

EVALUATING THE RESEARCH TRENDS OF ARTIFICIAL INTELLIGENCE AND ESG IN ACCOUNTING AND AUDITING EDUCATION

The 13th International Conference on Emerging Challenges: Business Dynamics in Disruptive Economy

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Abstract

Research purpose:

The objective of this study is to evaluate the current state of research trends of Artificial Intelligence (AI) and ESG in accounting and auditing education.

Research design, approach, and method:

An analysis of publications from the Scopus database was conducted using a bibliometric method to assess advancements in research and identify substantial trends in the application of AI and ESG in accounting and auditing education. The VOSviewer software was employed. Additionally, we structured interview methods with several Vietnamese experts to assess the specific research trends.

Main findings:

We provide insightful research on the AI and ESG adoption trends in the accounting and auditing education field. We analyze the specific content of the AI tool and the ESG main points in the field. The research findings support the specific development of AI and ESG education in the accounting and auditing field.

Practical/managerial implications:

The results indicate a workable plan for lecturers, universities, and professional bodies in the accounting and auditing fields, aiming to develop a framework and curricula incorporating AI and ESG content to achieve the sustainable development goals of organizations and societies.

Keywords: AI, ESG, Accounting, Auditing, Education

Acknowledgments: The research was financed by the Hanoi University of Science and Technology under project number T2024-PC-084.

1. INTRODUCTION

Digital transformation and the push for sustainable development are from professionals in accounting and auditing education. Artificial intelligence (AI) now goes beyond automating simple tasks. It is changing how accounting systems and auditing work, including how data is analyzed, risks are assessed, and information is checked for quality (IFAC, 2025a). As a result, both current professionals and future graduates need to develop new skills. Surveys are also building, indicating that students view AI as a crucial tool for developing analytical skills, solving problems, and preparing for their careers (Sridhar Ramamoorti, IFAC, 2024).

In parallel, sustainability disclosure standards have emerged as another critical driver of change. The issuance of IFRS Sustainability Disclosure Standards S1 and S2 (ISSB, 2023) established a “global baseline” for ESG reporting, providing more decision-useful information for investors. As a result, knowledge and assurance of sustainability reporting are now indispensable competencies for future accountants and auditors. Pedagogical innovations, such as proposals by the American Accounting Association (AAA, 2023), emphasize the incorporation of ESG into introductory accounting courses, highlighting the need to integrate sustainability into curricula from the outset. Accreditation bodies, such as AACSB and ASIIN, similarly emphasize the integration of GenAI and ESG into accounting education, with active stakeholder engagement to ensure both relevance and timeliness (AACSB, 2024a, 2024b).

Despite global advancements, systematic integration of artificial intelligence (AI) and environmental, social, and governance (ESG) principles into accounting and auditing education remains inconsistent. In many regions, curricula continue to emphasize technical competencies, with limited incorporation of digital skills and sustainability literacy. Emerging economies face additional barriers, including restricted data access, insufficient resources, and the absence of

established pedagogical frameworks. Ethical issues, quality assurance, and data security present further obstacles to adoption. Although Vietnam has established regulatory frameworks for ESG disclosure and begun implementing AI-driven audit processes, there is limited systematic analysis in the literature regarding how higher education institutions in Vietnam and similar contexts are addressing these changes. This gap underscores the need for research on the extent, approaches, and enabling factors for integrating AI and ESG into accounting and auditing education.

Against this backdrop, the objective of this article is to clarify some research trends in accounting and auditing education, particularly in the context of embedding AI and ESG content. The article's structure comprises the following sections: Introduction, Literature Review on Accounting and Auditing Education with AI and ESG, Methodology, Main Findings, and Conclusions. By addressing these objectives, the paper contributes to the growing body of knowledge on curriculum innovation in accounting and auditing, providing context-specific insights for policymakers, educators, and professional organizations seeking to align education with ISSB requirements and the AI-driven digital economy.

2. LITERATURE REVIEW

The Fourth Industrial Revolution and the rapid growth of Information and Communication Technology (ICT) are changing the organisations' operations, including the accounting and auditing sectors. According to Wang (2022), ICT is integrated into most business processes through digital transformation and the implementation of integrated information systems. Moreover, the development of Big Data, Artificial Intelligence (AI), and Generative AI has paved the way for the transformation in accounting and auditing practices (Pizzi et al., 2021).

Research papers and practical reports also reveal that manual labour is being replaced by automatic technology, especially for repetitive tasks such as those performed by machine operators, cashiers, typists, and even intellectual tasks like bookkeeping, text editing, and secretarial work (KPMG, 2019). With that being said, in the accounting and auditing field, roles related to bookkeeping, journal entries, and document verification are likely to be substituted by automation soon.

In this context, adapt by acquiring new competencies. Lase (2019) emphasises the importance of continuous learning skills, digital literacy, and social skills in maintaining employability. The World Economic Forum's (2025) report highlights the top ten skills that employers are seeking, including analytical thinking, resilience and adaptability, leadership skills and social influence, creative thinking, self-awareness and self-motivation, digital skills, empathy and active listening, eagerness to learn, and a commitment to lifelong learning. Additionally, the International Federation of Accountants – IFAC (2022) provides an assessment that the accounting and auditing sectors will continue to experience significant transformation, which requires workers to reaffirm their roles and value within organisations.

To meet labour market demands, many studies propose adjusting the content and teaching methods in accounting and auditing education. It is vital to integrate digital technologies into the teaching curriculum, particularly ICT skills (Berikol & Killi, 2021). Additionally, knowledge of data analytics, blockchain, and cloud computing should be incorporated into the curriculum to prepare learners for of the future (Moore & Felo, 2020).

However, the selection and integration of new teaching content should be based on practical needs, through discussions and collaboration with businesses, which are the direct employers of accounting and auditing candidates (Jackson et al., 2022). Simultaneously, soft skills such as teamwork, report modelling, forecasting, and interpreting information are considered important supporting skills for professional work (Zin et al., 2022).

Tsiligiris and Bowyer (2021) proposed a general competency framework for accounting and auditing education in the digital era, including of three competencies groups: (i) core skills (professional, ethics, business, digital and data skills); (ii) soft skills (adaptability and lifelong learning); and (iii) global citizenship skills (sustainability and cultural diversity). Within this framework, professional ethics, including independence, integrity, objectivity, professional conduct, and confidentiality, are also highlighted by Syam et al. (2024) as essential abilities that should be strengthened in the university.

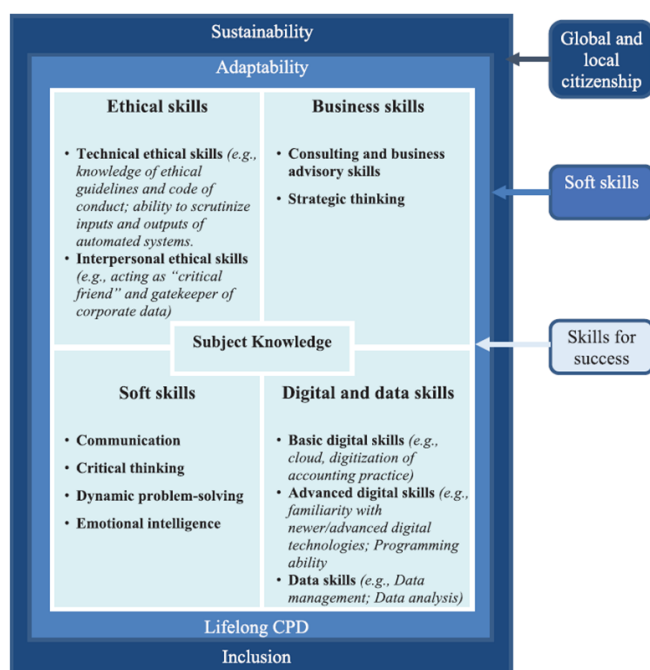


Figure 1. A conceptual framework for university accounting education in 4IR.

Figure 1. A conceptual framework for university accounting education (Tsiligiris và Bowyer, 2021)

Regarding the orientation for curriculum development, the standards of international professional associations such as ACCA, CPA, and ICAEW should be considered for incorporation to facilitate mutual recognition and support learners' international professional practice. Furthermore, as the Ministry of Finance of Vietnam has approved the roadmap for adopting International Financial Reporting Standards (IFRS), incorporating IFRS into the curriculum is essential to ensure that learners have a solid knowledge base aligned with global integration trends (Dao, 2022). In November 2024, the National Assembly of Vietnam officially approved the adoption of International Financial Reporting Standards (IFRS) in the amended Law on Accounting, as amended by Law No. 56/2024/QH15. This is a crucial step in Vietnam's financial integration into the global market. Law No. 56/2024/QH15 added provisions to Article 7, Clause 3 of the Law on Accounting, allowing the Ministry of Finance to regulate the application of international accounting standards, including IFRS, in line with Vietnam's specific conditions. The Vietnam Association of Accountants and Auditors (VAA) has launched IFRS training programs in collaboration with PwC Vietnam and ICAEW to enhance the capabilities of accounting professionals (Economic and Forecasting Magazine, 2024)

Table 1.

Author(s)	Year	Main Content
L. M. Cunningham, A. King, C. Vaughn	2024	This paper discusses the integration of ESG into the accounting curriculum, including the history and purpose of ESG accounting, the differences between ESG reporting and traditional financial reporting, global legal requirements for ESG, the role of accountants in ESG audits, and how to assess ESG performance reports.
Bruce Buehler	2024	This thesis presents a collection of case studies completed in the ACCY 420 course during the 2022-2023 academic year, covering topics like ESG, audit risks, and tax planning.

Thuy Thanh Tran	2024	This paper reflects on teaching sustainability accounting through case studies, highlighting opportunities, challenges, and potential solutions in integrating ESG into accounting education.
Charles H. Cho, Ericka Costa	2023	This paper discusses the transformative role of sustainability accounting education, current challenges, and prospects in integrating ESG into the accounting curriculum.
Julia Pargmann, Florian Berding	2024	This paper examines the integration of sustainability into accounting and controlling in vocational business education in Germany, proposing strategic approaches for incorporating ESG into accounting education.
Vijanti Ramautar, Sergio España	2022	This report presents a domain analysis of ethical, social, and environmental accounting methods, providing a foundation for developing software and analytical methods in the ESG field.

3. RESEARCH METHODOLOGY

To address the research objectives, we employ the Bibliometrics method. Bibliometrics involves examining published materials (such as books, journal articles, datasets, and blogs) along with associated metadata (including abstracts, keywords, and citations) through statistical methods to illustrate or clarify connections among these works. The foundation of bibliometrics lies in the premise that a field's academic production is reflected in the literature that has been published. Data for this study were retrieved from the Scopus database from 2020 to 2025. The search string applied is:

("AI" OR "ESG" OR "sustainability") AND ("accounting" OR "auditing" OR "education")

We also employed in-person interview methods to analyze the demand for embedding AI and ESG in the education of accounting and teaching majors. We conducted the interviews in July 2025. We received the appointments and conducted in-depth interviews with six experts in the fields of accounting and auditing services, as well as professional education institutes. The questionnaires were well-prepared through a literature review and effectively addressed the research questions. It is believed that structured interviews based on beforehand prepared questions bring high-quality research findings (Schmidt & Hunter, 1998; DeJonckheere & Vaughn, 2019)

4. FINDINGS AND DISCUSSIONS

A review of 363 articles from the Scopus database from 2020 to 2025 reveals a sharp upward trend in interdisciplinary research on AI, accounting, auditing, and ESG. The research output was insignificant in the early years of this period, with threeoneonly three papers in 2020 and one paper in 2021. This limited output suggests that, prior to 2022, the integration of AI and ESG within accounting and auditing was still an emerging topic, lacking academic discussion. The number of papers increased to 11 in 2022 and to 40 by 2023, which can be attributed to the rise in ESG awareness following the COVID-19 era, aligning with the rapid adoption of AI in business practices. Moreover, 2023 marks the introduction of IFRS S1, and IFRS S2 focuses on sustainability-related financial disclosures, which further stimulates the research on ESG in accounting and auditing. The exponential growth in research occurred in 2024 and 2025, with 143 and 165 papers, respectively, making the majority of the literature in the 2020–2025 period. It shows that AI and ESG are gradually becoming central to accounting and auditing practices. For educators, this trend signifies the integration of AI and ESG into accounting and auditing education.

To illustrate this trend, Figure 1 shows the relationship among keywords across the topics of AI, ESG, accounting, and auditing domains.

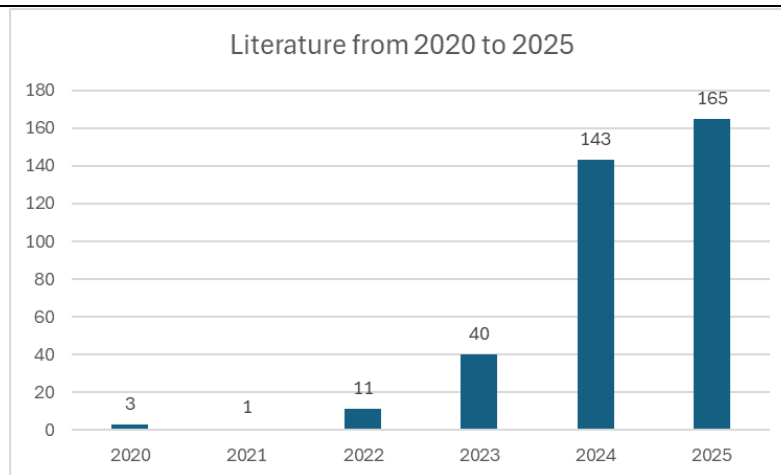


Figure 2. Growth of literature from 2020 to 2025 (Sources: Authors' analysis)

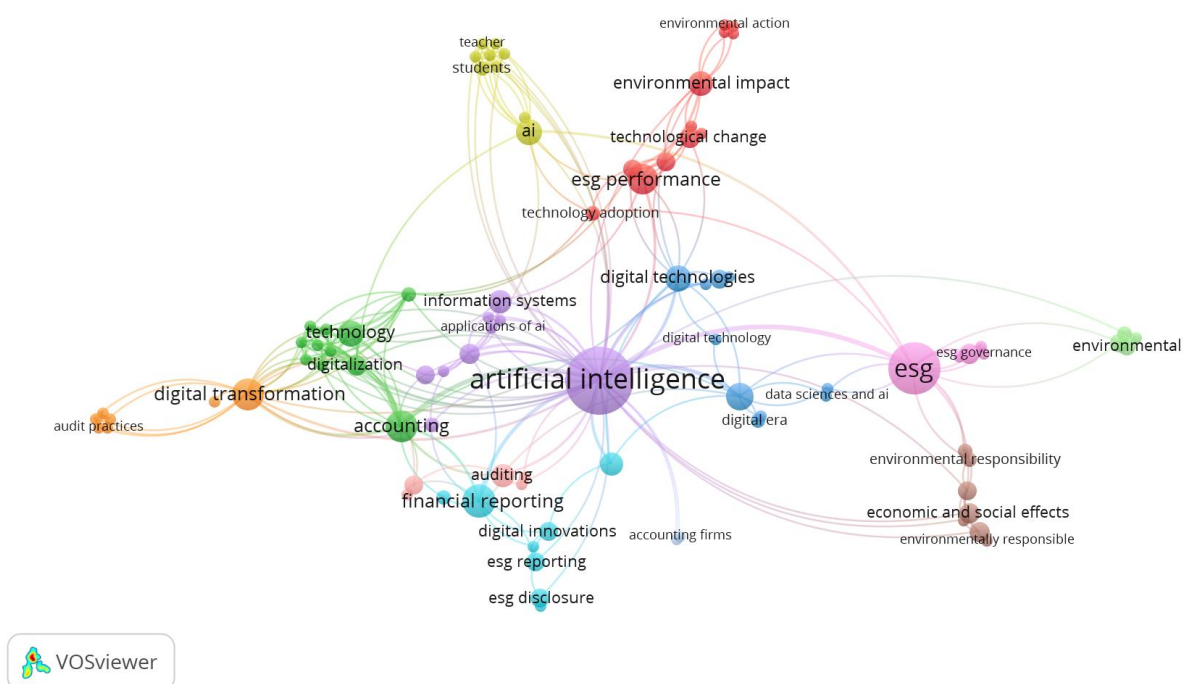


Figure 3. Keyword analysis of AI, ESG, accounting and auditing literature (Sources: Authors' analysis)

The keyword analysis reveals AI as the dominant theme, appearing 61 times, followed by ESG, which appears 33 times, accounting for 11 times, and auditing, which appears 5 times.

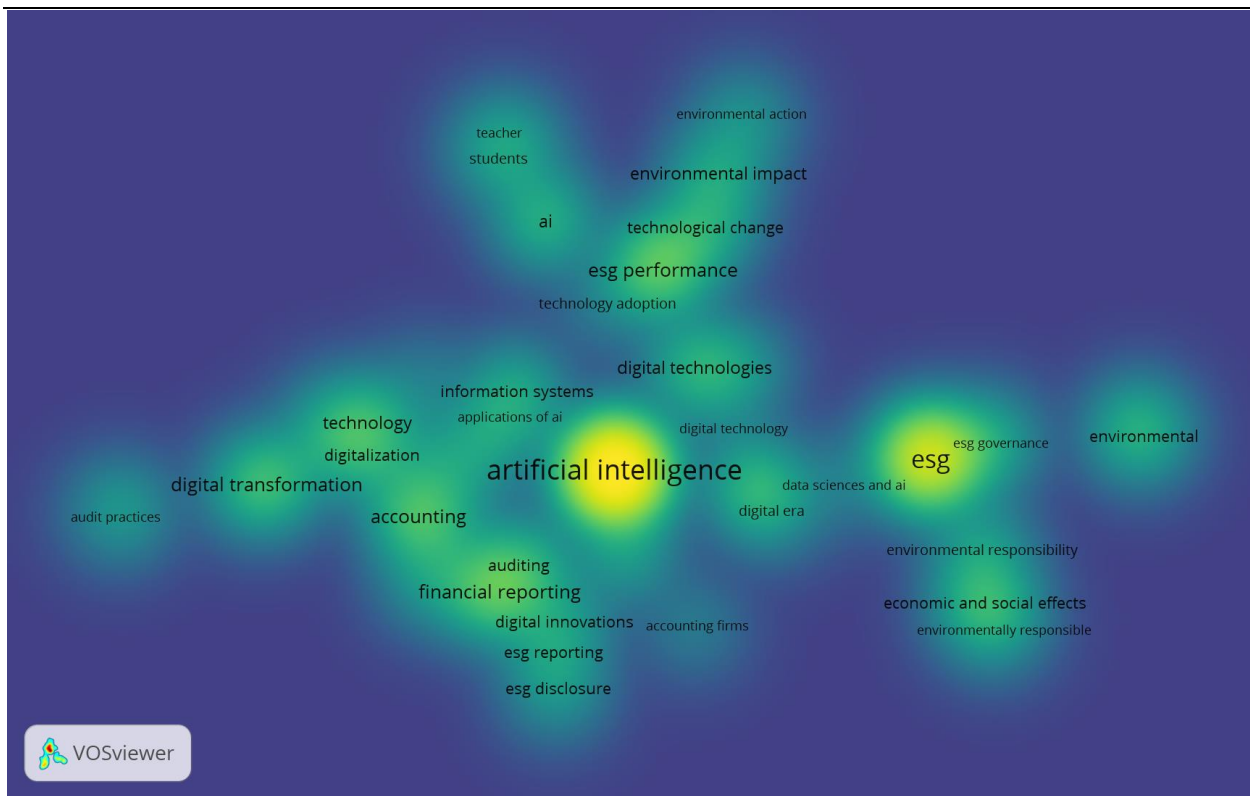


Figure 4. Density visualisation of AI, ESG, accounting, and auditing literature (Sources: Authors' analysis)

The first cluster centres on AI, which has the most prominent and frequently occurring theme, reflecting its role as the primary connector across diverse domains. From the visualization, AI is linked to multiple nodes, including digital technologies, accounting, auditing, digital skills, ESG, education, and teaching. It indicates that AI is spreading across multiple domains, such as education, accounting, and auditing, while serving as the central concept that links the clusters together. Scholars are increasingly concerned about how AI, digital technology, and data science can be applied in accounting and auditing practices.

The second cluster is ESG, represented by a relatively large node. ESG or “environmental, social, and governance” connects directly to artificial intelligence. Through its relationship with AI, or “artificial intelligence,” ESG is also linked to the educational field, involving “teachers” and “students.” Moreover, ESG reporting and disclosure are also closely linked to accounting and financial reporting. This positioning suggests that ESG is an important topic, which is gradually being integrated into education and the accounting sector.

The connection among keywords is also notable. The terms accounting, auditing, and financial reporting are closely tied to digital innovations, financial reporting, auditing, and ESG disclosure, indicating a practical reality that ESG information is gradually being integrated into companies' reports, which requires auditors and accountants to examine such disclosures. The application of AI tools facilitates the data compilation of both financial and non-financial data. Secondly, the educational dimension of AI also emerges clearly. Nodes such as education, teaching, and artificial intelligence learning are clustered with AI. Besides accounting and auditing, AI also appears in research related to education, both teaching, and learning, reflecting its growing role in professional training and curriculum development. Finally, although ESG does not directly the use of AI. This underlines AI's role as a bridge linking ESG not only to professional practices, such as accounting and auditing, but also to educational themes.

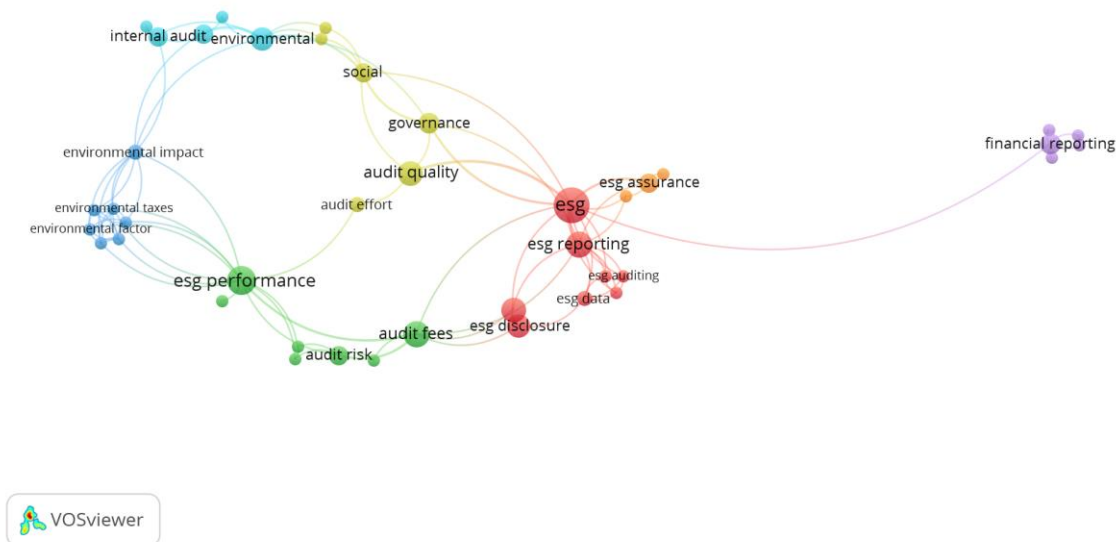


Figure 5. Keyword analysis of ESG and auditing literature (Sources: Authors' analysis)

The ESG and Auditing map, based on 80 articles, presents a broader and more interconnected structure. It demonstrates that ESG is the central domain in the field of auditing research. ESG appears as the largest node, directly linked to auditing and financial reports, showing its substantial presence in both general auditing practices and specific audit-related activities. The larger dataset and larger node sizes illustrate the greater research attention given to ESG research in the auditing sector. The first cluster, closest to ESG, primarily focuses on reporting, auditing, and disclosure. It reflects the research in an important aspect of ESG data transparency. Moreover, ESG has a connection with audit fees and audit risk, which can hardly be found in the previous traditional auditing framework. Especially, the environmental pillar has a direct relationship with the internal audit. It demonstrates the increasing integration of ESG in the auditing practice. As a result, it reveals the necessity for educating ESG in auditing majors.

Table 2 presents several key articles from around the world on the application of AI and ESG in accounting and auditing education. We summarized the main points on student skills, lecturers' focuses, and the necessary resources.

Paper (Year)	Journal	Country	Student skill	Lecturer/ Educator	Infrastructure/ Resources
Accounting education and digitalisation: A new perspective after the pandemic (2023)	International Journal of Management Education	Italia	Blended-learning competencies, digital literacy	Teachers' perceptions, redesign of teaching practices	LMS, online tools; COVID post-tech set-up
Management accounting and data analytics: technology acceptance from the educational perspective (2025)	Accounting Education	United Kingdom	Perceived usefulness; analytics skill uptake	Guidance for integrating DA into courses; resource planning	Data analytics platforms and materials for MA courses

Integrating data analytics into the auditing curriculum: insights from early-career professionals (2023)	Journal of Accounting Education	United State	What new hires need (ADA, visualisation, automation)	Emphasis areas for faculty; assessment suggestions	Practitioner tools, platforms, and exposure
Integrating data analytics in teaching audit with machine learning and AI (2023)	Education and Information Technologies	Australia	Audit analytics & ML problem-solving	Instructor roadmap linking content to skills	Software stacks, datasets, and lab setup
Exploring sustainability accounting education in the digital era with sustainability leadership as a moderating factor using a two-stage approach PLS-SEM-ANN (2025)	Discover Sustainability	China	Digital literacy, sustainability, and analytical skills	Role of sustainability leadership, faculty development	Campus digital capability; AI systems and real-time data

To support the findings from the systematic literature review, in-depth interviews were conducted as part of this research. The interviews were conducted in person in June with six experts working in the field of accounting and auditing. The purpose is to gain profound insights into the integration of ESG and AI in the accounting and auditing educational programs. Table 3 below shows perspectives shared by the interviewees.

Table 3. Summary of the interviewee's perspective toward ESG and AI in the accounting and auditing program

Interviewee	Organization	Interviewee's opinions
I1	A professional institution in accountancy	The curriculum has been updated to include sustainability accounting, aligning with the current trend.
I2	A professional institution in accountancy	Technologies are integrated into courses (e.g., blockchain, process automation). • The current business trend is ERP (SAP, Oracle). Employers prioritize candidates with SAP knowledge • Cyber risk is a critical component, especially in auditing. A Cybersecurity course should be included in the Auditing module. • A Simulation lab should be established
I3	A professional institution in accountancy	Technology application skills (AI, prompt engineering, etc.) need to be emphasized
I4	A Big4 firm in audit and assurance	Office software knowledge is mandatory. Word and Excel are basic requirements, but now SQL and Python are also essential.

15	A professional institution in finance	Use of software such as SAP, Oracle, MISA, and data analysis tools like Power BI should be incorporated.
16	Accounting software company	Simulation and practical technology training should be added. Use AI for recording accounting entries (manual entry is no longer necessary)

According to the interview's outcome, one of the six interviewees (I1) has proposed the importance of sustainability accounting in the training program. ESG is starting to catch the attention of accounting and auditing institutions. It is a new and vital knowledge, not only in theoretical aspects but also in real working practices. Therefore, ESG should also be introduced to students. It also represents the intersection between global trends and Vietnam's context, where the ESG approach is integrated into the official educational program. All the remaining interviewees (I3–I6) mention and emphasise the application of digital technology and software in accounting and auditing practices. I3 highlights AI and prompt engineering. I6 points out that the growing application of AI and automation can change the role of accountants in a company. I4 and I5 express the need for SQL, Python, and Power BI, which are advanced programming and digital skills that replace the conventional working methods. Therefore, AI and technology are no longer a supporting tool, but a mandatory requirement for the accounting and auditing profession. That means it is vital to equip students with digital skills to work with AI and advanced software, which facilitates their employability by meeting the needs of potential employers. The interview's results indicate two significant implications. Firstly, there is a need to address ESG issues in educational programs. Secondly, there is a strong agreement on the critical role of AI and digital competence in real-world working practices. Therefore, accounting and auditing education should incorporate both ESG and AI knowledge in the curriculum to equip students with essential skills and adapt quickly to new working ways.

The findings from in-person interviews are also aligned with the results of the systematic literature review, which points out the profound relationship between AI and ESG in the accounting and auditing fields. In addition, it indicates that the practical situations in Vietnam have developed along a common trend in the world, which highlights the key role of digital literacy skills in training students in the accounting and auditing major.

The findings reveal two main trends. First, the application of AI in accounting primarily focuses on activities such as automatic recording processes and supporting financial data analytics. Second, existing studies emphasize the importance of ESG factors in accounting education, which is reflected through sustainability reporting, CSR, and governance transparency. Identifying these trends plays a crucial role in accounting and auditing education. It promotes the development of an integrated curriculum, which equips students with the necessary digital skills to meet the demands of employers in the digital era.

Several potential applications of these trends can be proposed for accounting and auditing education. For example, AI can be used to support improve the analysis of ESG data, improving the quality of accounting and auditing reports. As a result, students should be trained to utilize AI tools in assessing the ESG practices of firms. Moreover, modules that integrate AI and ESG into accounting and auditing should be developed to provide students with a comprehensive understanding and enhance their practical skills.

5. CONCLUSIONS AND SUGGESTIONS

Our study has examined the relationship between AI and ESG in accounting and auditing education globally and in Vietnam with a systematic literature review and in-depth interviews. literature review of studies from 2020 to 2025 shows that there is a growing trend of incorporating AI and ESG in the accounting and auditing education in the world. A literature review of studies from 2020 to 2025 reveals a growing trend of incorporating AI and ESG into accounting and auditing education worldwide. However, the focus is more on AI and technological skills rather than ESG.

In Vietnam, the demands come from internationalization and integration, which come along with the pathway to adopt IFRS and the issuance of several regulations related to the accounting and auditing works. The urgency of incorporating AI and ESG in accounting and auditing has become increasingly important. The it is interview results show that it is essential to adopt AI and ESG in the accounting and auditing curriculum. However, firms seem to than prioritizing the needs of AI and technological skills over ESG knowledge.

These findings highlight the practical implications for higher education institutions, firms, and policy makers. It creates a framework that supports educators in designing accounting and auditing programs that meet the requirements of organizations. Firms can collaborate with universities to provide specific demands for AI and ESG, and send guest speakers to universities to bring practical insights from business. Policy makers can provide initiatives and regulations to motivate higher education institutions to modernize their curriculum with AI and ESG knowledge and skills.

Further research could explore how to incorporate AI and ESG in the accounting and auditing curriculum and the impact of this on the employability of graduate students. Another direction could be to develop a competency framework for accounting and auditing students to meet the requirements of the new working context, which highlights the importance of AI and ESG.

6. ACKNOWLEDGMENTS

The research was financed by the Hanoi University of Science and Technology under project number T2024-PC-084.

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