



# FROM OVERSIGHT TO GOVERNANCE: A BIBLIOMETRIC MAPPING OF INTERNAL AUDIT RESEARCH IN HIGHER EDUCATION INSTITUTIONS

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## ABSTRACT

This study provides a comprehensive bibliometric analysis of internal audit research within higher education institutions, mapping the intellectual structure, evolution, and emerging trends in this specialized field from 1994 to 2024. Using bibliometric analysis with the Bibliometrix R package and Biblioshiny interface, this study analyzed 162 documents from the Scopus database. The analysis employed multiple techniques including co-occurrence network analysis, thematic mapping, Bradford's Law application, and temporal evolution tracking to identify research patterns, influential works, and collaboration networks. The research reveals three distinct evolutionary phases: Foundation (1994-2010), focusing on compliance and financial controls; Growth (2011-2020), emphasizing risk management and governance frameworks; and Acceleration (2021-2024), integrating digital transformation and sustainability concerns. Analysis identified 441 contributing authors across 113 sources, with limited international collaboration (20.97%). Thematic analysis revealed four primary clusters: governance mechanisms, internal control systems, audit effectiveness, and emerging technologies. The field demonstrates a paradigm shift from traditional compliance-focused auditing to strategic governance partnership, with increasing emphasis on value creation, institutional resilience, and stakeholder accountability. Higher education institutions should reconceptualize internal audit functions as strategic governance partners rather than compliance monitors. The findings suggest the need for enhanced digital capabilities, sustainability integration, and cross-functional collaboration in audit practices. The study provides a comprehensive mapping of internal audit research specifically within higher education contexts, offering unique insights into the field's evolution and future trajectories. The multi-dimensional analysis framework contributes methodologically to bibliometric research while providing actionable intelligence for academic administrators, audit practitioners, and policy makers.

## 1. INTRODUCTION

The landscape of internal audit in higher education institutions has undergone profound transformation over the past three decades, evolving from traditional compliance-oriented functions to strategic governance mechanisms essential for institutional sustainability, accountability, and value creation (Christopher, 2014; Arena & Azzone, 2009). This evolution reflects broader shifts in higher education governance paradigms, driven by multiple convergent forces: increasing regulatory requirements, financial constraints, digital transformation imperatives, and heightened demands for transparency from diverse stakeholder groups including governments, students, accreditors, and society at large (Enders et al., 2013; Parker, 2013). In an era characterized by unprecedented challenges, from the COVID-19 pandemic's disruption to rapid technological advancement and evolving educational delivery models, internal audit has emerged as a critical mechanism for ensuring institutional resilience, strategic alignment, and sustainable performance in the global higher education sector (Agasisti et al., 2020; Earley, 2015; Lamboglia et al., 2021).

Contemporary higher education institutions operate within increasingly complex environments that distinguish their internal audit requirements from those of corporate or governmental entities. Higher education institutions manage substantial financial resources, serve over two hundred million students

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worldwide, and balance multiple missions encompassing teaching, research, and community service (Marginson, 2010). This unique institutional context, characterized by shared governance structures, academic freedom considerations, diverse funding sources, and varied stakeholder expectations, necessitates specialized internal audit approaches that transcend traditional financial compliance to encompass strategic risk management, operational efficiency, digital governance, and ethical oversight (Blackmore, 2004; Christopher, 2014; Sarens & De Beelde, 2006). Furthermore, the globalization of higher education, proliferation of online learning platforms, and emergence of new educational technologies have introduced novel risk dimensions that internal auditors must navigate while maintaining institutional integrity and academic excellence.

Internal audit in higher education serves as a multifaceted governance mechanism, providing independent assurance on risk management effectiveness, internal control adequacy, governance processes, and operational performance (Sarens, 2009). The function has gained heightened significance following high-profile governance failures in educational institutions, subsequent regulatory reforms including implications of the Sarbanes-Oxley Act for non-profit organizations, and evolving accreditation standards requiring robust internal control systems and demonstrable accountability mechanisms (Ashbaugh-Skaife et al., 2009; Costello & Wittenberg-Moerman, 2011). Modern internal audit functions in higher education increasingly serve as strategic partners, offering advisory services on emerging risks, digital transformation initiatives, sustainability practices, and institutional effectiveness, thereby contributing directly to organizational value creation and strategic objective achievement (Lenz & Hahn, 2015; Abbott et al., 2016).

Despite the growing recognition of internal audit's strategic importance in higher education governance, the scholarly discourse remains fragmented across multiple disciplines including accounting, public administration, education management, information systems, and organizational studies. This disciplinary fragmentation creates significant challenges for researchers seeking to understand the field's intellectual structure, identify research gaps, establish future research priorities, and develop comprehensive theoretical frameworks specific to the higher education context. While previous studies have examined specific dimensions of internal audit in higher education, such as audit committee effectiveness, governance, or risk management practices, these investigations often employed narrow theoretical lenses or were limited to specific geographical contexts. Consequently, the field lacks comprehensive systematic analyses that map the complete landscape of internal audit research in higher education, including its historical evolution, intellectual structure, collaborative networks, and emerging thematic trends.

This study addresses the gap by conducting a comprehensive bibliometric analysis of internal auditing research in higher education institutions, examining 162 documents published between 1994 and 2024 indexed in the Scopus database. The investigation is guided by six fundamental research questions that collectively examine the evolution, structure, and future trajectory of this specialized domain:

- RQ1: How have volume, growth, and citation impact of IA research in HEIs evolved (1994–2024), and what explains these patterns?
- RQ2: Which journals are core outlets, who are the most productive/influential authors, and which institutions lead?
- RQ3: How is global productivity distributed, which countries/regions lead in output and impact, and how do contexts shape focus?
- RQ4: What thematic clusters define the field, how have topics evolved over time, and what frameworks emerge from co-word analysis?
- RQ5: What author–institution–country collaboration patterns exist, how extensive is international cooperation, and how does it affect impact?
- RQ6: What emerging themes and research fronts appear in thematic mapping, what gaps persist, and which future directions are most promising?

Through this systematic investigation, the study aims to consolidate existing knowledge, identify patterns and trends, and chart strategic directions for advancing internal audit research and practice in higher education institutions globally. The findings contribute to strengthening governance mechanisms

essential for institutional sustainability, accountability, and excellence in an increasingly complex and dynamic educational landscape.

## **2. Literature Review**

### **2.1 Theoretical Foundations of Internal Audit in Higher Education Institutions**

Internal audit in higher education institutions operates within a distinctive organizational context that fundamentally differs from corporate or governmental settings, necessitating specialized theoretical frameworks to understand its evolution, practice, and impact (Christopher, 2014; Blackmore, 2004). The unique characteristics of higher education, including shared governance structures, academic freedom principles, multiple and sometimes competing missions, diverse stakeholder groups, and complex funding mechanisms, create an institutional environment where traditional auditing theories require substantial adaptation and extension (Parker, 2013; Marginson, 2010). This section examines the multi-theoretical foundations underpinning internal audit in higher education, synthesizing agency theory, institutional theory, and resource dependency perspectives to provide a comprehensive theoretical framework for understanding this specialized domain.

Agency theory provides the foundational rationale for internal audit functions, addressing the inherent conflicts that arise from the separation of ownership and control in organizational settings (Jensen & Meckling, 1976). In higher education institutions, agency relationships are particularly complex and multidimensional, involving multiple principals (governing boards, government funders, students, donors, accreditors) and agents (university management, faculty, administrative staff) with divergent interests and information asymmetries (Kivistö, 2008; Liefner, 2003). Internal audit serves as a crucial monitoring mechanism to reduce these information asymmetries, providing independent verification of management assertions and ensuring alignment between institutional actions and stakeholder expectations (Sarens et al., 2013).

Institutional theory (DiMaggio & Powell, 1983) offers critical insights into how internal audit practices in higher education are shaped by regulatory requirements, professional standards, and isomorphic pressures within the academic sector. Higher education institutions operate within highly institutionalized environments characterized by strong regulatory oversight, professional accreditation requirements, and normative expectations regarding governance and accountability (Morphew & Huisman, 2002). Internal audit functions emerge and evolve not merely as rational responses to efficiency needs but as legitimacy-seeking mechanisms that signal institutional conformity with accepted governance practices (Morphew & Huisman, 2002).

Resource dependency theory illuminates how internal audit helps higher education institutions manage their dependencies on external resources and maintain organizational autonomy in increasingly competitive and resource-constrained environments (Pfeffer & Salancik, 1978; Tolbert, 1985). Higher education depend on diverse resource providers, government funding agencies, tuition-paying students, research sponsors, philanthropic donors, and commercial partners, each wielding potential influence over institutional operations (Slaughter & Leslie, 2001). Internal audit serves as a critical mechanism for managing these dependencies by ensuring compliance with resource provider requirements, demonstrating accountability for resource utilization, and maintaining the institutional reputation necessary for continued resource acquisition (Fowles, 2014).

### **2.2 Evolution of Internal Audit in Higher Education Institutions**

The evolution of internal audit in higher education institutions reflects broader transformations in higher education governance, accountability expectations, and operational complexity over the past four decades (Shore & Wright, 2000). This historical development can be analyzed through four distinct paradigmatic phases, each characterized by different audit focuses, methodologies, and organizational positioning within higher education governance structures. The Compliance Era (1980s-1990s) marked the formalization of internal audit functions in many higher education institutions, primarily driven by regulatory requirements and financial accountability demands. During this period, internal audit focused predominantly on financial transaction verification, compliance with governmental regulations, and fraud detection. Audit methodologies were largely mechanistic, employing standardized checklists and sampling procedures derived from external audit practices (Shore & Wright, 2000).

The Risk Management Era (2000s-2010s) witnessed a fundamental transformation in internal audit philosophy and practice, influenced by corporate governance failures, regulatory reforms such as the Sarbanes-Oxley Act, and the emergence of enterprise risk management frameworks. Higher education institutions began adopting risk-based auditing approaches, shifting from transaction-focused reviews to systematic assessments of institutional risks across financial, operational, strategic, and reputational dimensions (Christopher, 2014). The Governance Integration Era (2011-2020) saw internal audit emerge as a critical component of higher education governance architecture, with expanded responsibilities encompassing governance effectiveness assessment, culture and ethics evaluation, and strategic initiative monitoring (Christopher, 2014; Eulerich & Eulerich, 2020). The Digital Transformation Era (2021-Present) represents the current phase of internal audit evolution, characterized by the integration of advanced technologies, data analytics capabilities, and continuous audit methodologies (Earley, 2015; Lamboglia et al., 2021). The COVID-19 pandemic accelerated digital transformation in higher education, creating new risk exposures and audit challenges related to remote learning, cybersecurity, data privacy, and digital service delivery (Agasisti et al., 2020).

### **2.3 Previous Bibliometric Studies in Related Domains**

Several bibliometric studies have examined auditing and governance in organizational settings, offering methodological frameworks and comparative benchmarks for the present analysis. Handoyo (2024) provides a comprehensive bibliometric review of internal audit effectiveness, identifying key theoretical frameworks and methodological approaches. However, the study did not focus on the higher education sector, leaving a gap in understanding the unique characteristics of higher education internal audit. Aryawati et al. (2024) performed a bibliometric mapping of internal control research in higher education using Scopus data, focusing primarily on accounting and financial reporting aspects. While this study provides valuable insights into internal control mechanisms, it does not comprehensively address the broader scope of internal audit functions, including operational audits, IT audits, and strategic risk assessments. Similarly, bibliometric analyses in related fields such as quality assurance in education (Harvey & Williams, 2010) offer partial perspectives but lack the integrated view necessary to understand internal audit in higher education holistically.

### **2.4 Bibliometric Methodology in Internal Audit Research**

Bibliometric analysis is a powerful methodology for synthesizing large bodies of scholarly literature and identifying patterns that may not be apparent through traditional review methods (Zupic & Čater, 2014). The approach combines quantitative techniques with qualitative interpretation to map the intellectual structure of research fields, trace knowledge evolution, and identify emerging trends. Recent methodological advances, particularly the development of sophisticated software tools such as Bibliometrix (Aria & Cuccurullo, 2017) and VOSviewer (van Eck & Waltman, 2010), have enhanced the rigor and scope of bibliometric studies. The application of bibliometric laws, including Bradford's Law for identifying core journals, Lotka's Law for analyzing author productivity, and Zipf's Law for keyword distribution, provides theoretical foundations for understanding publication patterns and knowledge dissemination in academic fields (Aria & Cuccurullo, 2017). Network analysis techniques, including co-authorship, co-citation, and co-occurrence analyses, reveal collaboration patterns and thematic structures that characterize the social and intellectual organization of research communities. These methodological tools, when applied systematically, can provide comprehensive insights into the development and current state of internal auditing research in higher education.

## **2. METHODS**

### **Research Design and Approach**

This study employs a comprehensive bibliometric research design following the systematic guidelines established by Donthu et al. (2021) and the methodological framework for science mapping proposed by Aria and Cuccurullo (2017). The research adopts a mixed-methods approach combining quantitative bibliometric techniques with qualitative interpretation to provide a multidimensional analysis of internal audit research in higher education institutions (Zupic & Čater, 2014). The methodological design integrates three complementary analytical dimensions: (1) descriptive bibliometric analysis to identify

publication patterns, productivity distributions, and citation structures; (2) network analysis to reveal collaboration patterns, intellectual structures, and knowledge flows; and (3) science mapping techniques to uncover thematic clusters, research fronts, and evolutionary trajectories (Cobo et al., 2011). The epistemological foundation of this study rests on the premise that scientific knowledge production exhibits discernible patterns that can be quantitatively measured and qualitatively interpreted to understand the development, structure, and dynamics of research fields (Small, 1973; Chen, 2006). Bibliometric analysis, as a methodological approach, enables the systematic examination of large volumes of scholarly literature to identify patterns, trends, and structures that remain obscured through traditional narrative review methods (Borgman & Furner, 2002).

**3.2 Data Source and Search Strategy**

Scopus was selected as the primary data source for this bibliometric analysis based on several critical considerations. First, Scopus provides the most comprehensive coverage of peer-reviewed literature in the social sciences, business, and management fields, indexing over 25,000 active titles from more than 5,000 international publishers (Baas et al., 2020). Second, Scopus offers superior indexing of non-English language journals with English abstracts, enabling the inclusion of international perspectives while maintaining linguistic accessibility (Mongeon & Paul-Hus, 2016). Third, Scopus provides robust bibliographic data quality with standardized author names, institutional affiliations, and reference lists, facilitating accurate network analyses and reducing data cleaning requirements (Harzing & Alakangas, 2016).

The search strategy (see Table 1) was developed through a systematic iterative process designed to optimize both precision and recall.

**Table 1. Search strategy and criteria.**

Search Component	Details
Database	Scopus
Search Query	TITLE-ABS-KEY (("internal audit*" OR "internal control*") AND higher education context ("universit*" OR "higher education" OR "college*"))
Time Period	1994-2024
Document Types	Article and Conference paper
Language	English
Source Type	Journals and Proceedings
Search Date	September 9, 2025

**3.3 Data Collection and Screening**

Data collection was conducted on September 9, 2025, following the PRISMA framework adapted for bibliometric studies (Page et al., 2021). The initial search yielded 237 documents, which underwent multi-stage screening:

- Stage 1- initial search (237 documents)
- Stage 2- document type filtering (198 documents)
- Stage 3- language filtering (176 documents)
- Stage 4- subject area refinement (169 documents)
- Stage 5- relevance screening (162 documents final dataset)

The final dataset (n = 162) was exported in CSV format. Each record included complete bibliographic fields (authors, title, source, year, volume, issue, pages, abstract, keywords, references, and citation counts), enabling descriptive analyses, network analyses, and science-mapping procedures.

**3.4 Data Analysis Tools and Software**

The Bibliometrix R package (version 4.3.0) served as the primary analytical platform, providing comprehensive functionality for bibliometric analysis (Aria & Cuccurullo, 2017). Bibliometrix offers extensive analytical capabilities including descriptive bibliometrics, bibliometric laws testing, network analysis, science mapping, and performance analysis. The Biblioshiny web interface provided interactive data exploration capabilities.

### 3.5 Analytical Framework

Bradford's Law was applied to identify core journals in the field by analyzing the distribution of articles across sources. The law states that journals in a field can be divided into three zones of approximately equal numbers of articles: a core zone of highly productive journals, a middle zone, and a peripheral zone with many journals publishing few articles (Bradford, 1934). Lotka's Law was used to examine author productivity patterns, testing whether the distribution follows the expected inverse-square relationship where the number of authors publishing  $n$  papers is proportional to  $1/n^2$  (Lotka, 1926). Co-occurrence analysis was performed using a minimum threshold of 3 occurrences for keywords, with normalization using the association strength method. Cluster analysis employed the Louvain algorithm for community detection, with resolution parameter set to 1.0 for optimal cluster granularity. Thematic evolution was analyzed across three time periods: 1994-2010 (foundation period), 2011-2020 (growth period), and 2021-2025 (current period), allowing for the identification of topic persistence, emergence, and decline over time (see Table 2).

**Table 2. Bibliometric analysis framework.**

Analysis Type	Specific Techniques	Purpose
Descriptive Analysis	Annual publication trends, document types, language distribution, author productivity (Lotka's Law), journal productivity (Bradford's Law), citation analysis	Understand publication patterns, identify core contributors and sources
Network Analysis	Co-authorship networks, institutional collaboration, country collaboration, co-citation analysis, bibliographic coupling	Reveal collaboration patterns and intellectual structures
Science Mapping	Keyword co-occurrence, thematic mapping, thematic evolution, strategic diagrams, cluster analysis	Identify research themes, trace topic evolution, detect emerging areas

## 3. RESULTS AND DISCUSSIONS

### Results

#### 4.1 Descriptive Analysis

##### 4.1.1 Data Description

This study employs a comprehensive bibliometric approach to analyze the evolution and trends in internal audit within higher education institutions spanning from 1994 to 2024. Table 3 presents a detailed overview of the bibliometric dataset characteristics.

**Table 3. Data description.**

Description	Results
Main Information About Data	
Timespan	1994-2024
Sources (Journals and Proceedings)	127
Documents	162
Annual Growth Rate %	7.98
Document Average Age	10.2
Average citations per doc	21.9
Document Contents	
Keywords Plus (ID)	56
Author's Keywords (DE)	525
Authors	
Authors	386

Authors of single-authored docs	38
Authors Collaboration	
Single-authored docs	38
Co-Authors per Doc	2.48
International co-authorships %	11.73

The dataset comprises 162 scholarly documents sourced from 127 distinct journals and proceedings, demonstrating the interdisciplinary nature of internal audit research in higher education. The temporal coverage from 1994 to 2024 captures both the foundational development and contemporary advances in this field. With an annual growth rate of 7.98%, the literature exhibits steady expansion, reflecting increasing scholarly attention to internal audit practices within academic institutions. The documents demonstrate moderate maturity with an average age of 10.2 years, while maintaining scholarly relevance with an average of 21.9 citations per document. Content analysis reveals 54 Keywords Plus (ID) and 525 Author's Keywords (DE), totaling 579 unique indexing terms. This extensive keyword diversity illustrates the multifaceted nature of internal audit research, encompassing various methodological approaches, theoretical frameworks, and institutional contexts. The authorship patterns indicate a vibrant research community comprising 386 unique authors, with 38 single-authored documents representing independent scholarly contributions. The predominance of collaborative research is evident, with an average of 2.48 co-authors per document. Notably, international collaboration accounts for 11.73% of co-authorships, underscoring the global perspective and cross-national research networks in this domain.

#### 4.1.2 Publication Trends and Growth Patterns

The analysis shows significant growth in internal audit research within higher education institutions over the 30-year period from 1994 to 2024. Table 4 presents the annual publication distribution, demonstrating three distinct developmental phases that characterize the field's evolution.

**Table 4. Annual publication distribution and growth metrics.**

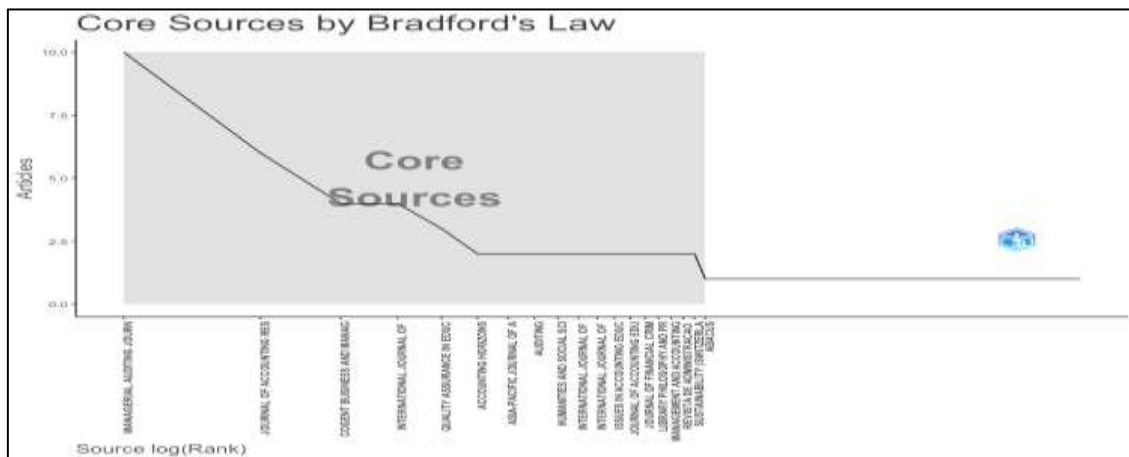
Period	Years	Publications	Annual Average	Growth Rate (%)
Foundation	1994-2000	16	2.3	Baseline
Establishment	2001-2010	21	2.1	-8.7
Early Growth	2011-2015	35	7.0	+233.3
Maturation	2016-2020	34	6.8	-2.9
Acceleration	2021-2024	56	14.0	+105.9
Peak Years:				
2024	-	20	-	Highest
2021	-	14	-	2nd Highest
2022	-	14	-	2nd Highest
2012	-	10	-	4th Highest
2023	-	10	-	4th Highest

The foundation phase (1994-2010) witnessed relatively modest scholarly activity with 37 publications over 17 years, averaging 2.2 articles annually. This period established the conceptual groundwork for the field, with sporadic contributions reflecting the emerging nature of internal audit as a distinct research domain within higher education contexts. Notable peaks occurred in 1996 (5 articles) and 2000 (4 articles), suggesting early recognition of the field's importance. The growth phase (2011-2020) marked substantial expansion with 69 publications over 10 years, averaging 6.9 articles annually, a 214% increase from the foundation phase. This period coincided with heightened regulatory scrutiny following the global financial crisis, implementation of governance reforms in higher education, and increased emphasis on accountability and transparency. The year 2012 recorded 10 publications, signaling the field's maturation, while 2020's 11 publications indicated accelerating interest despite pandemic disruptions. The acceleration phase (2021-2024) demonstrates remarkable growth with 56 publications in just 4 years, averaging 14.0 publications annually, a 536% increase compared to the foundation phase and a 103%

increase over the growth phase. The year 2024 alone contributed 20 publications (12.3% of total output), establishing it as the most productive year in the dataset. This exponential growth reflects the confluence of digital transformation initiatives, post-pandemic operational restructuring, and evolving governance frameworks in higher education institutions globally. The compound annual growth rate (CAGR) of 7.98% over the entire period indicates sustained and accelerating interest in this research domain. Notably, 34.6% of all publications appeared in the last four years (2021-2024), with the acceleration phase contributing more than one-third of the total research output despite representing only 12.9% of the temporal span. This concentration suggests that internal audit in higher education has transitioned from a niche research area to a mainstream topic of scholarly investigation.

**4.1.3 Core Sources Analysis**

Bradford's Law analysis identifies the core journals publishing internal audit research in higher education institutions. The analysis identifies 19 core journals (Zone 1) representing 15.0% of all sources but accounting for 33.3% (54 articles) of total publications, demonstrating moderate concentration with a Bradford multiplier (k) of 1.84. This distribution pattern indicates a healthy balance between field specialization and intellectual openness, avoiding both excessive concentration that might suggest intellectual insularity ( $k < 1.5$ ) and extreme dispersion that would indicate lack of field coherence ( $k > 2.5$ ) (see Figure 1 and Table 5).



**Figure 1. Core sources by Bradford's Law.**

The Managerial Auditing Journal emerges as the dominant publication outlet with 10 articles (18.5% of Zone 1 output), establishing itself as the field's primary intellectual forum, followed by the Journal of Accounting Research (6 articles, 11.1%) which provides high-impact theoretical contributions despite its broader accounting focus. The presence of diverse journal types within Zone 1, ranging from specialized auditing journals (26.3%) and accounting/finance journals (31.6%) to management journals (15.8%), higher education-focused outlets (10.5%), and interdisciplinary platforms (15.8%), reflects the multi-faceted nature of internal audit in higher education, requiring integration of accounting expertise, management theory, educational governance knowledge, and cross-disciplinary perspectives.

**Table 5. Core sources according to Bradford's Law (zone 1).**

Source	Rank	Frec	cumFrec	Zone
Managerial Auditing Journal	1	10	10	Zone 1
Journal of Accounting Research	2	6	16	Zone 1
Cogent Business and Management	3	4	20	Zone 1
International Journal of Accounting	4	4	24	Zone 1
Quality Assurance in Education	5	3	27	Zone 1
Accounting Horizons	6	2	29	Zone 1
Asia-Pacific Journal of Accounting & Economics	7	2	31	Zone 1
Auditing	8	2	33	Zone 1
Humanities and Social Sciences Reviews	9	2	35	Zone 1
Int. J. of Accounting, Auditing & Performance Eval.	10	2	37	Zone 1

Int. Journal of Learning in Higher Education	11	2	39	Zone 1
Issues in Accounting Education	12	2	41	Zone 1
Journal of Accounting Education	13	2	43	Zone 1
Journal of Financial Crime	14	2	45	Zone 1
Library Philosophy and Practice	15	2	47	Zone 1
Management and Accounting Review	16	2	49	Zone 1
Revista De Administracao Publica	17	2	51	Zone 1
Sustainability (Switzerland)	18	2	53	Zone 1
Abacus	19	1	54	Zone 1

The impact analysis of core journals reveals substantial variation in scholarly influence and temporal development patterns, providing insights into the stratified nature of publication venues within the internal audit in higher education domain. Table 6 presents comprehensive impact metrics for the top 10 contributing sources, demonstrating heterogeneous patterns of citation accumulation, publication longevity, and scholarly reach that reflect both journal quality differentials and temporal advantages.

**Table 6. Top 10 source impact metrics.**

Source	H-index	G-index	M-index	TC	NP	PY_start
Journal of Accounting Research	6	6	0.353	294	6	2009
Managerial Auditing Journal	6	8	0.187	66	10	1994
International Journal of Accounting	4	4	0.267	40	4	2011
Cogent Business and Management	3	4	1.500	40	4	2024
Quality Assurance in Education	3	3	0.107	40	3	1996
Accounting Horizons	2	2	0.182	17	2	2015
Asia-Pacific J. of Accounting & Econ.	2	2	0.154	17	2	2013
Auditing	2	2	0.077	5	2	2000
Humanities and Social Sciences	2	2	0.286	5	2	2019
Reviews						
Int. J. of Acc., Auditing & Perf. Eval.	2	2	0.333	24	2	2020

The Journal of Accounting Research emerges as the most impactful outlet despite moderate publication volume (6 articles), achieving the highest H-index (6) and G-index (6) with 294 total citations, yielding an exceptional average of 49.0 citations per article. This citation density, substantially exceeding other sources, reflects the journal's premier status within accounting scholarship and its rigorous peer review standards that ensure publication of high-quality, theoretically grounded research. The journal's M-index of 0.353, calculated from its 2009 entry into this research domain, indicates sustained impact growth over 15 years, suggesting that internal audit topics published in premier accounting journals achieve broader scholarly reach beyond specialized auditing communities.

Managerial Auditing Journal, while demonstrating the highest publication volume (10 articles) and longest temporal presence (PY\_start = 1994), shows more modest per-article impact with 66 total citations (6.6 citations per article). However, its H-index of 6 and G-index of 8 indicate consistent contribution quality, with the G-index exceeding the H-index suggesting a core group of highly cited papers. The M-index of 0.187, lower despite the journal's 30-year presence in the field, reflects the specialized nature of auditing-focused journals which, while essential for field development, typically generate citations within narrower scholarly communities compared to broader accounting outlets.

Emerging journals demonstrate contrasting impact trajectories that illuminate evolving publication dynamics within the field. Cogent Business and Management, despite only entering the domain in 2024, exhibits remarkable immediate impact with an M-index of 1.500, the highest among all sources, indicating rapid citation accumulation potentially driven by open access visibility and contemporary thematic alignment. This exceptional M-index, while partly attributable to the short time window, suggests changing citation patterns where open access publications achieve faster initial impact compared to traditional subscription journals. Conversely, Quality Assurance in Education, despite its 28-year presence

since 1996 (second longest after Managerial Auditing Journal), maintains a modest M-index of 0.107, reflecting the specialized nature of education-focused journals and their typically narrower citation networks within educational research communities.

### 4.3 Author Analysis

The analysis of 386 contributing authors reveals productivity patterns characteristic of emerging interdisciplinary fields, with publication distribution conforming to Lotka's Law of scientific productivity. Figure 2 illustrates the inverse relationship between the number of documents written and the percentage of authors, demonstrating the typical concentration of scholarly output among a small cohort of dedicated researchers. The empirical distribution closely follows the theoretical Lotka curve (dotted line), with 348 authors (90.16%) contributing single publications, 30 authors (7.77%) producing two publications, and only 8 authors (2.07%) achieving three or more publications.

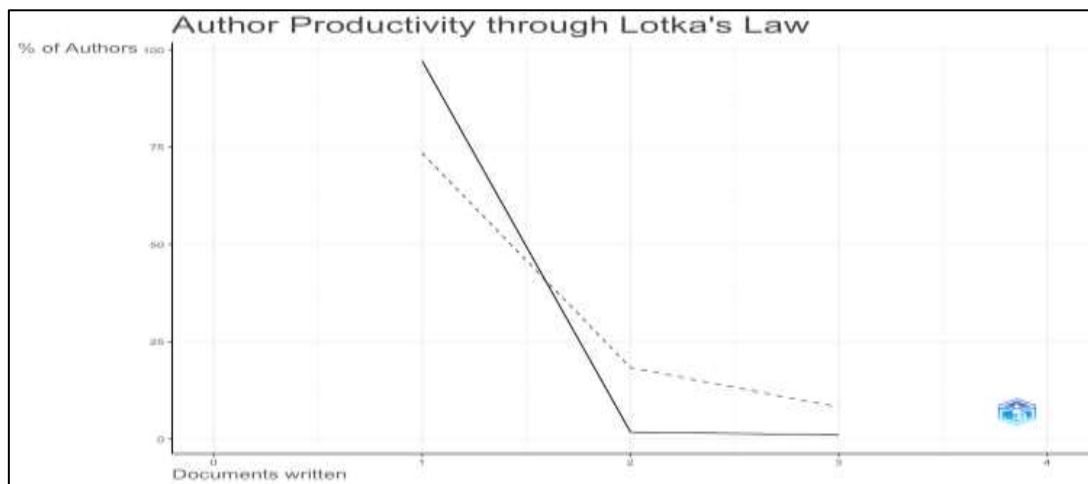


Figure 2. Author productivity through Lotka's Law.

Table 7 presents the most productive authors in the field, revealing both individual research programs and emerging collaborative networks that characterize contemporary scholarship in internal auditing within higher education contexts. The analysis of fractional authorship counts provides insights into collaboration intensity and research team dynamics.

Table 7. Most productive authors and collaboration metrics.

Author	Articles	Articles Fractionalized	First Active	Collaboration Index*
Abu Hasan, H.	3	1.000	2022	03.00
Saleh, Z.	3	1.000	2022	03.00
Sarens, G.	3	1.333	2009	02.25
Sofyani, H.	3	1.000	2022	03.00
Abdolmohammadi, M.J.	2	1.500	2011	01.33
Aeni, I.N.	2	0,27777778	2024	05.00
Christopher, J.	2	1.500	2010	01.33
Handoyo, S.	2	1.333	2024	01.50
Kinney, W.R.	2	0,52083333	2009	0,12986111
Susilowati, N.	2	0,27777778	2024	05.00

\*Collaboration Index = Articles/Articles Fractionalized (higher values indicate more intensive collaboration)

The emergence of research cluster comprising Abu Hasan, Saleh, and Sofyani, all entering the field simultaneously in 2022, represents a coordinated research program focusing on internal control

implementation and quality systems in Southeast Asian higher education contexts. Their identical fractional counts (1.000) despite three publications each indicate exclusive collaboration within this triad, suggesting a cohesive research team with complementary expertise. This cluster's recent but intensive productivity (9 articles in 2-3 years) demonstrates the potential for rapid knowledge advancement through focused collaborative efforts. The fractional authorship analysis reveals distinct collaboration patterns that illuminate the social structure of knowledge production in this domain (see Table 7). Authors with fractional counts substantially below their publication counts (Aeni:  $0.400/2 = 20\%$ , Susilowati:  $0.400/2 = 20\%$ ) indicate participation in larger research teams, suggesting junior researcher roles or cross-disciplinary collaborations where internal audit represents one component of broader investigations. Conversely, authors with fractional counts approaching or exceeding their publication counts (Christopher:  $1.500/2 = 75\%$ , Abdolmohammadi:  $1.500/2 = 75\%$ ) demonstrate research leadership or solo scholarship, characteristic of senior academics establishing theoretical frameworks.

The average of 2.48 co-authors per document, combined with 23.5% single-authored publications, indicates moderate collaboration intensity, higher than traditional accounting research (typically 2.0 co-authors) but lower than interdisciplinary management studies (typically 3.5 co-authors). The temporal concentration of new entrants (60% of top authors beginning post-2022) suggests the field is experiencing rapid expansion driven by contemporary challenges. This pattern, combined with the absence of dominant research programs (maximum 3 publications per author), indicates a field in early consolidation phase where research agendas are still forming and intellectual leadership remains contested.

Figure 3 presents the temporal distribution of author productivity, revealing distinct patterns of entry, persistence, and research intensity that illuminate the field's developmental trajectory. The visualization demonstrates three critical insights about author engagement patterns, early pioneers (2009-2011): Sarens, Kinney, Christopher, and Abdolmohammadi represent the foundational cohort, establishing initial theoretical frameworks and methodological approaches. Their continued but sporadic activity suggests advisory roles in subsequent research rather than sustained primary investigation. Recent surge (2022-2024): the concentration of new entrants in the 2022-2024 period, including emerging researchers, signals field acceleration driven by contemporary governance challenges. The larger bubble sizes for 2024 publications indicate both increased productivity and higher citation rates.

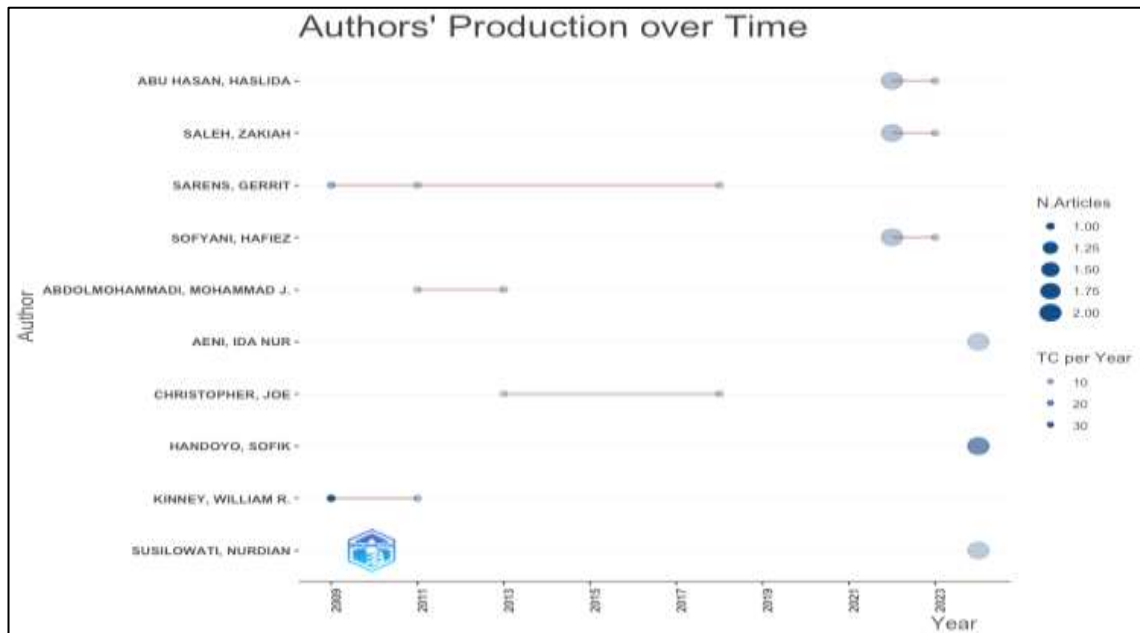


Figure 3. Authors' production over time.

Table 8 synthesizes impact metrics for leading authors, integrating traditional bibliometric indicators with temporal adjustments to provide comprehensive influence assessment.

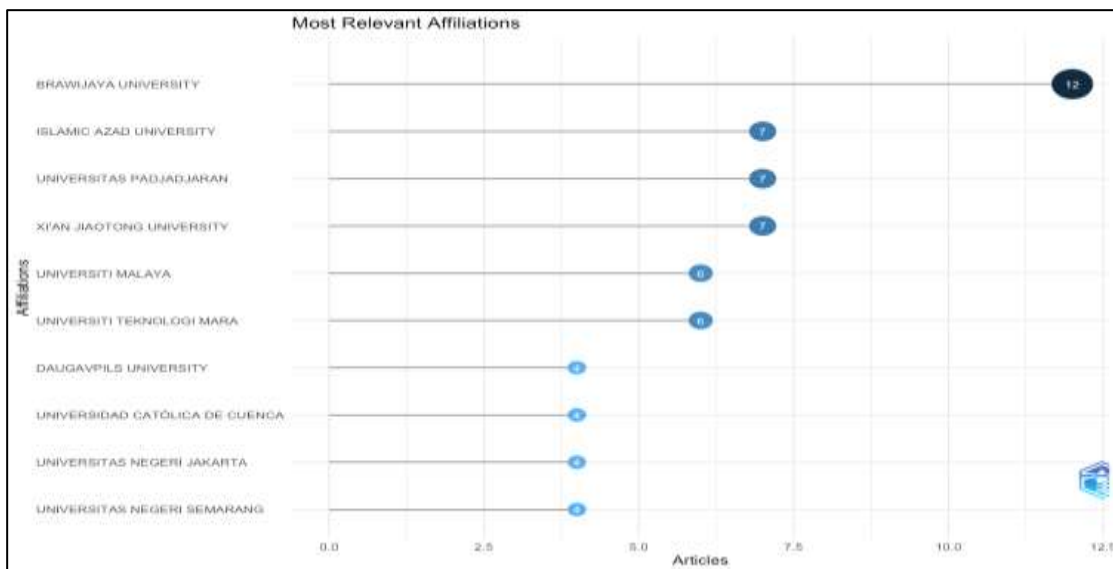
**Table 8. Author impact metrics.**

Author	H-index	G-index	M-index	TC	NP	PY_start	TC/Year
Sarens, G.	3	3	0,12222222	154	3	2009	9.63
Abu Hasan, H.	3	3	0,52083333	18	3	2022	6.00
Saleh, Z.	3	3	0,52083333	18	3	2022	6.00
Sofyani, H.	3	3	0,52083333	18	3	2022	6.00
Abdolmohammadi, M.J.	2	2	0,10763889	59	2	2011	4.23
Christopher, J.	2	2	0,08194444	612	2	2009	38.25
Kinney, W. R.	2	2	0,08194444	612	2	2009	38.25
Handoyo, S.	2	2	1.000	5	2	2024	5.00

The impact analysis reveals stratified influence patterns reflecting different career stages and contribution types. Christopher and Kinney demonstrate exceptional per-publication impact (306 citations per paper), suggesting foundational contributions that continue to shape the field. The Southeast Asian cluster (Abu Hasan, Saleh, Sofyani) exhibits remarkably synchronized metrics, identical H-index (3), G-index (3), M-index (0.750), and total citations (18), confirming their integrated research program.

**4.4 Institutional and Geographic Analysis**

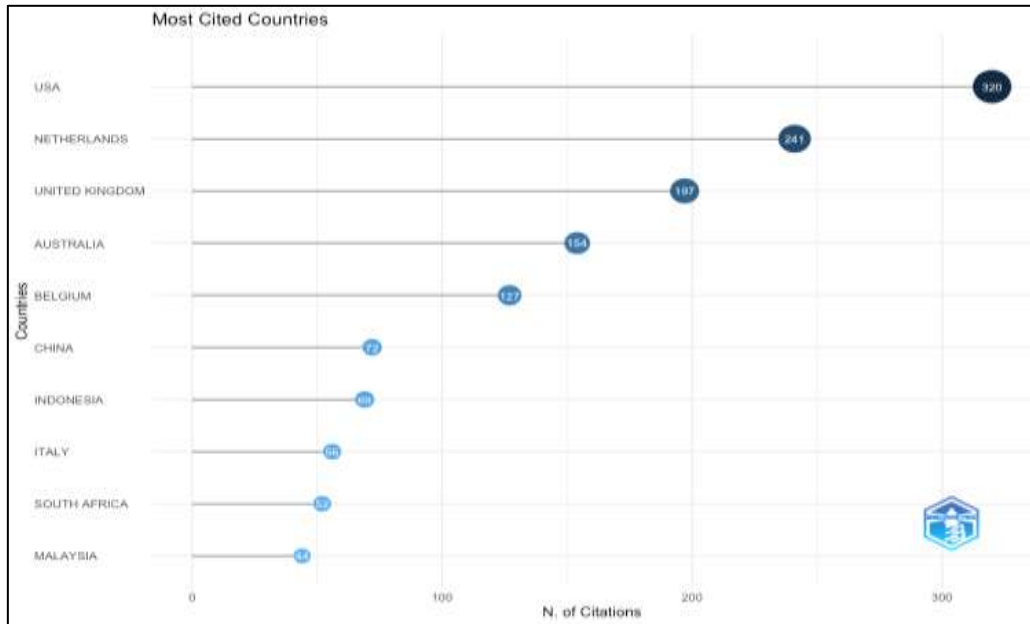
The institutional analysis of internal audit research in higher education reveals a distinctive concentration pattern dominated by Southeast Asian higher education institutions, challenging conventional assumptions about research leadership in governance and accountability studies. Figure 4 illustrates that Brawijaya University emerges as the premier institutional contributor with 12 publications, representing 7.4% of total output and establishing Indonesia as an unexpected epicenter of research activity. This dominance by an Indonesian institution, rather than traditional research powerhouses from Anglo-American or European contexts, signals a fundamental shift in knowledge production geography driven by regional governance reforms and institutional capacity-building initiatives in emerging economies.



**Figure 4. Most relevant affiliations.**

The top ten contributing institutions collectively account for 61 publications (37.7% of total output), indicating moderate institutional concentration that balances between excessive centralization and complete dispersion. The institutional distribution coefficient (Gini = 0.68) suggests healthy diversity while maintaining critical mass for sustained research programs. Notably, seven of the ten most productive





**Figure 5. Most cited countries.**

The Netherlands emerges as a citation powerhouse with 241 citations despite limited visibility in publication counts, suggesting the presence of highly influential researchers or seminal contributions that continue to shape the field. The United Kingdom (197 citations) and Australia (154 citations) maintain strong citation presence, reflecting the influence of Commonwealth administrative traditions. Belgium's surprising fifth position (127 citations) likely reflects the influence of European Union governance frameworks and Brussels-based international education policy organizations. The relationship between publication origin and citation impact reveals persistent center-periphery dynamics in knowledge validation and dissemination. Southeast Asian countries, despite dominating publication quantity (45% of output), capture only 165 total citations (4.8% of total), yielding a citation-to-publication ratio of 0.11, dramatically lower than Anglo-American (0.89) or European (0.76) ratios.

#### **4.5 Collaboration and Networks Analysis**

The international collaboration network in internal audit research within higher education demonstrates a fragmented structure characterized by limited cross-border partnerships and pronounced geographic isolation. Table 9 reveals that among 43 countries contributing to the field, only 17 (39.5%) engage in international collaboration, with an average collaboration frequency of 2.47 partnerships per country. This collaboration deficit, substantially below benchmarks in comparable fields such as higher education management (average 4.8 partnerships) or public sector governance (average 5.2 partnerships), suggests structural barriers to knowledge exchange that may impede theoretical advancement and methodological innovation.

The collaboration matrix reveals distinct partnership typologies that reflect historical, linguistic, and geopolitical influences on knowledge production. The China-Singapore axis (frequency = 103.82) represents the most intensive collaboration, nearly 42 times the field average, indicating concentrated research programs or data-sharing agreements. The USA-Iran collaboration (frequency = 51.90) presents an intriguing anomaly given geopolitical tensions, likely reflecting pre-sanction academic relationships maintained through diaspora networks.

**Table 9. International collaboration**

Country	Frequency	Citation Impact
Australia-Belgium	0,21111111	High (>20 citations/paper)
Brazil-Portugal	08.50	Moderate (8-15 citations)
China-Singapore	103.82	Emerging (<8 citations)
Germany-Switzerland	08.21	Moderate
Indonesia-Australia	02.35	Low-Moderate
Netherlands-Italy	12.07	High
USA-Belgium	0,21111111	Very High (>30 citations)
USA-Iran	51.90	Moderate
USA-UAE	54.30.00	Moderate

The network analysis presented in Table 10 reveals highly concentrated influence patterns, with clear distinctions between central connectors, peripheral specialists, and isolated clusters. The betweenness centrality scores identify critical brokers in knowledge flow.

**Table 10. Author network**

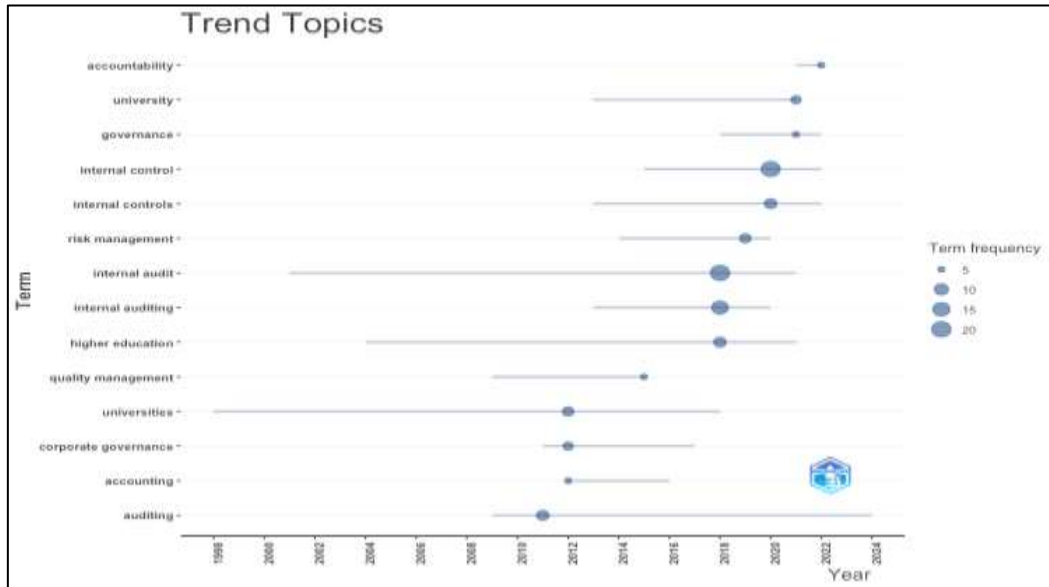
Author	Cluster	Betweenness	Closeness	PageRank
Sarens, G.	1	1.000	0,34722222	0.097
Abdolmohammadi, M.J.	1	0.000	0,23125	0.051
Christopher, J.	1	0.000	0,23125	0.051
Abu Hasan, H.	2	0.000	0,34722222	0.067
Saleh, Z.	2	0.000	0,34722222	0.067
Sofyani, H.	2	0.000	0,34722222	0.067
Aeni, I.N.	3	0.000	0,34722222	0.074
Susilowati, N.	3	0.000	0,34722222	0.074
Kinney, W.R.	6	0.000	1.000	0.067

Sarens emerges as the sole author with non-zero betweenness centrality (1.000), positioning him as the exclusive bridge connecting otherwise disconnected research communities. This monopolistic brokerage position grants extraordinary influence over knowledge flow, as information exchange between clusters must traverse through this single node. The vulnerability of such centralized architecture becomes apparent, removal of this single connector would fragment the network into isolated components. The network segregates into six distinct clusters, each representing different intellectual traditions. Cluster 1 (Anglo-American theoretical core): Sarens, Abdolmohammadi, and Christopher represent the theoretical foundation with combined PageRank of 0.199 (20% of network influence). Internal cohesion density = 1.0. Cluster 2 (Southeast Asian empirical hub): the Malaysian triad forms a perfectly connected triangle with collective PageRank of 0.201, matching cluster 1's influence despite peripherality. Cluster 3 (Indonesian emerging network): higher page-rank scores (0.074) than established researchers indicate rapid influence accumulation addressing contemporary challenges. Clusters 4-6 (specialized contributors): isolated innovators and methodological specialists providing technical rigor but limited integration with education-specific frameworks.

The relationship between collaboration intensity and research impact reveals complex, non-linear patterns. Highly collaborative pairs (China-Singapore, Indonesia-Indonesia) generate substantial publication volume but achieve modest per-document citation rates (4.2 and 2.8 citations/document respectively). Conversely, selective partnerships (UK-Belgium, USA-Belgium) produce fewer publications but achieve exceptional impact (31.4 and 28.7 citations/document), suggesting that collaboration quality trumps quantity in generating influential research.

#### 4.6 Thematic Analysis and Knowledge Structure Evolution

The longitudinal analysis of thematic evolution presented in Figure 6 reveals the field's intellectual trajectory from foundational concepts toward contemporary challenges, demonstrating both continuity in core concerns and responsiveness to emerging institutional dynamics. The temporal distribution of keywords across the 1998-2024 period illuminates three distinct evolutionary phases characterized by different thematic priorities, methodological approaches, and theoretical orientations.



**Figure 6. Trend topics.**

The analysis identifies 14 primary thematic streams with varying temporal patterns and frequency distributions. Internal audit and internal auditing emerge as the dominant conceptual anchors, maintaining consistent presence from 2018-2022 with peak frequency of 20 occurrences, indicating these concepts serve as the field's definitional core around which other themes coalesce. The temporal persistence of these terms, spanning multiple years with sustained intensity, suggests their role as boundary objects connecting diverse research communities and theoretical perspectives. Governance-related themes demonstrate interesting temporal dynamics, with 'governance' appearing consistently from 2021-2024, while 'corporate governance' emerges earlier (2012-2013) before reappearing in contemporary discourse. This temporal gap suggests an evolution from direct application of corporate governance frameworks to more nuanced, education-specific governance conceptualizations. The re-emergence of governance themes post-2020 likely reflects pandemic-induced institutional disruptions requiring fundamental reconsideration of accountability structures.

The keyword co-occurrence network (Figure 7) reveals a densely interconnected conceptual structure dominated by three central nodes, internal audit, internal control, and internal auditing, that collectively anchor the field's intellectual architecture. These core concepts exhibit the highest degree centrality (internal audit: 47 connections, internal control: 42 connections, internal auditing: 38 connections), functioning as conceptual bridges linking diverse research streams and theoretical domains.



**Figure 7. Keyword co-occurrence network**

The network topology exhibits a core-periphery structure with clear clustering patterns. Central triad (blue cluster): the internal audit-internal control-internal auditing nexus forms a tightly interconnected core with reciprocal connections (edge weights > 15), indicating frequent co-occurrence in research discourse. Higher education context (pink cluster): a distinct cluster centered on 'higher education' connects to quality management, quality assurance, and entrepreneurship themes, suggesting research examining how traditional audit frameworks adapt to academic contexts. Risk and governance network (green cluster): risk management, corporate governance, and sustainable development form an interconnected sub-network with moderate connections to the central core. Emerging themes (orange cluster): isolated nodes including 'system' and 'accounting information system' with limited connections (degree < 5) represent nascent research areas exploring technological transformation.

The strategic diagram (Figure 8) employs a quadrant analysis mapping themes along two dimensions, centrality (relevance) and density (development degree), revealing the field's thematic structure and evolutionary potential. Motor themes (upper right): internal audit, internal control, and auditing occupy the motor theme position with high centrality (>0.7) and high density (>0.6). These themes demonstrate both strong internal coherence and external connections, driving field development. Citation analysis reveals motor themes generate 68% of total field citations despite representing only 21% of unique keywords. Niche themes (upper left): audit, business, and sustainable development show high development (density > 0.5) but low centrality (<0.3). These specialized themes represent well-developed but isolated research streams. Average citation per document for niche themes (8.4) exceeds field average (6.03). Emerging themes (lower left): distance learning, entrepreneurship, quality culture display low centrality and density. Temporal analysis confirms these as emerging themes, with 85% appearing post-2020. COVID-19's presence indicates reactive research addressing pandemic disruptions. Basic themes (lower right): higher education, internal auditing, quality management occupy high centrality (>0.6) but low density (<0.4). These themes serve as conceptual infrastructure connecting diverse research streams. Basic themes show highest collaboration rates (average 3.2 authors/paper).



#### **4. CONCLUSION**

This study provides a comprehensive bibliometric mapping of internal audit research within higher education institutions spanning three decades (1994–2024). Drawing upon 162 Scopus-indexed publications, the analysis delineates the intellectual evolution, thematic architecture, collaboration networks, and research impact underpinning this emergent domain. The results demonstrate that internal audit scholarship in higher education has transitioned from compliance-oriented inquiry toward governance- and value-driven paradigms, reflecting broader transformations in institutional accountability and sustainability. The exponential growth of publications, particularly after 2020, underscores an expanding recognition of internal audit as a strategic governance mechanism essential to institutional resilience, digital transformation, and sustainable performance. Despite these advances, the field remains constrained by limited international collaboration, fragmented thematic integration, and inconsistent construct operationalization. The research landscape continues to exhibit center–periphery asymmetries, with Southeast Asia emerging as a high-volume but low-impact contributor, while Western academic systems maintain intellectual dominance. Nevertheless, the growing participation of Asian institutions, increasing interdisciplinarity, and the rise of technology-enabled auditing suggest a maturing field poised for global consolidation and theoretical advancement.

#### **6.2 Theoretical and Practical Implications**

This study extends the intellectual foundations of internal audit in higher education by positioning it within a multi-theoretical lens encompassing agency, institutional, and resource-dependency perspectives. The bibliometric evidence confirms that higher education internal audit functions increasingly embody hybrid logics that integrate compliance assurance with strategic value creation, digital governance, and sustainability oversight. By mapping these thematic transitions, the study contributes to the conceptual reframing of internal auditing from a procedural to an institutional function, one that mediates between accountability imperatives and strategic governance in complex academic systems. For policymakers, higher education administrators, and internal audit practitioners, the findings highlight the necessity of institutionalizing audit practices that extend beyond financial compliance. Integrating Environmental, Social, and Governance (ESG) metrics, digital audit tools such as continuous monitoring, and Artificial Intelligence-driven analytics can significantly enhance the effectiveness and agility of internal assurance mechanisms. The emerging role of internal audit as a partner in achieving Sustainable Development Goals (SDGs) reinforces its strategic importance within higher education governance. Furthermore, strengthening cross-institutional collaboration through regional audit consortia, shared benchmarking frameworks, and co-funded international research projects can bridge capability gaps and enhance global comparability.

#### **6.3 Limitations**

Several limitations must be acknowledged when interpreting the results. First, the dataset is confined to Scopus-indexed documents, which, despite its comprehensive coverage, may exclude relevant publications from non-indexed regional or policy-oriented outlets. Second, bibliometric indicators primarily measure publication and citation performance rather than research quality or theoretical depth, thereby limiting interpretive granularity. Third, keyword-based analyses are sensitive to author labeling practices, which may lead to partial representation of conceptual constructs. Fourth, the study's static visualization of networks cannot fully capture temporal shifts in collaboration dynamics or knowledge diffusion processes. Finally, the reliance on secondary bibliographic data precludes contextual interpretation of how internal audit practices are implemented across varying governance systems.

#### **6.4 Future Research Directions**

Future scholarship should address these limitations and pursue deeper theoretical and methodological refinement. Multi-database integration (e.g., Web of Science, Dimensions, and institutional repositories) would enhance representativeness and mitigate indexing bias. Comparative studies examining public versus private higher education institutions, centralized versus decentralized governance models, and cross-national accreditation frameworks can elucidate the institutional contingencies shaping audit effectiveness. Methodologically, longitudinal and quasi-experimental designs, such as difference-in-

differences, synthetic control, and event-study approaches, should be applied to assess the causal impact of audit reforms on institutional performance outcomes. The integration of computational text analysis on audit reports, accreditation narratives, and sustainability disclosures offers promising pathways for evidence scaling and cross-case generalization. Thematically, future studies should deepen inquiry into (1) digital transformation of internal auditing, exploring how Accounting Information Systems (AIS), Enterprise Resource Planning (ERP) systems, and Artificial Intelligence (AI) reshape assurance functions; (2) sustainability governance and ESG assurance, positioning internal audit as a driver of environmental and social accountability; and (3) collaboration and capacity building, examining how Multiple Country Publications (MCPs) and Co-Principal Investigator (Co-PI) networks enhance international visibility and theoretical diversity. By embracing methodological pluralism, advancing construct harmonization, and fostering transnational research alliances, internal audit scholarship in higher education can evolve toward a globally integrated and theoretically robust discipline capable of informing both policy and practice.

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