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Abstract: This study analyses the state of the art in the literature about audit quality, focusing on the most important ideas that may influence audit quality in the future. The study used bibliometric analysis to describe the evolution of publishing activity in audit quality, looking at the most popular themes and research trends. In all, 1,300 studies on cryptocurrencies were published in the Web of Science (WoS) core collection, which is the most reputable database, between 1990 and 2021, but only a small percentage of them were analysed for present and future trends. One of the most frequent objections was that the current audit failure leads to more litigation declines in business value, and falls in the service fees of auditing organisations. The study enables us to propose prospective routes for future research that may be useful in reflecting on the enhancement at a size and reputation level, along with the development of relating market performance and regulation with an audit quality.

Keywords: Web of Science; WoS; co-citation; co-occurrence analysis; bibliometric analysis; bibliographic coupling.

JEL codes: M41, M42.

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1   Introduction

Audit quality can ensure that the information of accounting reports has openness with relevance for the reasons of decision making, as well as ensuring the responsibilities of auditors are deployed fairly within the analysis of financial statements (Yopie and Elivia, 2022). An issue of the great demand for audit quality is the capacity of auditors for discovering and disclosing false statements. The capacity of discovering misstatements in data has no use unless the auditor is operating independently with unaffected responsibility of reporting existent infractions (Salem et al., 2021). Incapacity in that regard results in audit failure which gives rise to misconceptions and a negative image of the audit process.

Current audit failure results in further litigation drops within corporate value and falls in the service charges of auditing companies. If an auditor applies an audit of strength or quality, however, litigation is reduced, the image of the company improved and its worth is raised which, subsequently, has an impact on costs for auditing services that are acquired within the future (Rajgopal et al., 2021). Accuracy in financial reporting is improved by high audit quality, with the promotion of financial strength and informed financial investments (Hammami and Zadeh, 2020); however, it serves also as a tool for monitoring, thwhicheduces opportunism from managers and stockholders (Ernstberger et al., 2020). Therefore, additional future trends that seek to modify views of audit quality may be developed.

This research investigates fills the hole by offering quantitatively based suggestions for the selection and presentation of articles, authors, and journals most relevant to the subject of this study, as well as the construction of a unified theoretical framework and visualisation. The literature review is carried out with the use of bibliometric analysis and the VOSviewer software. Furthermore, the study proposes to investigate the characteristics and history of audit quality publications as clusters on the effect of regulatory and management factors that allow us to estimate the Industry experience of the main four auditors in audit quality. This research is unique in that it combines bibliometric approaches and content analysis with an integrative study, allowing us to completely examine the interaction of two academic areas.

The remainder of the paper is organised as follows. The next section provides the background of our study. The methodology and data that the study utilised are described in Section 3. Section 4 shows the bibliometric analysis findings locate the debate whereas the main conclusions are finally drawn in Section 5 and summarise the major results.

2 Theoretical framework and literature review

The theoretical concepts behind audit quality may be defined using either audit quality irrelevance or audit quality relevance. An issue of great prominence for audit quality is the capacity of auditors for discovering and disclosing false statements. The capacity of discovering misstatements in data has no use unless the auditor is operating independently with unaffected responsibility of reporting existent infractions (Salem et al., 2021). Incapacity in that regard results in audit failure which gives rise to misconceptions and a negative image of the audit process. A current audit failure results in further litigation drops within corporate value and falls in the service charges of auditing companies. If an auditor applies an audit of strength or quality, however, litigation is reduced, the image of the company improved and its worth is raised which, subsequently, has an impact on costs for auditing services that are acquired within the future (Rajgopal et al., 2021). Accuracy in financial reporting is improved by high audit quality, with promotion of financial strength and informed financial investments (Hammami and Zadeh, 2020); however, it serves also as a tool of monitoring, that reduces opportunism from managers and stockholders (Ernstberger et al., 2020).

Some articles have examined audit quality. However, none have looked at the historical phases of both ideas' history as a scope for future study, which is the primary purpose of this article (Blum et al., 2022; Samagaio and Felício, 2022; Barr-Pulliam et al., 2022; Athavale et al., 2022; Rosati et al., 2022). The work focuses on the issue of audit quality delay analysis, gaps in the literature, and prospective future research areas. Firms are assisted by the quality audit in acquiring loans from key creditors in addition to the attraction of potential partners willing to make additional investments (Rose et al., 2022). The quality and dependability of the audit involve audit tasks that have to be undertaken by predefined rules and standards, in addition to the employment of processes of quality control (Sharma et al., 2022; Zhang and Li, 2022). There is a vital function for the objective and impartial auditor in enhancing the levels of trust within financial markets since there is greater trust and knowledge within the dependability of financial statements and their accountability following the disclosure by management. The result is that, overall, audits make a considerable contribution to enhanced economic well-being (Albawwat and Frijat, 2021).

Over the last 20 years, there have been many significant changes to the profession and study of auditing. A notable feature within contemporary research has been a concern for audit quality. However, it is difficult to measure audit quality because of the witnessed auditor confidence level (Payne and Williamson, 2021). There is no single, universal method that can be used for the assessment of audit quality, however, and it can be seen within the literature that the topic is considered from numerous perspectives. The viewpoints that can be noted include the scale of audit agency, sector competence, auditor reputation, auditor longevity, audit committees, durability in auditor-client relations, and exorbitant fees (Khurana et al., 2021). Briefly, the key reasons that drive audit quality are being questioned currently, and there are continual attempts of regulators across the world to enhance validity, audit quality and the dependability of financial statements (Dekeyser et al., 2021). As such, audit quality continues to be a key field within biomedical study, and there is a growth in the regulatory and public authorities and the various studies undertaken within the sector.

Bibliometric analysis is a key approach in the evaluation of outcomes for scientific investigation, and bibliometrics has been newly classified as a subject employing scientific and computational approaches for analysing scientific communication processes through utilisation of written forms of text (Donthu et al., 2021). Defined simply, it is a strategy employed for quantitative assessment of impact from scientific articles (Goyal and Kumar, 2021). Bibliometric analysis has the goal of gaining significant data, with research data from databases in relation to a particular topic, such as references, articles, journals, researchers, keywords, organisations and so on, for extending the field or topic and then aiding in understanding the value of the issue in question. So, a broad, macroscopic overview can be provided from scholarly papers and research trend analysis (Baas et al., 2020). Also, bibliometric studies serve to motivate scholars to have aggressiveness in becoming more up-to-date in relation to changes within their particular field (Zyoud and Al-Jabi, 2020). Recently, an increased number of publications have used bibliometric analysis as a form of method and assessment of study (Albuquerque et al., 2018); it shows, then, that there is a recognition that bibliometric analysis is a valuable and essential approach in the evaluation of scientific output (Ellegaard and Wallin, 2015).

It has become easier to undertake bibliometric studies as computers have advanced rapidly and internet access has become more widely available (Merigo et al., 2015). This tendency is accelerated by the use of web-based bibliographic databases. Scopus, Google Scholar and Web of Science (WoS) are the bibliometric databases that are most popular. Bibliometric analysis may benefit any field or subject. Broad bibliometric viewpoints have been given to various study topics and studies within the literature. Several disciplines have had high impact value in relation to the topic such as health (see Guo et al., 2020), finance (see Elie et al., 2021), economy (see Kraus et al., 2020), marketing (see Ghorbani et al., 2021) and accounting (Merigo and Yang, 2017). For over thirty years there has been ongoing research into audit quality. As such, the research of this author is an attempt to employ bibliometric analysis for the creation of a research trend map in relation to audit quality for the years from 1990 up to 2021. The bibliometric analysis within the study has concerns for the topics that follow: contributions between countries, average annual publications, most cited articles, most relating words, output over time of top authors, trend themes, analysis of network clusters and graphical representations.

3   Methodology

This study employed the system mapping research (SMS) literature-based technique with bibliometric analysis. The use of co-occurrence to find the most relevant subjects and evaluate their patterns across time. SMS can also group and show interconnected contributions and contributor networks. The WoS database was used to gather bibliometric data on audit quality literature for this investigation. Because WoS is the major and oldest citation database, its academic publications have more complete coverage, including all the top journals published since 1950. As a result, the bibliographic information about audit quality was gathered solely from this database. In April 2022, the articles were retrieved from the WoS. The search parameter was (audit quality), period (1990–2021), and keywords/terms (audit quality). Documents about audit quality first emerged in 1898. The results of 1300 documents were then shown for additional analysis after being filtered by document type (article) and language (English). The papers were then evaluated with VOSViewer, a program created by van Eck and Waltman (2010), and MS Excel (Ninglasari, 2021).

4   Result

4.1   Publication capacity and trends towards increase in audit quality research have evolved

The number of papers published in a certain time by a specific unit (journals, institutions, nations, etc.) is used to calculate publishing activity. Measures of publishing activities offer us a picture of the topic's statistical development and framework, as well as the potential to recognise the most significant journal, institutions, and nations publishing in a field. Furthermore, the study can determine the topics covered during the research period. 1,300 studies were selected in 171 various publications over the research period (1995–2021).
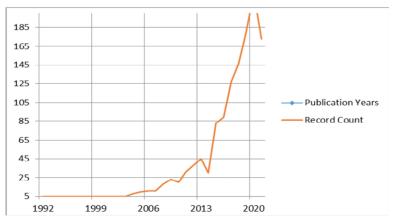
Figure 1   Publication activity from 1990 to 2021 (see online version for colours)

According to the findings, the audit quality literature has developed at an exponential rate in recent years. As seen in Figure 1 and Table 1, publishing activity was rather low throughout the 1990s, with only 5 papers published each year. Nonetheless, there has been a growth in publications since 2004. It can be seen that the evolution has some peaks in 2009 (n = 23), followed by a decreasing tendency (n = 20 in 2010). In 2012 and 2013, the number of publications increased significantly over the next five years, reaching 127 in 2017, 146 in 2018, 180 in 2019, and 222 in 2020 before declining to 46 in 2021 (Grueso-Gala and Zornoza, 2022). The increase in publishing activity in recent years may indicate the emphasis that organisations have on audit quality; therefore, it will be fascinating to see how this trend evolves.

Table 1   Publication activity from 1990 to 2021

Publication years	Record count	Publication years	Record count
1992	5	2010	20
1994	5	2011	31
1995	5	2012	38
1996	5	2013	45
1997	5	2014	30
1999	5	2015	83
2003	5	2016	89
2004	8	2017	127
2005	10	2018	146
2006	11	2019	180
2007	11	2020	222
2008	18	2021	173
2009	23		

4.2   Geographical and institutional dispersion, along with collaboration

The institution with the most papers is the State university system of Florida, which has ninety-two articles (see Table 2). Universities have the highest number of publications. Universities account for around 84% of the overall number of institutions involved in the study (218). The State university system of Florida is the most productive university, followed by the University system of Georgia, each with forty publications, and finally by the University of Texas System and University of New South Wales Sydney, with thirty-eight published articles. It could be interesting to categorise all 218 institutions as private corporations, academic institutions (e.g., colleges or universities), or governmental organisations (Grueso-Gala and Zornoza, 2022).

However, this information is not available in the WoS database and doing it individually would be highly time-intensive (Van Nunen et al., 2017). Among the 1,300 articles reviewed, 194 writers wrote on audit quality between 1990 and 2021. The most productive writers are Kenechel WR, Pitt SA, and Gul FA, each of whom has more than 15 publications.

Table 2 The most productive institutions publishing on audit quality (1990–2021)

No.	Affiliations	Record count	No.	Affiliations	Record count
1	State University System of Florida	92	14	University of North Carolina	26
2	University of Texas System	40	15	Monash University	24
3	University System of Georgia	40	16	Hong Kong Polytechnic University	21
4	University of New South Wales Sydney	38	17	University of Massachusetts System	21
5	California State University System	36	18	The University of Texas At San Antonio UTSA	20
6	University of Wisconsin System	35	19	University of Wisconsin Madison	20
7	University of Missouri System	34	20	University of Houston	19
8	City University of Hong Kong	30	21	University of Houston System	19
9	University of Florida	30	22	Virginia Polytechnic Institute State University	19
10	University of Missouri Columbia	30	23	Arizona State University	18
11	North Eastern University	27	24	Bentley Univ.	18
12	Pennsylvania Commonwealth System of Higher Education PCSHE	27	25	Louisiana State University	18
13	University of North Carolina	26	26	Louisiana State University System	18

4.3 Collaboration countries in publishing

Audit quality publications have been produced in 74 different countries or territories. There are 10 in Europe, 9 in Asia, 2 in Africa, 2 in North America, and 2 in Oceania. Table 3 shows the distribution of contributing countries throughout the world.

Table 3 shows that the USA is the greatest contribution (39.40%), followed by China (9.47%), and other nations with lower percentages. North American countries publish around 43% of all publications.

Table 4 and Figure 2 describe the most important audit quality research topics at WoS. 'Business economics' is the category with the most publications (94.57%). Because every publication may correspond to many classifications or fields of research, the overall number of areas of study written could be more than the overall number of articles.

Table 3   The most productive countries publishing on audit quality (1990 – 2021)

No.	Countries/regions	Record count	No.	Countries/regions	Record count
1	USA	632	14	France	27
2	Peoples R China	152	15	Netherlands	25
3	Australia	140	16	Italy	24
4	Canada	64	17	Tunisia	24
5	South Korea	59	18	Saudi Arabia	22
6	Taiwan	54	19	Norway	21
7	England	53	20	Belgium	20
8	Malaysia	42	21	South Africa	20
9	Indonesia	36	22	Finland	18
10	Spain	33	23	Iran	18
11	New Zealand	32	24	Jordan	16
12	Singapore	31	25	Sweden	13
13	Germany	28			

Table 4   The most effective topics of audit quality research

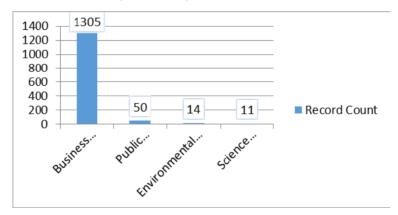| Research areas	Record count
Business economics	1,305
Public administration	50
Environmental sciences ecology	14
Science technology other topics	11

Figure 2   The most effective topics of audit quality research (see online version for colours)
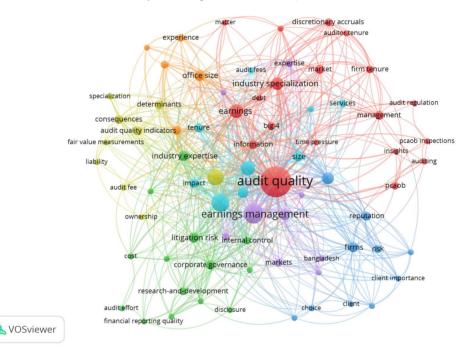
5   Discussion

5.1   Bibliometric visualisation analysis

5.1.1   Co-occurrence analysis of all keywords

The important terms from the 1,300 exported articles obtained were evaluated with VOSviewer software to better understand the study topics and audit quality trends. Figure 3 depicts a keyword-based co-occurrence network map. The minimum number of keywords was set at three, and 75 of them appear.

Figure 3   Co-occurrence of all keywords map and visualisation (see online version for colours)

In Figure 3, the colours of the nodes reflect various clusters, while the size of the circles represents frequency. VOSviewer can categorise these words into seven groups. Blue, red, green, orange, purple, light blue, and yellow are the hues of the cluster. In general, the phrases in the red cluster are mostly related to audit quality regulation and management research. The primary phrase in the red cluster is 'audit quality, which is strongly connected to 'audit regulation', 'auditor tenure', and 'management'. The green words in the second cluster are concerned with the impact of industry experience on litigation risk. The most frequently used phrases in this cluster are 'industry expertise', 'litigation risk', and 'business governance'. The blue cluster represents the firm's reputation. 'Accruals', 'risk', and 'customer significance' were among the items in this category. The yellow cluster then depicts no audit services as audit quality indicators and their consequences or determination, where phrases like 'audit quality indicators', 'consequences', and 'determination' are employed. The purple cluster demonstrates the significance of earnings management in relating market performance to the phrase

'earnings management. Then the light blue cluster with the phrases 'fees', 'size', and 'services' emerged, displaying the most significant characteristics of the firm body. Finally, the orange cluster featured the firm's internal parties, where terminologies like 'premiums', 'perceptions', and 'experience' were employed. Overall, the existence of these five clusters reveals the primary audit quality continuing research components that are now being conducted at the worldwide level.

5.1.2 Research trends on audit quality

5.1.2.1 Cluster 1: 'Audit quality regulation and management'

Table 5 shows the keywords which correspond to Cluster 1, as well as the number of occurrences and linkages to all these terms. The cluster 'audit quality regulation and management' consists of 19 components. Top subjects in this study subject include audit quality, audit regulation, auditor tenure, and 'management'.

Table 5   Keywords in cluster 1 related to audit quality

Keyword	Links	Total links strength	Occurrences
Audit quality	74	252	46
Earnings	37	64	9
Industry specialisation	33	56	8
Market	23	27	4
Information	25	34	4
Management	20	24	4
Big 4	16	20	3
Firm tenure	15	20	3
Discretionary accruals	15	22	3
Pcaob	8	11	3
Debt	18	21	2
Knowledge	16	18	2
Auditor tenure	13	17	2
Time pressure	12	14	2
Insights	11	12	2
Matter	8	10	2
Pcaob inspections	7	8	2
Auditing	6	8	2
Audit regulation	5	6	2

The map illustrates the red cluster covers the most important occurrences keywords. To increase audit quality, national governments adopted several rules controlling the monitoring of the quality of audit services delivered by public accounting firms. During the global financial crisis in 2008, countries updated their administrative regulations. Article 3 emphasises the limitation of the supply of audit services, with the public accounting company restricted to a max of 6 years and the public accountant limited to a maximum of three years. Audit period limitations are believed to improve auditors' and

public accountants' independence, resulting in greater audit quality, a lack of reliance, and long-term involvement with audit customers (Prayogo and Agoes, 2017).

Subsequently, the map illustrates that the red cluster is a prominent term and that much more research is needed in the future. Audit quality regulation and management, as well as enhancing Big 4 workers and performance, audit quality between auditor tenure and time pressure, and obtaining auditor knowledge through social media may promote auditor engagement and quality creation in major organisations. Concentrate on the words with the fewest occurrences to establish a huge future research topic.

5.1.2.2 Cluster 2: 'Industry experience on big 4 auditors'

Table 6 shows the keywords that correspond to Cluster 2, as well as the number of occurrences and linkages to all these keywords. The cluster 'industry experience on lawsuit risk' consists of 14 entries. The important aspects in this study subject are litigation risk and company governance.

The map indicates that the green cluster is connected to the majority of the other clusters, which. maybe essential for a discussion of current and future trends. When one of the big four audit companies fails to detect fraud, investors and corporations worldwide benefit or blame other audit corporations and customers. Companies believe that a failure to audit by several of the big four companies hurts not just themselves and their client's investors, but also competitor big four corporations and their customers. Customers of the failing auditor and other outside big four consultants experience more negative stock market reactions to the revelation that customers particularly in non-4 auditors, compared to results in developed countries. For enterprises in the industry, the negative consequences are more evident. Furthermore, following the publication of the fraud case, corporations are less inclined to transfer to other Big 4 auditors. Our findings are robust to other studies; such as controls for Big 4 auditor self-selection (Jamal et al., 2018).

Table 6   Keywords in cluster 2 related to audit quality

Keyword	Links	Total links strength	Occurrences
Industry expertise	24	33	5
Litigation risk	22	31	5
Corporate governance	23	30	4
Research-and-development	16	20	3
Internal control	14	16	3
Information asymmetry	13	14	2
Institutional investors	13	14	2
Big 4 auditors	13	13	2
Innovation	12	14	2
Agency costs	12	13	2
Cost	11	12	2
Disclosure	9	10	2
Financial reporting quality	8	8	2
Audit effort	3	3	2

Subsequently, the map shows that the green cluster is a difficult keyword that will require much more examination in the future. Industry experience, for example, in the top four auditors, is meant to enhance operations, particularly in knowledge-intensive auditors. Auditors interact. Quality contribution and quality collection are the two components of industrial experience in the big four. Consultation with others leads to quality knowledge and intellectual richness through internal control, disclosure, and financial reporting. concluded that company culture, self-efficacy, reciprocal conduct, social capital, technology, and leadership all had an effect on the experience of the big four auditors.

5.1.2.3 Cluster 3: 'The firm's reputation'

Table 7 shows the keywords that correspond to Cluster 3, as well as the number of occurrences and linkages to these keywords. The cluster 'The firm's reputation' has a total of 9 elements. The main topics in this study subject include accruals and business reputations.

The map demonstrates that the blue cluster has a higher number of occurrences for some keywords and it is related to all other clusters. A company's reputation has been studied from a range of academic perspectives, including framework, finance theory, ideological standpoint, management theory, and others. To demonstrate why a strong firm's reputation is beneficial to the organisation, all firms will first examine three of the most frequently referred concepts in recent years: signaling theory, plan theory, and source of energy theoretical development (Khan and Sukhotu, 2020). A company's reputation can be used to predict future behaviour and performance. The company's reputation is described as the combination perception of investors on the corporation's personal views and experiences. The entire view of a company's clients is a more fundamental description of its reputation (Mani and Gunasekaran, 2021).

Table 7   Keywords in cluster 3 related to audit quality

Keyword	Links	Total links strength	Occurrences
Accruals	32	58	7
Firms	26	33	5
Reputation	16	22	4
Risk	9	11	3
Decisions	13	15	2
Market concentration	12	13	2
Client importance	11	17	2
Industry	11	12	2
Choice	11	12	2
Client	9	10	2

Subsequently, the map demonstrates that the blue cluster is a challenging phrase that will require much more investigation in the future. One example is the implementation of innovative concepts arising from management objectives that integrate a firm's reputation. Examine quality sources that might aid commercial reputation efforts. The influence of audit quality on the financial health of the reputation program does not compensate for other reputation metrics. The environmental component of reputation

outputs, as well as organisational audit, must be included in determining a company's reputation success.

5.1.2.4 Cluster 4: 'Non-audit services as audit quality indicators and their consequences or determination'

Table 8 shows the keywords that correspond to Cluster 4, as well as the number of occurrences and linkages to these keywords. The cluster 'no audit services as audit quality measures and their implications or decision' has a total of nine elements. The main topics in this study field include non-audit services, implications, and audit quality measures.

The map displays that the yellow cluster is linked to the majority of the keywords by attaching numerous keywords. To eliminate circumstances in which audit committees may be jeopardised, prohibitions on some non-audit services have been imposed. For example, the securities and exchange commission has implemented regulations restricting auditors' ability to provide financial information system development and execution services to its audit customers (Chu and Hsu, 2018). These include 'hardware and software systems associated with the audit firm's financial statements or general ledgers.' In delivering these services, auditors may be 'put in a position of developments projects choices' and then auditing employees' performance, according to the securities and exchange commission. Nevertheless, if certain circumstances are satisfied, such as the audit client's administration retaining decision-making responsibility for the client's accounting records systems, a small firm may be able to get accounting records system design and system service (Hohenfels and Quick, 2020).

Subsequently, the map shows that the yellow cluster is a challenging phrase that will require further investigation in the future. Non-audit services as audit quality indicators, as well as their repercussions or decisions, both explicit and tacit, have a direct impact on a company's innovation and function as an effective mediator.

Table 8   Keywords in cluster 4 related to audit quality

Keyword	Links	Total links strength	Occurrences
Non-audit services	44	96	13
Consequences	18	25	4
Determinants	18	24	4
Audit quality indicators	18	21	4
Audit fee	12	13	2
Ownership	11	12	2
Fair value measurements	10	10	2
Specialisation	8	10	2
Liability	7	7	2

5.1.2.5 Cluster 5: The significance of earnings management in relating market performance'

Table 9 shows the keywords that correspond to Cluster 5, as well as the number of occurrences and linkages to these keywords. The cluster 'The relevance of earnings

management in related market performance' has a total of 9 entries. The main topics in this study subject include earnings management, performance, and association markets.

The map demonstrates that the purple cluster has a weak presence. Earnings management enterprises are another rationale for long-run lack of performance. As the first to give this hypothesis, Siekelova et al. (2020) discovered that "financial institutions with abnormally high accounting in the year have poor stock return performances in the three years following." As a result, they contend that a firm's earnings management plays a substantial role in explaining underachievement in the long run. Chiraz and Anis (2013) investigate the French market and discover that businesses that engage in extreme earnings management during the initial public offering are likely to have bad returns later on and are delisted for low productivity. According to a study conducted by Sletten et al. (2018), audit businesses engaged in earnings management with high accounting at the moment tend to see a reverse in accounting, and such reversals lead to a lengthy lack of performance.

Subsequently, the map shows that the purple cluster is a challenging phrase that will require much more research in the future. The earnings management relationship is encouraged by the relevance of earnings management in connection to market performance. Other research looks into the influence of ownership structure on audit quality and performance determinants. Some academics have looked at the goal of earnings management in terms of costs and benefits.

Table 9   Keywords in cluster 5 related to audit quality

Keyword	Links	Total links strength	Occurrences
Earnings management	55	122	19
Performance	25	37	6
Association	20	25	3
Expertise	18	22	3
Markets	16	20	3
Incentives	15	15	2
Investor protection	12	15	2
Ownership structure	9	12	2
Bangladesh	9	12	2

5.1.2.6 Cluster 6: 'Audit fees'

Table 10 shows the keywords that correspond to Cluster 6, as well as the number of occurrences and linkages to these terms. The cluster 'The most important qualities of the firm body' has a total of ten entries. The main topics in this study field are fees, independence, company size, and longevity influence.

The map displays that the light blue cluster is linked to the majority of the keywords by attaching numerous keywords. Fees charged to auditors in competing audit markets reflect both operational costs and litigation risk. Real fee variances observed between customers will mostly represent variances in operational costs and customer risk. As a result, real fees are restricted in representing the degree of an auditor's economic relationship with a client (Jha and Chen, 2015). Real fees as a measurement of bonded can induce significant experimental error in the analysis of fees on audit quality if pass

changes in operational costs and lawsuit risk are not effectively adjusted for; it is likely that the negligible relationships between audit quality and other fee measures shown in prior studies are due to this constraint rather than a lack of structural relationships (Cahan and Sun, 2015).

Subsequently, the map shows that the light blue cluster is a complex phrase that will require further investigation in the future. Audit fees, for example, are fees paid to public accounting organisations to audit the business.

Table 10   Keywords in cluster 6 related to audit quality

Keyword	Links	Total links strength	Occurrences
Fees	52	110	16
Independence	34	73	10
Firm	30	40	6
Size	22	31	5
Impact	21	31	4
Tenure	21	29	4
Services	13	16	3
Audit fees	13	14	2
Differentiation	11	12	2

5.1.2.7 Cluster 7: 'The firm's audit size'

Table 11 shows the keywords that correspond to Cluster 7, as well as the number of occurrences and linkages to these terms. The cluster 'The firm's internal parties' has a total of ten entries. The key topics in this study subject include offices size, premiums, and audit fees.

The map displays that the orange cluster is linked to the majority of the keywords by attaching numerous keywords. High service quality is often connected with a larger scale in the professional services sector. After adjusting for client variables that influence audit fees, such as size, complication, and auditor-client sharing of risks, empirical studies on listed businesses show that the Big 4 receive a fee premium compared to other auditors (Sundgren and Svanström, 2013). The stated Big 4 premium is roughly 20% on average (Comprix and Huang, 2015). A larger size might be attributable to more auditing (more audit hours) or better skill (higher price per hour). The amount toward which private enterprises are ready to pay more for improved (anticipated) audit quality, on the other hand, is virtually unclear (Bernard et al., 2018).

Table 11   Keywords in cluster 7 related to audit quality

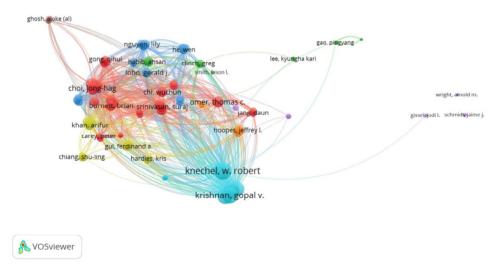| Keyword	Links	Total links strength	Occurrences
Office size	26	40	6
Premiums	19	30	4
Perceptions	15	20	3
Experience	13	17	3
Audit firm size	8	10	2

Subsequently, the map shows that the orange cluster is a challenging phrase that will require further investigation in the future. The audit size, for example, maintains that large audit firms have outstanding audit quality because they've already decided to invest in large audit new tech and employee training, and thus they are extra proficient and realistic than auditing firms in sensing issues related to the false statement and anticipating future presumptions.

5.2   Bibliographic coupling of authors

The study investigated author bibliographic coupling. Authors that appear in the same cluster are connected because they regularly cite the same sources. In other words, their research interests are comparable. This approach helps discover relevant authors who may specialise in one of the study streams. The software discovers eight clusters, which are shown in Figure 4.

There are 26 entries in the red cluster. The authors with the strongest links are Zang Yoonseok, Jeong-bon Kim, and Jong-hag Choi. The green cluster has 14 authors. The most important nodes are Donghua Zhou, Haiyan Jiang and Ahsan Habib. The blue cluster has 14 authors whose study is a combination of the several research lines mentioned, with the biggest node referring to Gerald Lobo. The yellow cluster had 11 authors, with three authors receiving the highest total strength: Dessalegn Getie Mihret, Badrul Muttakin Mohammad, and Arifur Khan. The purple one had ten writers, while the last three clusters had 16 authors.
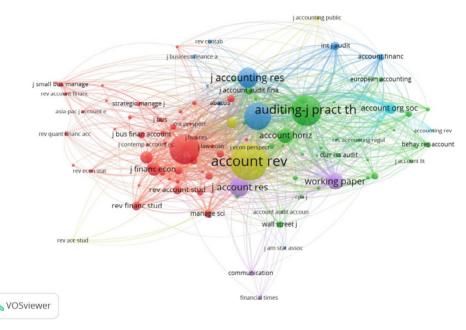
Figure 3   Bibliographic coupling for authors' map and visualisation (see online version for colours)

5.3   Co-citation analysis for cited sources

Tracking pairs of publications that are referenced together in the source articles is what co-citation analysis is all about. When many writers mention the same pair of publications, clusters of research emerge. The publications that are co-cited in these

clusters usually have the same subject. Co-citation analysis attempts to discover such 'high-density zones' in a citation network by grouping heavily co-cited papers, showing the presence of these research fronts (Liu and Hu, 2021).

In Figure 5 the study obtained 101 cited sources divided into six clusters according to the most citations. Cluster 1 appeared in red and include (j account econ) which was the most cited source with 291 citations. Then the second cluster that appeared in green had (auditing-j pract th) 290 citations. The third cluster was in blue and had (contempt account res) with 232 citations. The fourth one was in purple and had (j account res) with 120 citations. Finally, the light blue cluster had (account org soc) which recorded 41 citations.

Figure 5   Co-citation analysis for cited sources map and visualisation (see online version for colours)

6   Conclusions

This study contributes to the understanding of the literature on audit quality through a systematic revision and clustering of papers published in the WoS core collection. It identifies the most significant authors, topics, publishers, and nations related to audit quality research. In addition, it explores new streams of research that may be useful in reflecting on audit quality. The notable increase in the number of publications in recent years reflects the growing interest in the audit quality phenomenon, the study of which is still at an early stage with a small number of quantitative studies undertaken. As a consequence, many of the results obtained are inconclusive and there are issues that remain underexplored in the literature.

The keyword analysis identifies seven exceptional areas of study that are being developed with a few studies connecting the different areas. Research on the development of audit quality shows the following general trends: useful in reflecting on the auditor career, audit quality, auditor size, audit fees, market performance, independence, big four, non-audit services, risk, and earning management. As a consequence, it is possible to deduce that audit quality research should concentrate on elements that impact audit quality, the most significant of which would be corporate governance, client performance, management systems, and audit fees. Other academics may seek to develop a scale to statistically quantify audit quality characteristics and examine their links with value co-creation and other new challenges in markets, although research on this area is limited.

The articles that were studied (n = 1300) were published in journals in the US and they had also been well-cited which showed the considerable interest there is in writing that has been done on the topic. Other papers on audit quality were issued often within publications in China, Canada, and Australia. The authors that were most prominent in producing articles related to the subject were Yoon Seok Zang, Jeong-bon Kim, and Jong-hag Choi. Close contact was developed by them with the network of the author. Lastly, with regard to citations, the writers that were most referenced in respect to publications that debated audit quality were Dessalegn Getie Mihret, Mohammad Badrul Muttakin, and Arifur Khan.

Research trends in the mapping and visualisation of audit quality are organised around the seven identified clusters. The first trend shows the audit quality regulation and management. increase audit quality, national governments adopted several rules controlling the monitoring of the quality of audit services delivered by public accounting firms. The second trend focuses on the industry experience of big four auditors so that the Big Four audit companies fail to detect fraud, investors and corporations worldwide benefit or blame other audit corporations and customers.

The third trend is a firm's reputation. Due to the obvious emphasis on a company's reputation has been studied from a range of academic perspectives, including framework, finance theory, ideological standpoint, management theory, and others. The fourth trend is related to non-audit services as audit quality indicators and their consequences or determination. In the evaluation of the eliminated circumstances in which audit committees may be jeopardised, prohibitions on some non-audit services have been imposed. Furthermore, the fifth trend is a significance of earnings management in relating to market performance. that a firm's earnings management plays a substantial role in explaining underachievement in the long run.

Finally, the sixth and seventh trends are audit fees and firm's audit size. that indicate to fees charged to auditors in competing audit markets reflect both operational costs and litigation risk and high service quality is often connected with a larger scale in the professional services sector.

Improve on prior objective and assessment literature studies on audit quality. Increase the efficacy of interdependent links and how it impacts the audit quality. Furthermore, Future research directions may be consolidated through having evaluations at a macroeconomic level along with the development of an econometric technique with an 'audit quality' variable for the response variable since they were the keywords that were most significant from bibliometric analysis undertaken within the paper as an explanatory variable.

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