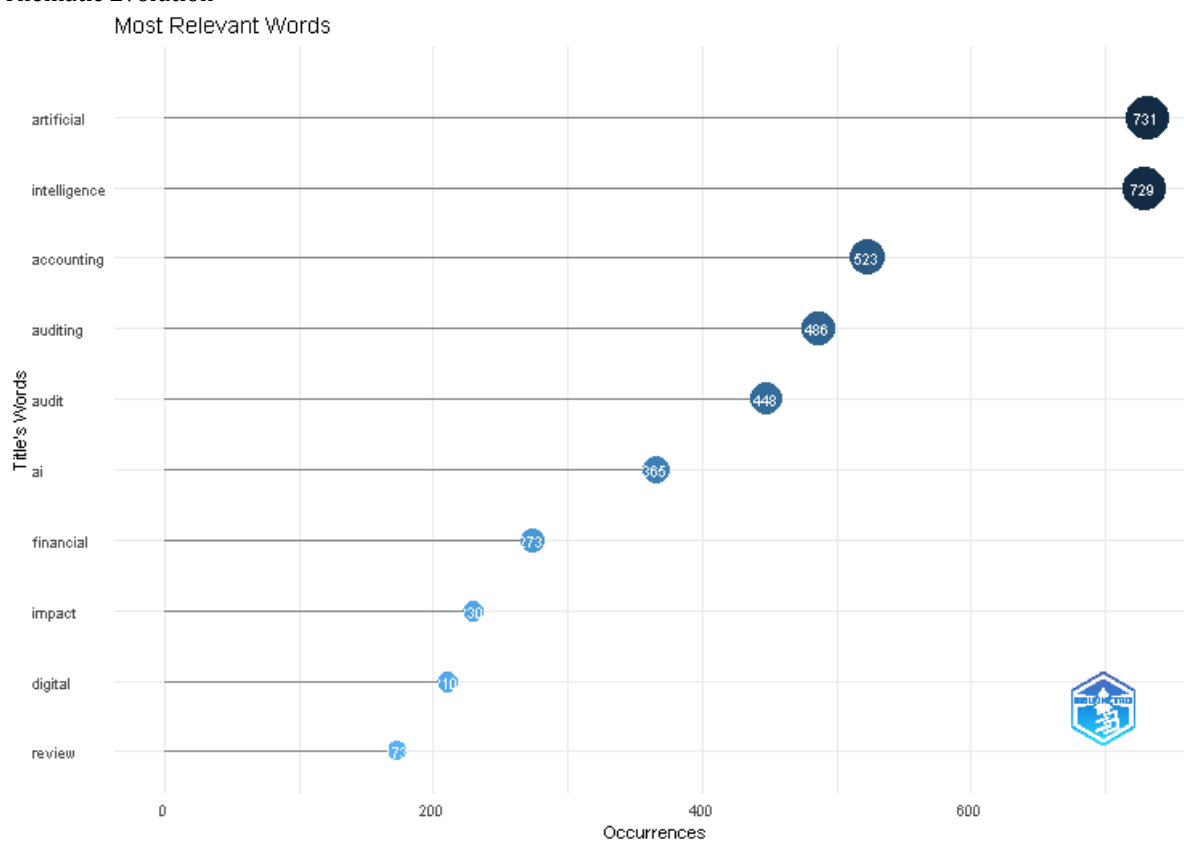
Table 10 and Diagram 10 also reveal the most widely cited documents in AI auditing and associated studies, its academic influence and impact. Singhal (2023) in Nature is the first study that presents the highest number of citations, followed by Moor (2023) and Dutta (2020), which indicates that high-impact journals have contributed significantly to the study. Primordial works, including the ones written by Floridi (2016) and Kirkos (2007), still have numerous citations, proving their enduring popularity. In sum, the findings highlight that recent high impact studies, as well as the previous foundational work, contributed to development of the field.

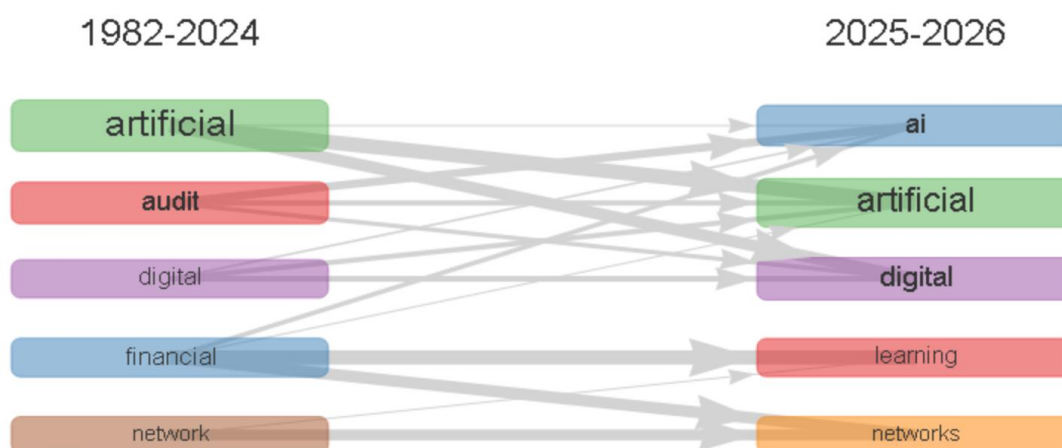
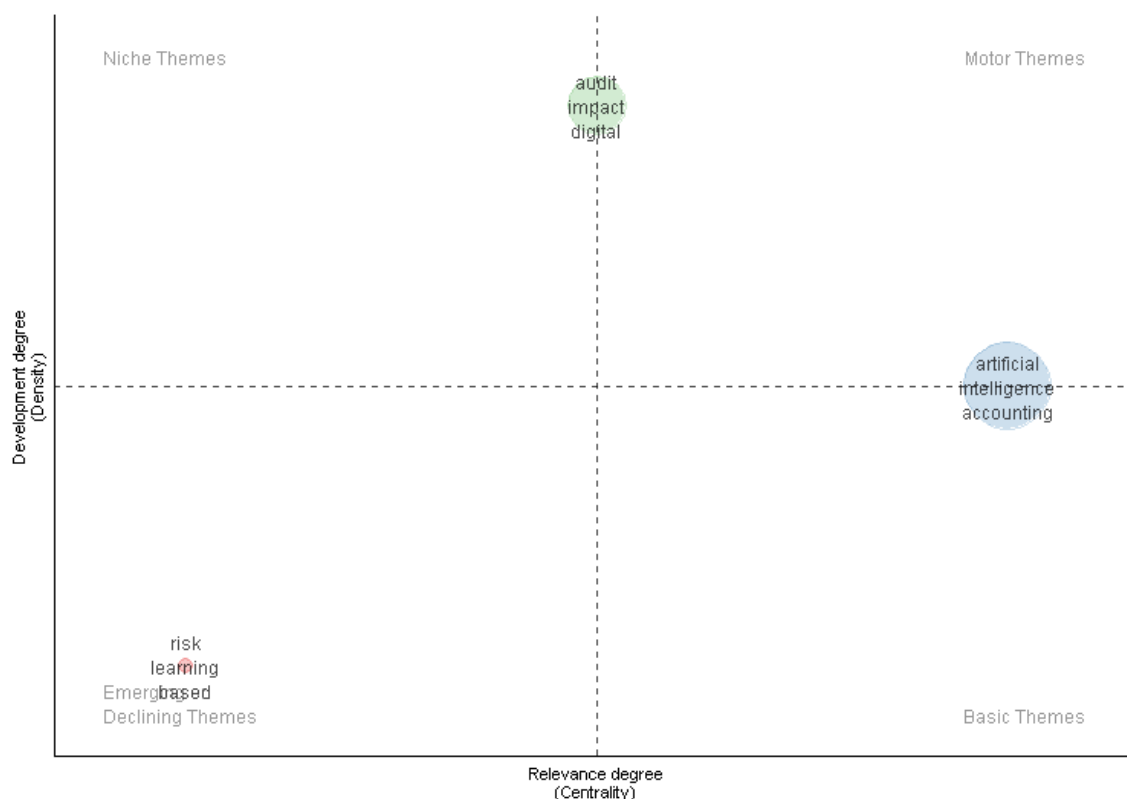
Table 11: Unigram of Selected Title Terms

Words	Occurrences
artificial	731
intelligence	729
accounting	523
auditing	486
audit	448
ai	365
financial	273
impact	230
digital	210
review	173
analysis	169
technology	165
role	151
quality	149
data	145
research	145

management	139
systems	131
internal	118
risk	118
learning	114
study	111
challenges	109
future	108
based	102
framework	102
information	100
auditors	96
transformation	94
Block-chain	92

Diagram 11: Most Relevant Unigram Words Charts, Word Cloud, Tree Map, Network, Thematic Map, and Thematic Evolution





The analysis of unigram keywords in Table 11 and the visualizations (word cloud, tree-map, network map, thematic map, and thematic evolution) give profound understanding of intellectual organization and thematic dynamics of AI auditing research. The frequency distribution of keywords clearly shows that such keywords as artificial (731), intelligence (729), accounting (523), auditing (486) and auditing (448) prevail in the research sphere. This is an indication of a good and steady interest in the approach of incorporation of artificial intelligence into the accounting and auditing spheres. The fact that the abbreviated name of artificially intelligence, AI (365) is a frequently occurring word, emphasizes the growing popularity of the use of the short name of the term artificially intelligence, AI (365) in recent literature, which indicates the presence of maturity and the recognition of the field.

The visualization of the word cloud helps to reinforce these findings by visually highlighting the hegemony of core concepts like artificial intelligence, accounting, and auditing and also illustrates the themes related to them, such as financial, digital, risk, Block-chain, and data analytics. On the same note, the representation of the tree map of results gives a proportional view of the importance of keywords, with foundational keywords such as Block-chain, transformation, learning, and risk taking up a larger conceptual space, whilst new concepts of 2018 but of lower importance like Block-chain, transformation, learning and risk take up relatively smaller yet significant areas. It implies a knowledge stratification with major themes being anchored by dynamic sub-themes.

The keyword co-occurrence network adds further the relational structure among concepts in AI auditing research. There exist central nodes like artificial, intelligence, accounting and auditing that are highly interlinked and are part of the core cluster of the research field. Thematic clusters adjacent to the domain are those related to the financial system, data analytics, risk management, and application of technology, which means that the field is interdisciplinary. The existence of several clusters is also indicative of diversification in research topics, with high interconnections between technology-oriented and accounting-oriented themes.

The thematic map offers more information on the advancement and applicability of various research topics. The cluster that includes the keywords artificial intelligence, and accounting represents the motor themes quadrant, which is characterized by the high level of centrality and density so that it can be perceived as highly developed and relevant areas of research. By contrast, such themes as risk or learning are observed in either the low stage of development or in the losing status. The proximity of such terms as auditing, impact, and digital to the central area shows that they are transitional and that they serve as the bridges between core and evolving themes.

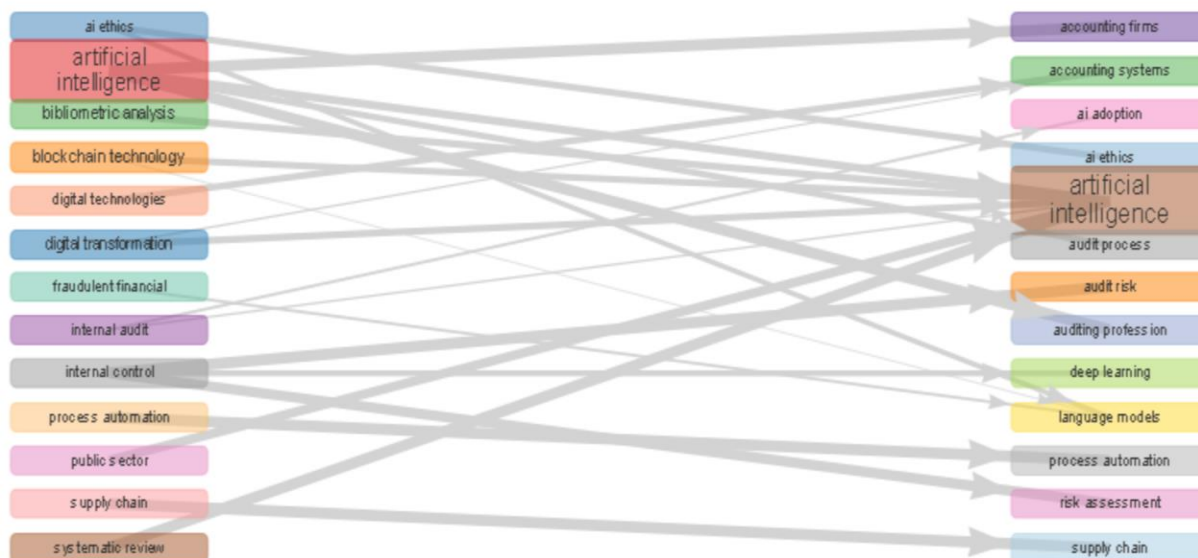
Lastly, the thematic evolution diagram will illustrate how the focus of the research has evolved throughout the years comparing the older eras (1982-2024) with much recent years (2025-2026). It demonstrates that the most basic themes such as the ones mentioned as artificial, auditing, digital, and networks have developed into more specific and technologically advanced concepts such as the ones surrounding the theme of AI. This process also underscores the evolution in broad arguments over concepts to narrower and more practical application-focused research. Altogether, this joint analysis of unigram frequencies and visual representations indicate that AI auditing research is not only well-established, with its basic foundations, but also dynamically developed with the new loads of technologies and interdisciplinary integrations.

Table 12: Bigram of Selected Title Terms

Words	Occurrences
artificial intelligence	697
machine learning	73
digital transformation	69
audit quality	67
internal audit	55
bibliometric analysis	43
financial reporting	42
fraud detection	41
accounting information	38
public sector	36
Block-chain technology	34
neural network	34
accounting profession	32
systematic literature	31
data analytics	29
intelligence ai	28
financial auditing	27
future research	26
supply chain	26
internal auditing	24
language models	24
process automation	24
systematic review	24
accounting practices	23
information systems	23
robotic process	22
risk assessment	21

1982-2024

2025-2026



The bigram keyword analysis presented in Table 12 along with the corresponding visualisations tell us a bit more about the conceptual and theme articulations inherent in the AI auditing study. The most powerful bigram is the one art topical intelligent with 697 instances of its use, obviously to the top of the sphere. Such finding suggests that the topic of the study is very much narrowed down to the integration of AI in auditing and accounting. Other key bigrams like machine learning (73), digital transformation (69), audit quality (67), internal audit (55) demonstrate that the discussion is not limited to technology-based but also to improving the performance of audits, governance, and organisational processes. Additionally, the keywords used like: fraud detection, financial reporting, and data analytics represent the real application of AI in enhancing the effectiveness of audits and financial transparency.

These findings are further supported by the word cloud visualisations and tree map visualisations, which visually emphasize the prevalence of the terms of artificial intelligence and technological topics and show the supporting concepts of the Block-chain technology, neural networks and accounting information systems. The proportional representation suggested by the tree map would infer that as the basic themes occupy the largest space, there are a number of emerging and specialised themes which occupy smaller areas but with the effect of expanding the current body of knowledge, possibly indicating variety in the subjects under study.

The co-occurrence network diagram illustrates the interconnectivity quality of the words in the form of bigrams with the major node being artificial intelligence that connects other groups like auditing techniques, financial systems, fraud detection, and new technologies. The network structure reveals the multidisciplinary nature of the study of AI audit, where concepts of accounting, information systems and computer science are closely interwoven. The fact that clusters around such topics like process automation, robotic process, and language models are emerging shows that an increased focus on automation and an advanced approach to AI is becoming increasingly popular in the field of auditing.

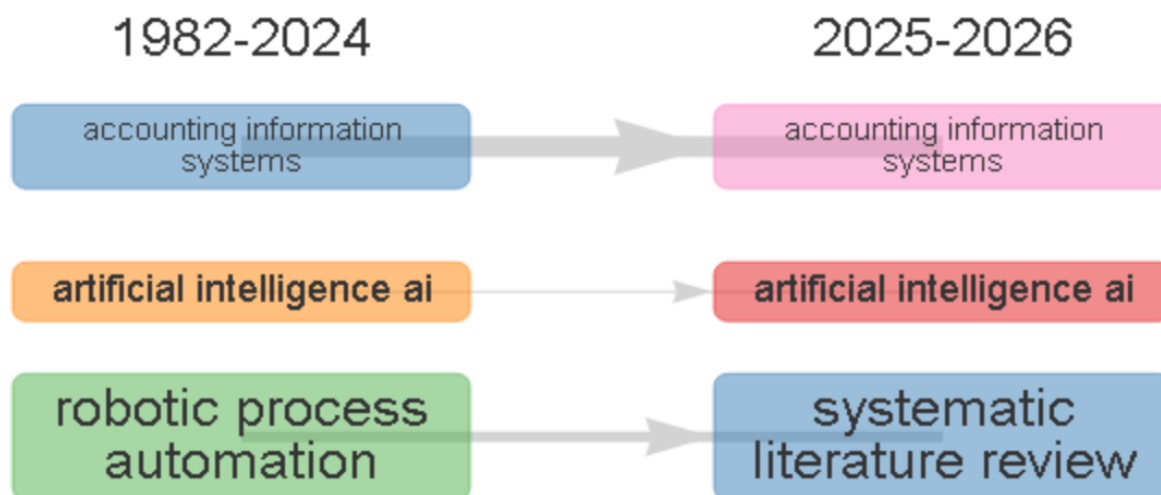
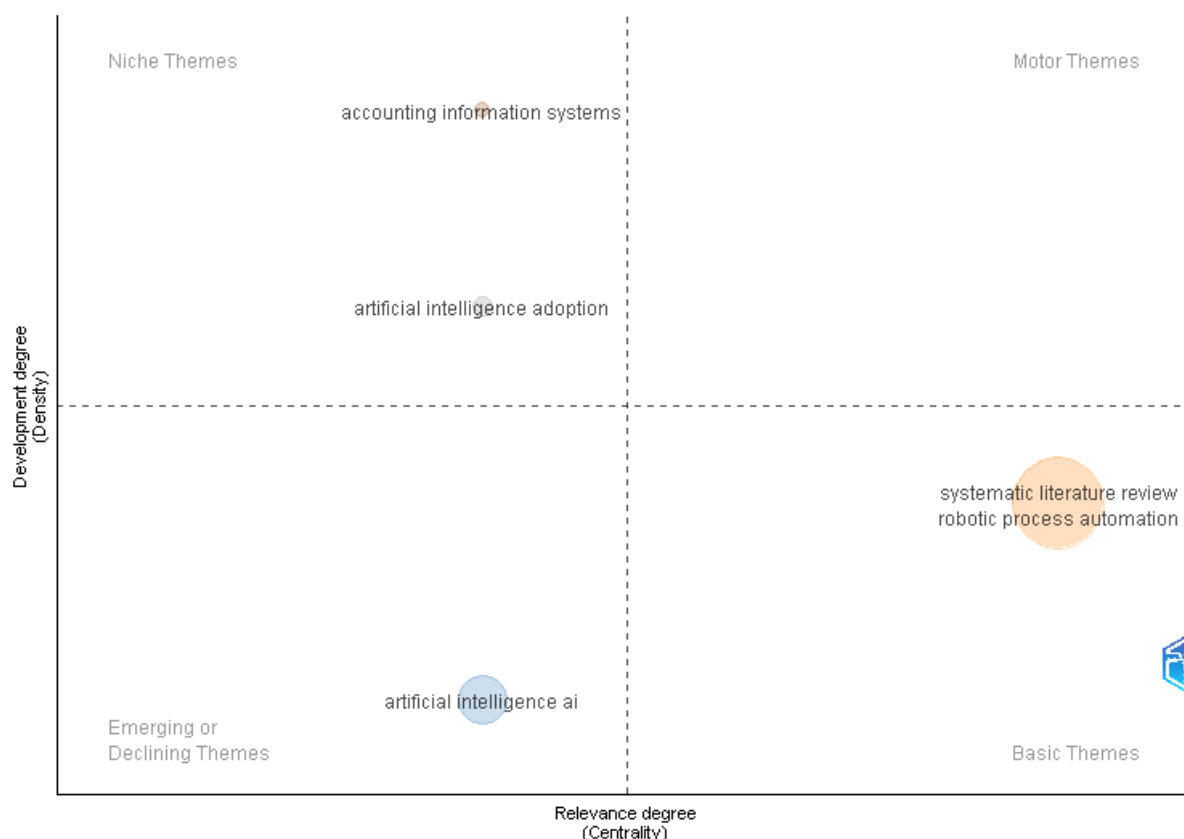
Theme map is a strategic illustration of the research development and meaning. The motor or basic theme quadrants contain key themes such as "artificial intelligence" or "machine learning" and "digital transformation" which highlight its great centrality and significance to the area. The areas of development embrace such topics as the process automation, and the robotic process as indicators of the emerging interest in the auditing, driven by automation. In the meantime, those terms, such as, language models, AI ethics and supply chain, fit into the developing or decreasing category, meaning that they are still under development and require more attention. Lastly, the analysis of the topic development helps explicate how the focus on the research has changed over the years. In recent years (2025-2026), a change has been observed in terms of former themes like artificially intelligent, bibliometric analysis, Block-chain technology, and internal audit to more complex and applications-oriented topics such as AI adoption, deep learning, auditing process, and risk assessment. The shift represents a transition towards implementation, adoption and impact oriented research as opposed to fundamental and conceptual talks. Altogether, the bigram analysis indicates that the AI auditing research is rather active, and has shifted away the basic technology principles towards more specific, application-based and transdisciplinary issues.

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Table 13: Trigram of Selected Title Terms

Words	Occurrences
systematic literature review	31
artificial intelligence ai	28
robotic process automation	22
artificial intelligence adoption	18
accounting information systems	17
artificial intelligence applications	11
integrating artificial intelligence	10
artificial intelligence technology	9
explainable artificial intelligence	9
artificial intelligence systems	8
financial reporting quality	8
jordanian commercial banks	8
artificial intelligence technologies	7
fourth industrial revolution	7
human resource management	7
internal audit quality	7
supply chain management	7
auditing artificial intelligence	6
internal audit function	6
natural language processing	6
accounting information system	5
adopting artificial intelligence	5
artificial intelligence application	5
artificial intelligence implementation	5
bp neural network	5
enterprise digital transformation	5
eu ai act	5
harnessing artificial intelligence	5
process automation rpa	5
public sector auditing	5

Diagram 13: Most Relevant Bigram Words Charts, Word Cloud, Tree Map, Network, Thematic Map, and Thematic Evolution



The trigram analysis presented in Table 13 and its associated visualizations provides a more refined and contextual understanding of research themes in AI auditing. The most prominent trigram, “systematic literature review” (31 occurrences), indicates a strong inclination toward review-based and synthesis-oriented research, reflecting the maturity and consolidation phase of the field. This is followed by “artificial intelligence AI” (28) and “robotic process automation” (22), highlighting the dual focus on conceptual understanding and practical implementation of AI technologies in auditing. Other significant trigrams such as “artificial intelligence adoption,” “accounting information systems,” and “artificial intelligence applications” demonstrate the growing emphasis on adoption, system integration, and applied research perspectives.

The word cloud and tree map visualizations further emphasize the dominance of “robotic process automation,” “artificial intelligence AI,” and “accounting information systems,” indicating that automation and system-based approaches are central to current research. Meanwhile, the increased attention to particularly regulatory, ethical and advanced analytical issues can be observed in emergent issues, like explainable artificial intelligence, natural language processing and EU AI Act. The diversity of trigrams also reflects the expansion of AI auditing research into interdisciplinary areas such as human resource management, supply chain management, and financial reporting quality.

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The co-occurrence network map reveals that “robotic process automation” and “systematic literature review” act as prominent clusters, indicating that both implementation-focused and review-based studies are central to the field. These clusters are interconnected with themes such as financial reporting, audit practices, neural networks, and fraud detection, demonstrating the integration of AI techniques into various auditing functions. The network structure also highlights the presence of specialized clusters, such as those related to language models, forensic accounting, and risk assessment, suggesting increasing diversification and specialization within the domain.

The thematic map provides further insights into the development and relevance of trigram themes. “Systematic literature review” and “robotic process automation” are positioned within the basic or motor themes quadrant, indicating their high centrality and importance in the field. In contrast, themes such as “artificial intelligence AI” appear in the emerging or declining quadrant, suggesting evolving terminology and shifting research focus. Themes like “accounting information systems” and “artificial intelligence adoption” are positioned in niche areas, indicating specialized but well-developed research streams that require further integration into the broader domain.

Finally, the thematic evolution analysis highlights the transformation of research focus over time. Earlier themes such as “accounting information systems” and “artificial intelligence AI” continue to remain relevant in recent years, demonstrating their foundational importance. However, “robotic process automation” has evolved into “systematic literature review,” indicating a shift from application-based research toward consolidation and synthesis of knowledge in the recent period (2025–2026). This evolution reflects the transition of the field from early-stage technological exploration to a more mature phase characterized by critical evaluation and structured understanding. Overall, the trigram analysis confirms that AI auditing research is advancing toward deeper conceptualization, practical implementation, and interdisciplinary expansion.

MAJOR FINDINGS

1. The present bibliometric study provides comprehensive insights into the intellectual structure, growth trajectory, and thematic evolution of artificial intelligence (AI) auditing research. The findings reveal a significant and consistent increase in research output, particularly after 2020, indicating a growing academic and practical interest in the integration of AI within auditing practices. The high annual growth rate and the peak in publications in recent years reflect the rapid expansion and relevance of the field.

2. The source and journal analysis shows that AI auditing research is highly interdisciplinary with contributions made by both technology-oriented and accounting-oriented journals. Essential journals like Heliyon, AI and Ethics, and Journal of Emerging Technologies in Accounting are highly impactful in addressing influential research. Likewise, the authorship study presents both high-productivity researcher and active network as prominent features that showcase the significance of collaborative research efforts and networks in the development of scientific field.

3. Geographical analysis proves that the contributions to research are scattered all over the world, and the United States, China, the United Kingdom, and India appear to be the main contributors. Nevertheless, the citation analysis demonstrates that such countries like Germany are more successful in terms of impact of their research, which underlines the fact that the effectiveness and influence of the research are not only directly related to the volume of publications. This points to the existence of the quantity-oriented and impact-oriented research dynamics in AI auditing.

4. The keyword analysis (unigram, bigram, and trigram) reveals profound levels of understanding of how the field is conceptually and thematically structured. The core themes like referred to as artificial intelligence, auditing, and accounting prevail in the research scene, which confirms the central focus of the domain. Meanwhile, the rise in new keywords like machine learning, digital transformation, fraud detection and robotic process automation are an indication of strong shift towards automation, data analytics and intelligent systems. Such advanced notions like explainable AI, natural language processing and implementation also indicate the shift of researches toward being transparent, interpretable and implemented.

5. The thematic and network analyses show that the field of AI auditing research is extremely interconnected and interdisciplinary, incorporating the ideas of accounting, information systems, computer science, and management. The evolution analysis on a thematic basis reveals a definite shift in the initial and conceptual research to a more application-related and technology-oriented research in the past few years. Moreover, the prevalence of systematic literature review as an archetypal trigram is an indication that the field has reached a consolidation stage, and that scholars are producing more and more syntheses of existing knowledge.

FUTURE RESEARCH

Even though the research on AI auditing has grown and has matured to a great extent, there are still some interesting possibilities that the future AI auditing research can explore. To begin with, there is necessity to have more empirical and evidence-based studies that can be used to justify the practice of AI technologies in

real life auditing practices. Most of the literature to date has been theoretic indicating the necessity of case studies, field experiments and research based in industry.

Secondly, the future research ought to focus on establishing standardised auditing frameworks and models to use AI in auditing. This is because, without globally recognised norms, practitioners who need to realise the full potential of AI technology in various organisations are faced with barriers.

Thirdly, there is a necessity to explore further the ethical, legal and regulatory concerns of AI in auditing. With the trend of increased usage of automated decision-making systems, issues like algorithmic bias, data privacy, accountability and transparency are critical areas of concern. The recent emphasis of explainable AI and laws and regulations, including AI governance regulations, offer ample prospects of future research.

Research opportunities on how more advanced AI technologies such as deep learning, natural language processing, and generative AI to enhance audit procedures including fraud detection, risk assessment, and the financial reporting analysis. Research can also explore the intersection of AI with other emerging technologies like Block-chain, big data analytics, etc.

Fifth, future studies should examine how AI will impact the field of auditing, its skills required, employment, and professional capabilities. Much research is done on the topic of the transformation of the role of auditors to data analysts and strategic consultants.

Lastly, more comparative and cross-country studies of the acceptance, challenges, and impact of AI auditing on various economic and regulatory contexts are needed. This type of research probably can offer valuable information to politics and other global standard-setting agencies.

CONCLUSION

This research paper presents a bibliometric synthesis of artificial intelligence (AI) auditing literature, illustrating its recent accelerated growth, changed intellectual framework and expanded relevance on a global scale. The results show that the field has evolved to no longer rely on traditional auditing techniques but has shifted to rely on technology based, data oriented and automated solutions with the core themes being around artificial intelligence, accounting and auditing values of solutions and new areas such as machine learning, digital transformation and robotic process automation. It has also been shown that as a domain, it is interdisciplinary in its nature, there is strong international cooperation, and also that the domain is just gaining influence due to the high impact of the research contributions. Furthermore, the evolution of themes makes it evident that the studies have shifted out of their conceptual background towards the application-based and implementation-oriented research. However, despite these developments, the study mentions the gaps associated with the empirical validation, ethical considerations, and standardised frameworks, and recommends the further in-depth research. On the whole, the research helps to fill in the existing body of knowledge by providing a systematic insight into AI auditing research study and offers a platform to further academic investigation, professional work, and policy elaboration in this booming discipline.

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