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## Artificial Intelligence and Big Data Analytics in Accounting: A Systematic Review of Research Trends, Theoretical Perspectives, and Future Agenda

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**Abstract:** This study aims to map the intellectual developments, thematic trends, and methodological directions of research on BDA and AI in accounting during the 2015–2025 period using a Systematic Literature Review (SLR) approach based on PRISMA guidelines combined with bibliometric analysis of 74 articles. The research process includes identification, screening, eligibility, and inclusion stages, accompanied by a quality assessment using the CASP instrument to ensure methodological validity. The analysis results show that publications on BDA and AI in accounting have increased significantly since 2019, dominated by contributions from developed countries such as the United Kingdom, the United States, and Australia, while developing countries such as Indonesia and Malaysia show a trend of rapid research growth. Methodologically, quantitative research still dominates, followed by qualitative and mixed methods approaches. The bibliometric analysis results place The British Accounting Review, Journal of Business Ethics, and Technological Forecasting and Social Change as the most productive journals, with prominent authors such as Moll, Munoko, and Dwivedi as key contributors to the global citation network. The keyword co-occurrence map reveals two major orientations in the literature: technology-driven accounting research, which focuses on automation, predictive auditing, and machine learning, and value-driven research, which emphasizes transparency, sustainability reporting, and institutional legitimacy. These findings reinforce the relevance of Decision Usefulness, Legitimacy, and Agency Theory in explaining the dynamics of technology adoption in accounting. Theoretically, this study broadens the understanding of the digital accounting knowledge ecosystem and future research directions related to ethics, data governance, and the integration of AI in auditing and sustainability reporting. Practically, the results provide implications for educators, practitioners, and regulators to strengthen analytical competencies, AI governance policies, and the development of technology-based accounting curricula.

**Keywords:** Artificial Intelligence, Big Data Analytics, Accounting

### INTRODUCTION

Digital transformation has had a significant impact on modern accounting practices. The phenomenon of big data, characterized by high volume, velocity, and variety, demands

analytical technology capable of processing large-scale information quickly and accurately. In this context, Big Data Analytics (BDA) has become a crucial instrument for supporting data-driven decision-making, while Artificial Intelligence (AI) expands analytical capabilities through automation, pattern learning, and prediction (Kend & Nguyen, 2020). The presence of BDA and AI in accounting offers significant opportunities for improving audit efficiency, financial reporting accuracy, fraud detection, and providing strategic information for managers and regulators (Appelbaum et al., 2017; Earley, 2015; Tiberius & Hirth, 2019).

Conceptually, the application of digital technology in accounting has shifted the traditional paradigm toward a more data- and technology-driven approach (Moll & Yigitbasioglu, 2019). Accountants no longer function solely as financial report preparers but also as data analysts capable of utilizing algorithms, visualizations, and predictive modelling to generate relevant insights. The accounting function is increasingly shifting toward strategic decision support, where the role of accountants is increasingly strategic in supporting long-term decision-making (Warren et al., 2015). This aligns with global trends indicating a shift in the accounting function from mere record-keeping to data-driven value creation (Dwivedi et al., 2023).

Over the past decade, research on BDA and AI in accounting has shown rapid development. Recent studies demonstrate the application of these technologies to risk-based auditing, accounting information systems, financial risk management, and non-financial disclosures such as Environmental, Social, and Governance (ESG) (Alnor, 2024; Ievsieieva et al., 2024; Tiwari & Khan, 2020). Research by Kokina & Davenport (2017) highlights the role of AI in supporting more efficient and accurate audit processes, while Munoko et al. (2020) caution against ethical challenges that must be addressed in the use of AI, particularly regarding algorithm transparency, auditor independence, and client data protection. Thus, in addition to providing opportunities, technology adoption also creates new risks that require adequate governance.

The literature also emphasizes that BDA plays a crucial role in supporting management control systems and strategic decision-making. Stancheva (2018) demonstrates how big data is transforming managerial accounting practices and organizational control. In the audit context, Schneider et al. (2015) identify opportunities for leveraging data analytics to expand the scope of audit testing and improve the quality of auditor findings. Meanwhile, in the realm of sustainability reporting, Munir et al. (2022) demonstrate how data analytics helps companies present environmental and social information more transparently, thereby enhancing accountability to stakeholders.

However, the growing literature still presents several limitations. First, existing research tends to be fragmented across specific domains, such as audit or sustainability, making the results difficult to generalize comprehensively (Agustí & Orta-Pérez, 2023; Kokina & Davenport, 2017; Prokofieva, 2023; Thottoli, 2024). Second, most research is still dominated by cross-sectional designs, while longitudinal and experimental studies that can demonstrate long-term causality are still rare (Kureljusic & Karger, 2023). Third, the integration of bibliometric analysis with thematic and methodological synthesis is still limited, even though this multidimensional analysis is crucial for a comprehensive understanding of the field's development (Dwivedi et al., 2023). Fourth, although new technologies such as large language models and generative AI are beginning to be widely used in various sectors, their application in accounting, particularly in auditing and financial reporting, remains minimally researched (Rahman & Ziru, 2022).

These limitations emphasize the importance of a systematic literature review that can provide a comprehensive overview of the development of BDA and AI research in accounting. Such a review not only summarizes previous findings but also identifies remaining research gaps. Using the PRISMA method, a Systematic Literature Review (SLR) can be conducted to map research trends related to BDA and AI in accounting for the period 2015–2025. The

primary focus is on articles published in reputable national (SINTA 1–2) and international Scopus-indexed journals to ensure the quality of the reviewed literature remains consistent and scientifically sound.

Based on the urgency and limitations outlined above, this study formulates several research questions, as follows:

1. What are the dominant themes emerging in the literature on Big Data Analytics (BDA) and Artificial Intelligence (AI) in accounting during the period 2015–2025?
2. What are the bibliometric patterns and publication trends regarding Big Data Analytics (BDA) and Artificial Intelligence (AI) in accounting?
3. What are the methodological characteristics of previous research, including analytical methods, and the country or regional context in which the research was conducted?
4. What are the remaining research gaps, and how can a future research agenda be developed to strengthen the ethical, adaptive, and sustainable application of Big Data Analytics (BDA) and Artificial Intelligence (AI) in accounting practice?

Within this framework, this research has several main objectives. First, to identify dominant themes in the BDA and AI literature in accounting. Second, to analyze the methodological characteristics used in previous research, including research design, analytical methods, and data context. Third, to present bibliometric patterns of publications, based on annual trends, publishing journals, and citations. Fourth, to identify remaining research gaps, which can serve as a basis for developing a further research agenda in technology-based accounting. To answer these research questions and objectives, this study limits its scope to journal articles published between 2015 and 2025, with Scopus or SINTA 1–2 indexed quality, and focuses on the relationship between BDA and AI and accounting practices, including auditing, financial reporting, accounting information systems, risk management, and sustainable accounting. Conference articles, opinion pieces, white papers, and non-peer-reviewed publications were excluded to maintain consistent quality.

This research is expected to contribute significantly both academically and practically. Academically, the results present a comprehensive map of intellectual developments at the intersection of BDA, AI, and accounting. Methodologically, this study is expected to provide a data extraction and quality assessment framework that can be adopted in future research. Practically, the results can help accounting practitioners and regulators understand relevant research areas to support effective and ethical technology adoption. Furthermore, the findings are expected to contribute to the development of accounting education curricula by emphasizing the importance of data analytics competencies for aspiring accounting professionals.

Thus, this study seeks not only to map the current state of research but also to provide strategic direction for the future development of technology-based accounting knowledge and practices. The digital transformation driven by BDA and AI is not simply a technological trend but represents a fundamental shift in how the accounting profession performs its role in modern society. The systematic literature review conducted in this study is expected to provide a valuable foundation for guiding accounting research and practice in the coming decade, while addressing the ethical, methodological, and professional challenges inherent in the adoption of cutting-edge technologies.

## **METHOD**

### ***Research Design***

This study uses a Systematic Literature Review (SLR) approach combined with bibliometric analysis to gain a comprehensive understanding of the development of Big Data Analytics (BDA) and Artificial Intelligence (AI) research in accounting during the 2015–2025 period. This approach was chosen because it has two main strengths: (1) SLR ensures that the literature synthesis process is conducted systematically, transparently, and replicably, and (2)

bibliometric analysis allows mapping of intellectual structures and scientific trends through a quantitative approach based on publication data (Zupic & Čater, 2014).

The research framework adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which are widely recognized as the international standard for reporting systematic reviews. The PRISMA procedure helps ensure traceability, transparency, and reliability in the process of identifying, selecting, and synthesizing literature. Furthermore, the article quality assessment process uses the Critical Appraisal Skills Programme (CASP) instrument to ensure that only studies meeting high methodological standards are included in the analysis.

**Data Sources and Search Strategy**

Research data was obtained from three major nationally and internationally recognized databases: Scopus, SINTA (1–2), and Google Scholar. These three databases were selected to ensure a balance between global coverage and contributions to national literature.

This research was conducted with a publication coverage spanning from 2015 to 2025, aligning with a period of increasing academic and practical attention to the topics of Big Data Analytics (BDA) and Artificial Intelligence (AI) in accounting. This timeframe was chosen to capture recent developments and provide a longitudinal overview of the field's research evolution (Dwivedi et al., 2023). The SLR process in this study includes five main steps: (1) establishing eligibility criteria, (2) determining information sources, (3) selecting studies, (4) determining the data collection process, and (5) selecting data items for analysis. The PRISMA flowchart depicting the study selection stages is shown in Figure 1.

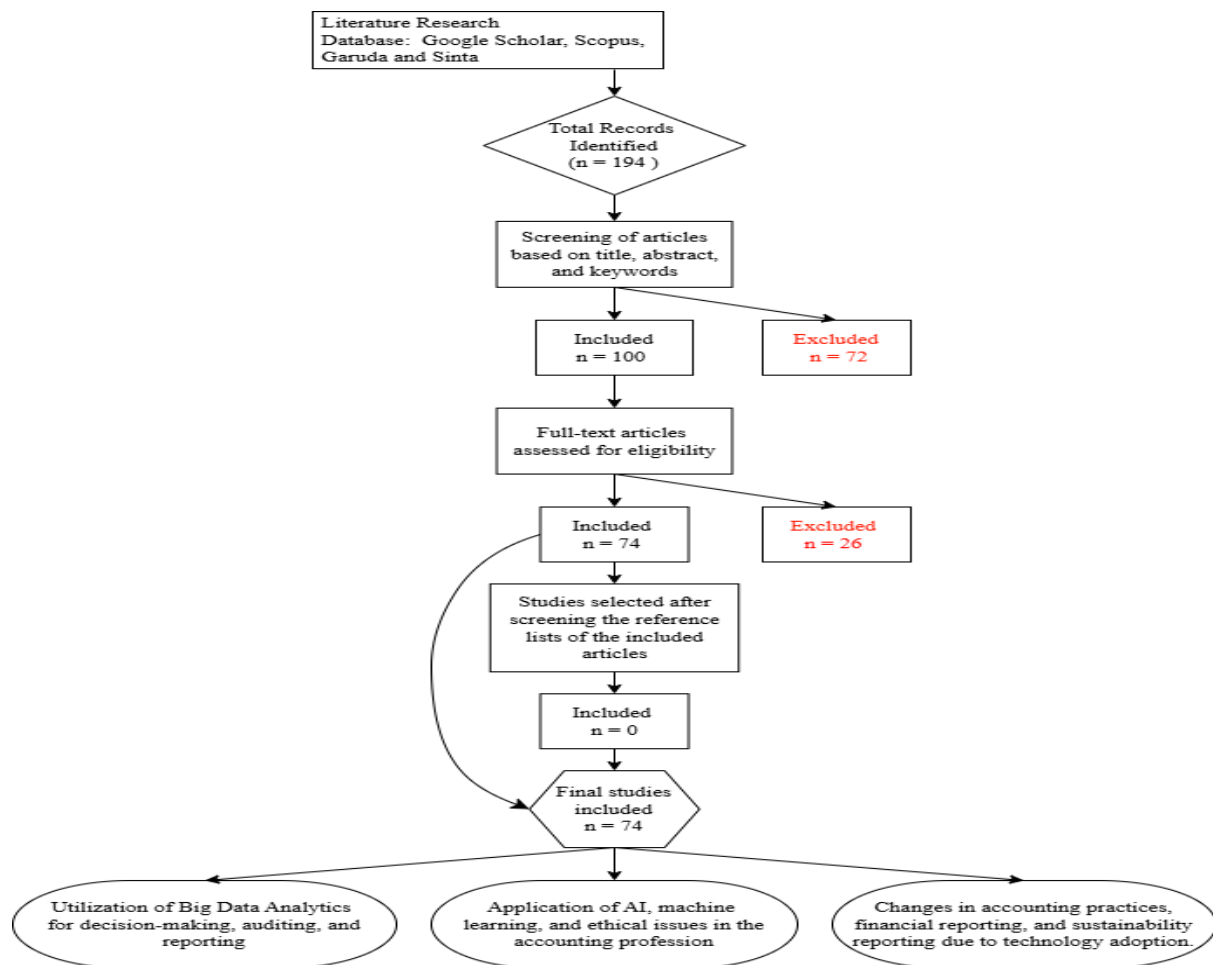


Figure 1. PRISMA Flowchart

**Screening Stage**

The screening stage is conducted by reading the title, abstract, and keywords. This stage involves a quick identification to evaluate the initial relevance of an article. Articles that are explicitly unrelated to accounting or focus more on other fields are removed from the list. This screening aims to reduce the number of irrelevant articles before moving on to a more in-depth evaluation stage.

Table 1. Boolean Query and Initial Search Results

Database	Boolean Query	Initial Results	Articles Worth Analyzing
Scopus	("Big Data Analytics" OR "Data Analytics") AND ("Artificial Intelligence" OR "Machine Learning") AND ("Accounting" OR "Auditing")	246	39
SINTA (1–2)	("Big Data Analytics" OR "Artificial Intelligence") AND ("Accounting" OR "Auditing" OR "Financial Reporting")	127	24
Google Scholar	("Big Data" AND "AI" AND "Accounting")	312	11
<b>Total</b>		685	74

**Eligibility Stage**

The eligibility stage is conducted after the initial screening process to assess the extent to which the remaining articles are worthy of in-depth analysis based on their methodological quality and scientific credibility. While the screening stage focuses on topic relevance, the eligibility stage emphasizes evaluating the consistency of the research design, transparency of the methods, and the appropriateness of the research objectives, data, and analysis results. Each article was thoroughly read and assessed using the Critical Appraisal Skills Programme (CASP) instrument, which comprises eight main criteria: clarity of research objectives, relevance of the theoretical context, appropriateness of the methods, quality of data analysis, clarity of results and interpretation, contribution to accounting development, traceability of data sources, and consistency of research ethics. Articles that do not meet at least five of these eight criteria are deemed unfit for further analysis. The assessment process was conducted systematically using a Microsoft Excel-based evaluation sheet. From a total of 194 articles from the initial search, after a further selection process based on a comprehensive quality assessment, 74 final articles were selected that met academic standards and thematic relevance for comprehensive analysis in this study.

**Inclusion Stage**

Inclusion criteria were established to ensure that the selected articles have adequate academic quality. Included articles must meet the following requirements:

- a. Publication type: Only peer-reviewed journal articles published in Scopus or SINTA 1–2 indexed journals. Conference papers, working papers, white papers, opinion pieces, editorials, and non-peer-reviewed publications are excluded to maintain quality consistency.
- b. Research context: Articles must discuss the relationship between BDA or AI and accounting practices, including auditing, financial reporting, accounting information systems, risk management, and sustainability accounting.
- c. Language: Articles must be in English or Indonesian.
- d. Timeframe: Publication between 2015 and 2025.

Meanwhile, exclusion criteria were established to filter out irrelevant articles, namely: (a) articles that only discuss BDA/AI without linking them to accounting; (b) conceptual articles

without adequate empirical support or theoretical review; and (c) duplicate articles in the database.

## RESULTS AND DISCUSSION

### Research Distribution by Country

An analysis of the 74 identified articles shows that publications on BDA and AI in accounting have a diverse geographic distribution, although they remain concentrated in several countries with more advanced research capacity and technological infrastructure. Based on the extraction results, the 10 countries with the highest publication contributions were identified. Generally, developed countries such as the United Kingdom (12 articles), the United States (10 articles), and Australia (7 articles) occupy the top positions, while developing countries such as Indonesia (8 articles), Malaysia (6 articles), and India (5 articles) have begun to show significant increases in recent years. This distribution can be seen in the following diagram:

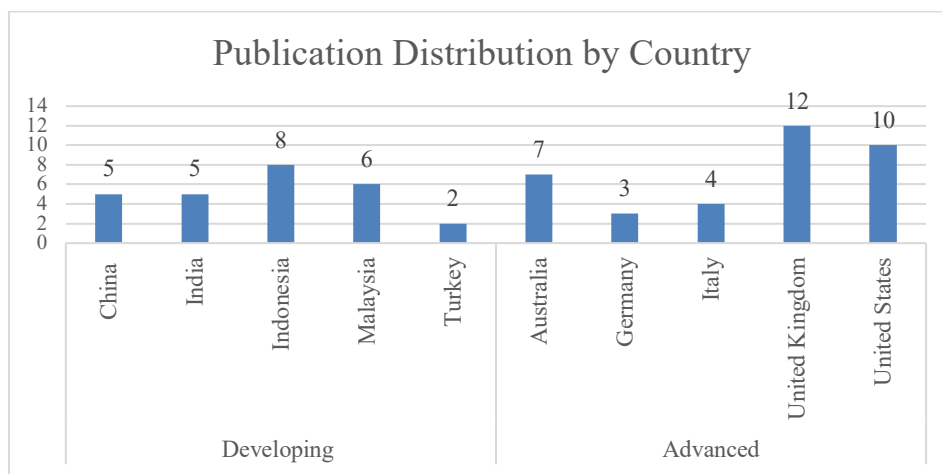


Figure 2. Distribution of Publications Based on Country of Origin of Research

These findings align with bibliometric research by Elnakeeb & Elawadly (2025), which identified that over 60% of publications on AI and analytics in accounting originate from OECD countries, particularly the United Kingdom and the United States. This pattern of dominance in developed countries is further reinforced by Moll & Yigitbasioglu (2019), who show that the application of data analytics in management accounting is growing rapidly in regions with strong technological infrastructure and regulatory support.

However, in recent years, research from Southeast Asia and South Asia has begun to occupy a strategic position in the literature. Handoyo (2024) highlights the increase in publications from Indonesia related to the adoption of Big Data in public sector accounting. Similarly, Abdullah & Almaqtari (2024) note the growing research interest in Malaysia regarding the integration of AI in digital accounting and auditing education. This phenomenon indicates a geographic shift in research towards developing countries, particularly in regions undergoing digital transformation.

From an Institutional Theory perspective, this geographic variation reflects the differing institutional pressures faced by each country. In developed countries, the adoption of BDA and AI is driven by the need to maintain efficiency and professional reputation in a competitive business ecosystem (Akteer et al., 2022; Ilugbusi & Dorasamy, 2025; Leitner-Hanetseder et al., 2021; Türegün, 2025). Conversely, in developing countries, coercive pressure from regulators and national policies plays a dominant role, where technology adoption is often part of an effort to adapt to global standards (Jin et al., 2024; Mohammad et al., 2020).

Meanwhile, from a Legitimacy Theory perspective, the increase in publication contributions from developing countries can be interpreted as an effort to gain international academic and professional legitimacy. This theory also explains that organizations, including educational and professional institutions, strive to establish legitimacy for values and practices considered globally valid. In this context, research on BDA and AI symbolizes the readiness of developing countries to face the challenges of global accounting digitalization (Mohammad et al., 2020).

Thus, the distribution of these publications reflects not only quantitative differences between countries but also significant epistemological and institutional gaps. Developed countries focus on high-tech research testing algorithms and predictive models, while developing countries place greater emphasis on implementation context, infrastructure readiness, and human resource capacity development. This highlights the need for cross-country and cross-institutional comparative research to understand how social, cultural, and regulatory factors moderate the effectiveness of BDA and AI adoption in modern accounting practices.

### ***Distribution by Research Method***

An analysis of the 74 articles that passed the inclusion stage shows that research on BDA and AI in accounting utilizes a variety of methodological approaches, with a clear predominance of quantitative methods. Based on the tabulated results, approximately 47% of the articles adopted a quantitative approach, 25% were conceptual or literature reviews, 18% used qualitative methods, and the remaining 10% combined the two approaches (mixed methods). This distribution pattern reflects the direction of research increasingly oriented toward empirical testing and data-driven model validation.

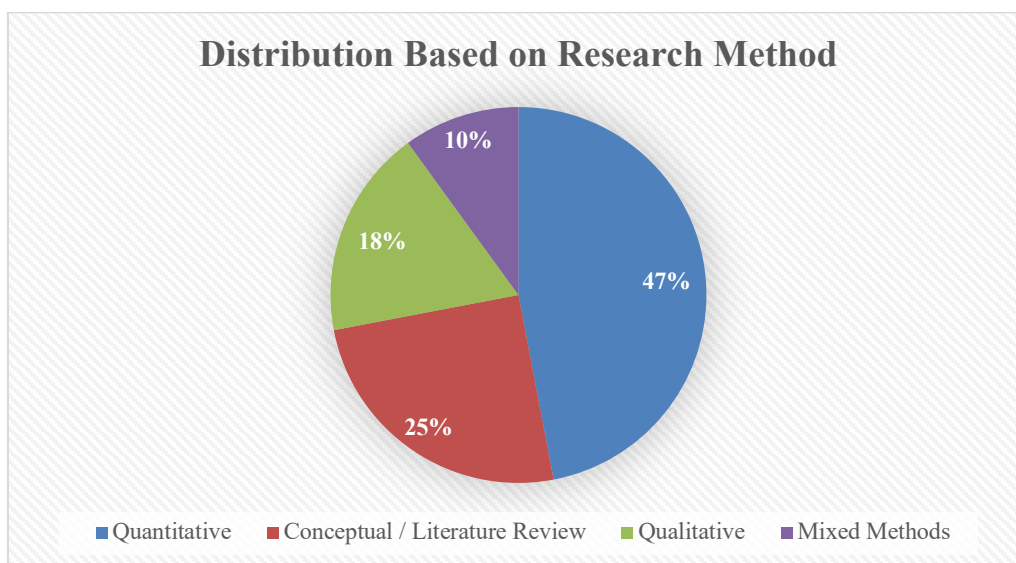


Figure 3. Distribution of Research Methods in BDA and AI Studies in the Field of Accounting

These findings are consistent with the results of a bibliometric study by Elnakeeb & Elawadly (2025), which demonstrated the strong dominance of quantitative approaches in technology-based accounting research, particularly in studies of data analytics, fraud detection, and predictive modeling. Research by Prokofieva (2023) also confirms the widespread use of quantitative methods in the development and testing of machine learning algorithms for automated audits and transaction anomaly detection.

Conversely, conceptual research continues to play a crucial role in the early stages of the field's development, particularly in elucidating theoretical frameworks for the integration of

BDA and AI in financial reporting, governance, and internal control (Kokina & Davenport, 2017; Moll & Yigitbasioglu, 2019). Conceptual articles play a role in opening up new theoretical space for further empirical research, for example, by identifying ethical issues, algorithmic transparency, and implications for the accounting profession.

Meanwhile, qualitative studies, although fewer in number, have made important contributions to understanding the context of technology implementation and the social dynamics behind the accounting digitalization process. For example, Rikhardsson & Yigitbasioglu (2018) used a case study and interview-based research approach to explore the perceptions of auditors and accounting educators regarding the adoption of intelligent technology. This type of research enhances understanding of how organizational culture, managerial support, and infrastructure readiness influence the successful implementation of AI and BDA in professional environments.

Mixed-methods research, although only around 10%, demonstrates a new trend in technology-based accounting research. This approach combines the power of quantitative analysis, for example, through text mining or big data regression analysis, with qualitative insights gained from interviews or field observations (Bonsu et al., 2022). This combination has proven effective in explaining complex phenomena such as user resistance to automated systems, ethical perceptions of AI, or the changing role of auditors due to automation.

From an epistemological perspective, this distribution indicates a paradigm shift in digital accounting research. The initial research phase (2015–2018) was still dominated by conceptual approaches seeking to understand the potential of technology, while the period after 2020 showed a trend toward empirical approaches based on big data (data-driven research). This change marks a shift from a normative paradigm to an empirical-analytical paradigm, where model reliability, algorithm accuracy, and predictive ability become the main focus of research.

This methodological shift can also be explained through the perspective of Decision Usefulness Theory, which emphasizes the importance of relevant and reliable accounting information for decision-making. In the context of BDA and AI, the dominant quantitative approach reflects researchers' orientation toward improving the quality and usefulness of information through predictive technology. On the other hand, qualitative and conceptual studies remain relevant because they provide insights into the social and behavioral factors influencing technology adoption, thus balancing the technical and human dimensions of digital accounting transformation (Kokina & Davenport, 2017; Moll & Yigitbasioglu, 2019).

Overall, the results of this analysis indicate that research on BDA and AI in accounting is moving into an empirical-applicative phase, with a predominance of quantitative methods and an increasing number of cross-disciplinary studies involving advanced data analysis techniques. Going forward, researchers are advised to strengthen mixed-methods approaches and longitudinal studies to understand the long-term impact of technology adoption on organizational performance, governance, and the changing role of the accounting profession.

### ***Bibliometric Analysis: Journals, Authors, and Citations***

A bibliometric analysis was conducted to identify publication patterns, scientific collaborations, and the scientific landscape in research on BDA and AI in accounting. Through an analysis of 74 articles, three main dimensions were analyzed: (1) the most productive journals, (2) dominant authors and institutions, and (3) the intellectual structure of the research through co-citation and keyword co-occurrence analysis.

#### **a. Most Productive Journal**

The analysis shows that publications on BDA and AI in accounting are spread across various international journals, covering the fields of accounting, information systems, and management technology. The ten journals with the highest number of articles are shown in Table 2 below.

Table 2. Most Productive Journals for AI and BDA Research in Accounting (2015–2025)

No	Journal Name	Number of Articles	Total Citations	Main Focus of Research
1	<i>The British Accounting Review</i>	2	1.312	Digital transformation and the role of technology in the accounting profession.
2	<i>Journal of Cleaner Production</i>	2	419	Integration of AI and BDA in sustainability reporting and green accounting.
3	<i>Sustainability (Switzerland)</i>	3	408	Sustainability, ethics, and legitimacy in digital accounting.
4	<i>Australian Accounting Review</i>	2	567	The impact of digitalization on accountants' roles and competencies.
5	<i>Journal of Emerging Technologies in Accounting (JETA)</i>	3	116	AI-based auditing and automated assurance systems.
6	<i>Annals of Operations Research</i>	2	735	Optimization and machine learning for financial decisions.
7	<i>Technological Forecasting and Social Change</i>	2	366	Trends and adoption of AI in financial governance.
8	<i>Journal of Business Ethics</i>	1	317	Ethical dimensions of AI application in accounting reporting.
9	<i>Managerial Auditing Journal</i>	1	208	Implementation of digital auditing and technology-based control.
10	<i>Accounting Education</i>	1	390	AI-based accounting learning and the transformation of the accounting education curriculum.

Based on frequency of appearance and total citations, the most productive and influential journals were The British Accounting Review, Journal of Cleaner Production and Sustainability (Switzerland), Australian Accounting Review, Journal of Emerging Technologies in Accounting (JETA), and Annals of Operations Research. These journals dominate because they serve as primary platforms for the development of literature on accounting digitalization, audit automation, and the ethical and sustainability implications of AI implementation in modern accounting practice.

The British Accounting Review ranked highest with a combined total of over 1,300 citations, demonstrating its role as a primary reference for research addressing the impact of digital transformation on the accounting profession and corporate accountability. The Journal of Cleaner Production and Sustainability (Switzerland) came in second with a focus on AI integration to achieve efficiency, transparency, and sustainability reporting. The Australian Accounting Review and JETA played a key role in facilitating research on data-driven auditing and automated assurance, which are emerging trends in the auditing literature. Meanwhile, the Annals of Operations Research stands out for its widespread use in publishing empirical studies combining machine learning and optimization models in the context of financial risk analysis.

This finding reinforces the findings of Indrayani et al. (2025) and Ng (2023), which assert that AI-based accounting research is now cross-disciplinary and increasingly emphasizes the strategic value added by technology for corporate governance, transparency, and legitimacy. Thus, publication trends over the past decade signal a shift in focus from technical automation to a value-driven approach to accounting research, where AI serves not only as a tool for efficiency but also as a mechanism for enhancing organizational accountability.

In general, this distribution pattern indicates that BDA and AI research in accounting is not focused on a single scientific domain, but is spread across various journals that connect technology, sustainability, and corporate governance. This phenomenon is consistent with the views of Liu et al. (2020) and Sutton et al. (2016), who assert that interdisciplinary approaches will be a key driver of the evolution of technology-based accounting research in the coming decade. Thus, The British Accounting Review, Sustainability, and JETA can be categorized as centres for the development of digital accounting literature that is oriented towards technology-based innovation, ethics, and efficiency.

This bibliometric approach aims not only to describe publication trends but also to map the knowledge structures that shape this research field (Zupic & Čater, 2014). Thus, the results of the analysis can be used to assess the extent to which BDA and AI research in accounting is developing thematically and collaboratively within the global scientific community.

## **b. Dominant Authors and Institutions**

The consistency between the distribution of publications by country and the dominance of authors indicates that research on Artificial Intelligence (AI) and Big Data Analytics (BDA) in accounting remains concentrated in developed countries, particularly the United Kingdom, the United States, and Australia. The dominance of authors such as Kend & Nguyen (2020) and Moll & Yigitbasioglu (2019) reflects the role of research institutions in these countries as key drivers in shaping the new digital accounting paradigm. Conversely, contributions from developing countries such as Indonesia and Malaysia are beginning to emerge through researchers such as Abdullah & Almaqtari (2024), Alexandro (2025), and Handoyo (2024), although they are still limited to research with an implementation orientation. This finding reinforces previous results on geographic distribution, which indicated a research gap between developed and developing contexts (Dwivedi et al., 2023; Munoko et al., 2020).

Overall, the analysis of 74 articles indicates that the highest research productivity comes from authors and institutions affiliated with renowned universities in developed countries. For example, Moll & Yigitbasioglu (2019) from The University of Queensland topped the list with 924 citations for their publication in *The British Accounting Review*, which discussed the impact of digitalization on accounting practices and controls. Meanwhile, Appelbaum et al. (2017) from Rutgers University received 988 citations for their work focusing on the application of machine learning and robotic process automation (RPA) in auditing. In Australia, Kend & Nguyen (2020) and Cockcroft & Russell (2018) were the dominant authors in the *Australian Accounting Review*, with significant contributions to ethics and sustainability issues in technology-based auditing.

From an institutional perspective, bibliometric results indicate that universities such as The University of Queensland (Australia), Rutgers University (USA), Monash University (Australia), and the University of Nottingham (UK) are centers of highest productivity. These institutions have strong research ecosystems in accounting analytics and AI-driven assurance systems, as confirmed by research by Al Ghatrifi et al. (2023), Qasim et al. (2022), and Tiberius & Hirth (2019) state that AI research in accounting tends to develop in academic settings, supported by cross-disciplinary research.

In contrast, contributions from institutions in developing countries such as Airlangga University (Indonesia), Universiti Utara Malaysia (Malaysia), and the University of Delhi (India) show a positive trend, although citation rates remain low. Research from these institutions generally focuses on technology adoption and digital readiness, rather than on developing theoretical models. This reinforces the view of Dwivedi et al. (2023) that AI adoption in developing countries is still applicable and has not yet reached the knowledge creation phase similar to that in developed countries.

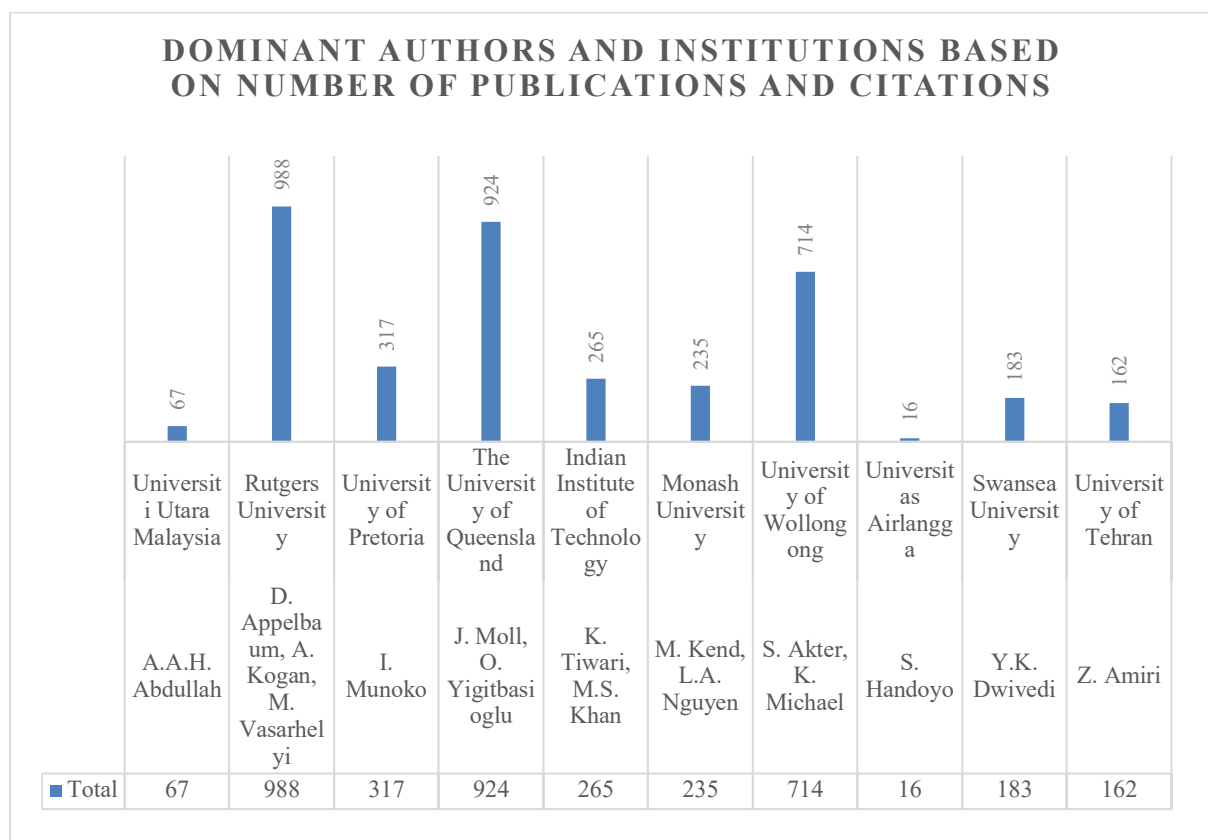


Figure 4. Distribution Based on Dominant Authors and Institutions

The figure shows that the largest contributions still come from universities in Australia, the United States, and the United Kingdom, which are also epicenters of international collaboration in AI-based accounting research. This phenomenon confirms the findings of Elnakeeb & Elawadly (2025) that global accounting research remains heavily dependent on research infrastructure in developed countries, both in terms of data access, funding, and cross-university collaborative networks.

**c. Keyword Co-Occurrence Analysis**

The results of keyword co-occurrence analysis, visualized using VOSviewer software, show that the most frequently appearing terms in the literature are "accounting," "artificial intelligence," "big data," "audit," "finance," and "deep learning." These keywords form a major thematic cluster that represents the current research direction in technology-based accounting. The dominance of the terms "accounting" and "artificial intelligence" confirms that the research focus remains concentrated on the integration of intelligent technology into accounting and auditing practices (Agustí & Orta-Pérez, 2023; Appelbaum et al., 2017; Sutton et al., 2016). Meanwhile, the emergence of "big data" and "deep learning" reflects a methodological shift toward data-driven predictive analytics, particularly in the context of financial decision-making and audit anomaly detection (Kokina & Davenport, 2017).

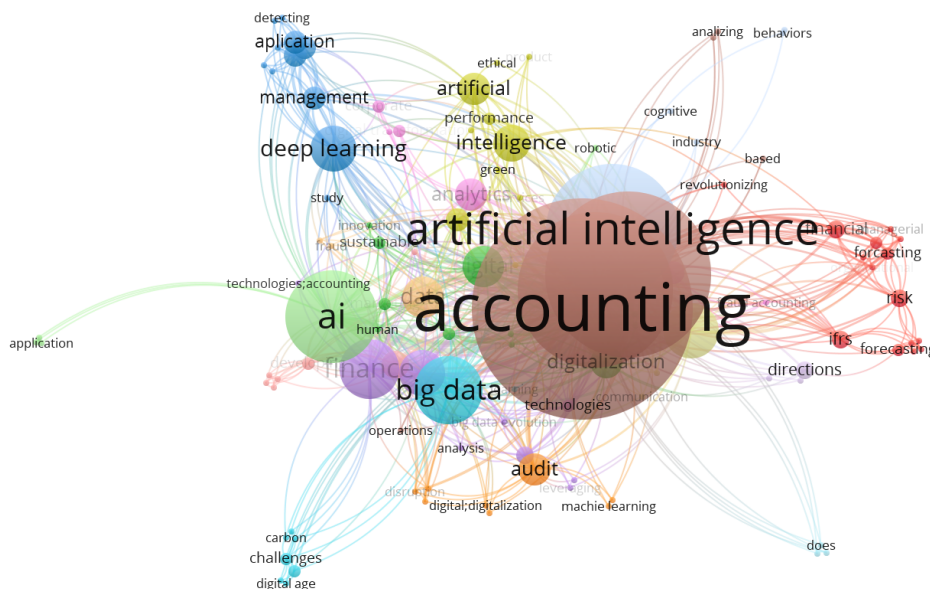


Figure 5. Visualization of Keyword Co-Occurrence

The visual map shows the formation of several thematic clusters. The largest cluster (brown) centers on the terms "accounting" and "artificial intelligence," which describe the integration of AI into reporting, auditing, and internal control processes. The second cluster (blue) highlights the terms "deep learning," "application," and "management," which indicate approaches to applying machine learning models to risk management and financial forecasting (Liu et al., 2020). The green cluster, involving "big data," "finance," and "AI technologies," illustrates the adoption of big data technologies for strategic financial analysis, operational efficiency, and sustainability reporting (Moll & Yigitbasioglu, 2019). Other clusters, such as "audit," "IFRS," and "forecasting" (red), demonstrate the strengthening of research in the areas of automated assurance, predictive auditing, and algorithm-based performance measurement (Leitner-Hanetseder & Lehner, 2022).

The strong link between "artificial intelligence" and "accounting" indicates that AI is no longer merely a technical tool but has become a new paradigm in digital accounting systems. This aligns with Sutton et al.'s (2016) view that AI integration has transformed audit practices into ones based more on predictive and real-time risk assessment. Furthermore, the emergence of nodes such as "ethics," "sustainability," and "performance" demonstrates a new dimension of accounting research that is beginning to emphasize aspects of social responsibility and sustainability, supporting the approaches of legitimacy theory and decision usefulness in the context of AI-based reporting (Tiron-Tudor et al., 2025).

Overall, the results of the keyword mapping indicate that the literature on AI and AI in accounting has evolved toward two main orientations. First, technology-driven accounting research, which emphasizes the automation of accounting processes, predictive auditing, and the application of machine learning algorithms to improve the efficiency and accuracy of financial reporting (Appelbaum et al., 2017; Prokofieva, 2023). Second, value-driven research, which links the use of AI to improved reporting quality, transparency, and institutional legitimacy, aligns with the theoretical frameworks of decision usefulness and legitimacy theory (Tiron-Tudor et al., 2025). These two orientations demonstrate that AI functions not only as a technical tool but also as a driver of value transformation in modern accounting practices. These findings align with global bibliometric trends that position data analytics and AI-enabled auditing as the most promising research areas in the coming decade (Elnakeeb & Elawadly, 2025).

### **Theoretical Discussion And Research Agenda**

A systematic analysis of 74 articles published between 2015 and 2025 shows that research on Artificial Intelligence (AI) and Big Data Analytics (BDA) in accounting has experienced rapid development, both thematically and methodologically. A bibliometric study reveals that research in the last decade has shifted toward two major orientations. First, technology-driven accounting research emphasizes the integration of intelligent technologies such as machine learning, robotic process automation (RPA), and predictive analytics to improve the efficiency, accuracy, and reliability of financial reporting. Second, value-driven research, focusing on interpreting the value and benefits of technology use for transparency, accountability, and organizational legitimacy (Dwivedi et al., 2023). This shift in orientation marks a paradigm shift in accounting from a mere record-keeping function to a more adaptive and sustainable data-driven decision-making system.

From a theoretical perspective, the findings of this study strengthen the relevance of several fundamental theories in explaining the adoption of AI and BDA. First, Decision Usefulness Theory explains that the primary goal of integrating technology into accounting practices is to increase the relevance and reliability of information to support decision-making (Appelbaum et al., 2017; Tiberius & Hirth, 2019). Through predictive analytics technology and automated audit systems, AI is believed to enrich the context of information presented to management and stakeholders. However, a research gap remains in empirically testing the extent to which AI-based analytics actually improve decision quality across various organizational contexts and regulatory environments, particularly in developing countries.

Furthermore, from an Agency Theory perspective, AI adoption can be understood as a mechanism to reduce information asymmetry between principals and agents. Technologies such as blockchain and algorithmic auditing can provide more transparent control systems and reduce the potential for opportunistic behavior (Moll & Yigitbasioglu, 2019). However, research also indicates the emergence of new risks, such as algorithmic bias and automation opacity, which can create new forms of information uncertainty (Munoko et al., 2020). Thus, further research is needed to examine the role of AI as a mediator between supervisory technology and agency relationships, including its impact on auditors' professional ethics.

From a social and institutional perspective, Legitimacy Theory provides an understanding that technology adoption is not solely aimed at efficiency, but also to gain social and institutional legitimacy. Organizations that adopt AI in their accounting systems are often perceived as modern and responsible entities, particularly in the context of sustainability reporting and environmental, social, and governance (ESG) disclosure. However, this legitimacy is often symbolic if not accompanied by tangible transformations in audit and reporting practices. Future research gaps should focus on empirically examining the relationship between technology adoption, perceived legitimacy, and increased organizational transparency, particularly in the public sector and financial institutions.

Based on these findings, several future research agendas can be proposed to enrich the development of technology-based accounting theory and practice. First, further research should integrate cross-disciplinary models from accounting theory, information systems, and organisational behaviour to understand the dynamics of AI adoption more holistically. For example, combining the Technology Acceptance Model (TAM) with Decision Usefulness Theory could explain technology acceptance by auditors and accountants at various organizational levels. Second, research needs to focus on contextualising developing countries to understand infrastructure limitations, digital literacy, and ethical barriers that impact the effectiveness of AI implementation in accounting practice (Dwivedi et al., 2023). Third, ethical issues and algorithm reliability are crucial for ensuring the accountability of AI systems, particularly in addressing bias and data misinterpretation (Munoko et al., 2020). Fourth, research on accountant competency transformation and accounting education curriculum reform needs to be intensified to enable the profession to adapt to rapid digital change (Damerji & Salimi, 2021). Finally, a new framework for measuring digital sustainability performance, combining financial and non-financial indicators based on data analytics, is needed.

## CONCLUSION

This study systematically reviewed 74 articles discussing the application of Artificial Intelligence (AI) and Big Data Analytics (BDA) in accounting during the 2015–2025 period using a Systematic Literature Review (SLR) approach based on the PRISMA protocol. The study results indicate that technology-based accounting research has experienced significant growth, both in terms of publication volume, topic diversity, and methodological approaches used. The global literature demonstrates two major orientations: first, technology-driven research, which focuses on efficiency, automation, and digital system integration in auditing and financial reporting; and second, value-driven research, which highlights aspects of transparency, ethics, and institutional legitimacy in the use of technology. Both complement each other in shaping a new landscape of modern accounting driven by data, innovation, and social responsibility.

Conceptually, the results of this study strengthen the relevance of several key theories in explaining the adoption of AI and BDA in accounting practice. Through Decision Usefulness Theory, it was found that technology plays a role in improving the quality and relevance of information used for managerial decision-making. Within the Agency Theory framework, technology has been shown to have the potential to reduce information asymmetry between principals and agents through algorithm-based audit systems and automated financial reporting. Meanwhile, Legitimacy Theory helps explain how companies and academic institutions use technology adoption as a means to gain social legitimacy and institutional recognition. The dominance of research by developed countries such as the United Kingdom, the United States, and Australia, as demonstrated in bibliometric results, confirms the epistemic gap between the center and the periphery in the development of digital accounting knowledge. Developing countries are still in the mimetic isomorphism stage, imitating research approaches and best practices from developed countries to gain academic recognition.

From an empirical perspective, these findings indicate that future research needs to focus on three main areas. First, broaden the research context in developing countries by considering social, institutional, and digital readiness factors. Second, develop new measurement models to assess digital performance and AI maturity in accounting organizations, both in the public and private sectors. Third, review professional ethics and algorithm governance in audit and reporting processes to align with the principles of transparency and accountability. Thus, future research directions should focus not only on the application of technology but also on how it fundamentally changes the values and norms of the accounting profession.

From an academic perspective, this research makes an important contribution to broadening the theoretical understanding of the relationship between technology and accounting practice. This study demonstrates that the integration of AI and BDA is not simply a technical innovation, but rather an epistemic transformation that requires a redefinition of the concept of the profession, the role of accountants, and learning approaches in accounting. These findings are expected to serve as a foundation for the development of technology-based accounting education curricula, emphasizing analytical competencies, data literacy, and an understanding of digital ethics. Furthermore, methodologically, this study strengthens the position of the PRISMA-based Systematic Literature Review approach as a valid and transparent method for mapping scientific developments and identifying relevant research gaps.

Meanwhile, from a practical perspective, these findings have important implications for regulators, practitioners, and professional institutions. For regulators and policymakers, the results of this study emphasize the need to update regulatory frameworks and audit standards to adapt to AI-based digital practices. For companies and auditors, these findings guide how technology can be strategically leveraged to improve reporting quality, anomaly detection, and internal control. For professional institutions such as the Institute of Chartered Accountants or the Indonesian Institute of Accountants (IAI), the results of this study can serve as a reference in designing new training and certification programs relevant to the needs of the digital era.

Overall, this study concludes that the application of AI and BDA in accounting is a multidimensional phenomenon that goes beyond technical aspects. It touches on ethical, institutional, and social domains, requiring a cross-disciplinary theoretical approach to fully understand its implications. The combination of data-driven efficiency and social responsibility is key to building a sustainable future for accounting. Thus, the direction of future research and practice needs to be oriented towards responsible innovation, namely the use of technology that is not only algorithmically intelligent but also ethically wise and socially inclusive.

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