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Ethical Dilemmas in Digital Accounting: A Comprehensive Literature Review

Associate Professor Adrian GROȘANU[a], PhD, Associate Professor Melinda Timea FÜLÖP[b], PhD, Associate Professor Nicolae MĂGDAȘ[c], PhD

[a, b, c] "Babeş-Bolyai" University of Cluj-Napoca, Romania

Abstract

The progressive integration of artificial intelligence (AI) into accounting and business information technology harbours both promising opportunities and significant risks, particularly with regard to ethical issues. By imitating human cognitive skills and reasoning, AI promises to reduce costs and time, improve data analysis and increase information accuracy, enabling deeper insight into business processes and improving customer service. These developments lead to increased discussion of the need for ethical reflections and guidelines in business informatics. In the wake of intense international debates about the ethics of information technology in business, proposals for legal and regulatory frameworks are emerging, including the establishment of regulatory or ethical oversight bodies for AI. This development highlights the urgent need to integrate ethical principles into the development and application of AI technologies to ensure their use in the interest of society and to protect fundamental rights and freedoms.

Keywords: accounting, ethics, artificial intelligence

JEL classification: M40, M41, M42, O33

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➲ Introduction

The accounting's digitization and ethics in accounting is on the threshold of a new era where technologies such as artificial intelligence (AI) and blockchain have the potential to fundamentally transform traditional processes. While these technological advances increase efficiency and open new opportunities for data-driven decision making, they also raise important ethical questions. The use of AI in accounting presents the industry with challenges in terms of transparency, accountability, and protection of financial data. Ethics in accounting, a fundamental pillar that creates trust between stakeholders, must be reconsidered in this digital transformation. The integrity of financial reports, the protection of personal data and the avoidance of bias in automated systems are just some of the ethical issues that need to be considered in digital accounting. There must be a careful balance between using innovative technologies to increase efficiency and upholding the ethical principles underlying accounting.

Research methodology plays a crucial role in the systematic collection and analysis of information to deepen understanding of concepts and phenomena. The objective of this study is ethics in relation to artificial intelligence from the perspective of the hermeneutic tradition. At a time when digitization is advancing, the ethical considerations of those who design, use, and adapt AI to market demands are increasingly coming into

focus. To shed light on the connection between AI, accounting and ethics, the hermeneutic methodology was applied, based on a semi-systematic literature review. Hermeneutics, a method of systematically understanding and interpreting texts, is used in various disciplines such as philosophy, economics, social sciences, and law. This method allows you to think beyond the text and make connections with your own reflections.

The diversity offered by this form of research made it possible to create a dialogue between the reader and the data through hermeneutic circles, with the aim of identifying the ethical challenges related to the application of AI in accounting. This included a literature review and a focus on key terms such as *artificial intelligence in sustainable development*, *artificial intelligence ethics* and *ethical accounting and auditing*. The aim was to show the connection between the advancement of technology, the profession, and the associated ethical issues. For this purpose, a systematic literature review was conducted, based on data from WOS indexed publications.

The application of AI in accounting not only reveals new opportunities to increase efficiency and improve decision-making, but also brings challenges related to professional roles, ethics, and skill development. In this dynamic research landscape, it is clear that a comprehensive understanding of the impact of these technologies on practice is needed to maintain the integrity of the profession and advance practice in accordance with rapidly changing technologies.

➲ Research methodology

Research is a systematic process through which information is collected and analyzed for a better understanding of concepts and phenomena. Thus, the present research approaches the subject of ethics in relation to AI from the perspective of the hermeneutic tradition. The ethics of AI or of robots has become a topic of concern in the age of digitization regarding the moral behaviour of those who design, use and adapt them to market needs (Etzioni & Etzioni, 2017).

In order to provide an overview of the connection between AI, accounting and ethics, we applied the hermeneutic methodology that is based on a semi-systematic literature review (Snyder, 2019). Hermeneutics as a method is a procedure of systematizing, understanding and interpreting texts in a reflexive manner. The hermeneutic method is used in philosophy, economic sciences, social sciences, law, literature, etc. *Hermeneutics* or *hermeneutic method* refers to a procedure that uses reason to explain or interpret a research. It is about understanding the meaning, breaking it down and connecting it to your own thoughts. This primarily includes the interpretation and analysis of texts. Hermeneutics is not a clearly tangible technique or method that you can follow step by step. Depending on the text, the focus of interpretation can and should be on other aspects (Carter *et al.*, 2020; Supri *et al.*, 2020; Losbichler & Lehner, 2021).

Due to the diversity that this form of research offers, our analysis followed the hermeneutic circles in which the reader and the data engage in a form of dialogue. Based on the key terms, our research aims to identify the ethical challenges regarding AI in the field of accounting, thus providing situational contexts and perspectives to discover the different aspects faced by accountants in the application of AI.

In order to identify the ethical challenges regarding AI, we relied on an analysis of specialized literature that was based on theoretically informed, semi-systematic synthesis (Parker & Northcott, 2016; Snyder 2019), and focused on the terms:

- artificial intelligence sustainable development goals;
- artificial intelligence ethics;
- artificial intelligence ethical accounting;
- artificial intelligence ethical auditing;
- ethical auditing;
- ethical accounting;
- artificial intelligence accounting.

Considering the objective of the research, we can place the present research in the category of exploratory research with a qualitative approach because we want to present the connection between the evolution of technologies, the profession and related ethical aspects. In order to achieve this goal, we used a systematic review of specialized literature based on evidence from WOS indexed publications (Lakatos & Marconi, 2003; Denyer & Tranfield, 2009).

To achieve our proposed objective for carrying out the systematic analysis, we performed the following steps:

- ✓ We defined the keywords to be able to search the database.
- ✓ We defined the query string to be able to search and download the required information.
- ✓ We selected databases with E-information publications.
- ✓ We searched the publication databases.
- ✓ We analyzed the search results.
- ✓ We downloaded the publications.
- ✓ We imported the information into VOSviewer.
- ✓ We analyzed the networks created using VOSviewer.

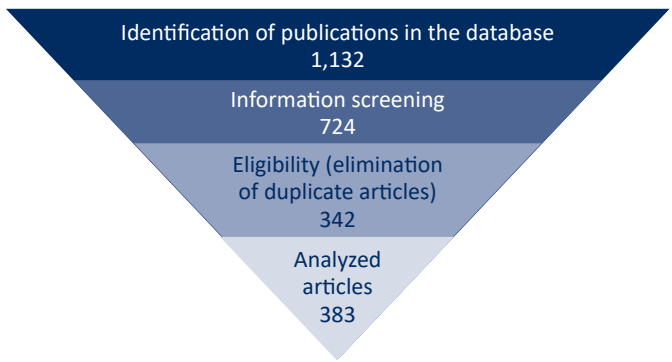

Figure 1. Search and selection of articles considered in this study

Source: Made by the authors.

We analyzed the identified articles concerning the evolution of technologies in the accounting profession and considered the ethical challenges faced in the new digital era resulting from the implementation and use of AI in processes used by accounting professionals.

➲ Results and discussions

Artificial intelligence promises innovations that can help people in their work and everyday life. The extent to which these promises are actually achieved depends largely on people's trust in technology. New technologies always become the subject of social and scientific ethics discussions when they lead to uncertainty and raise new moral issues. This is the case, for example, when AI leads to discrimination or uncertain, risky consequences. A common fear is that adherence to values and ethical principles that do not primarily follow the logic of the market will lead to disadvantages in free competition and being left behind economically (Smith, 2018).

Ethical principles and values are the starting point for trust in AI (Brendel *et al.*, 2021). They form the basis of a possible regulation and certification of systems based on AI (Munoko *et al.*, 2020).

The development of AI should serve society and not lead to new technical or economic constraints that violate ethical norms of coexistence or restrict positive developments.

In the figure below we note the correlation between the different keywords resulting from the analysis of the articles included in the sample based on the VOSviewer application.

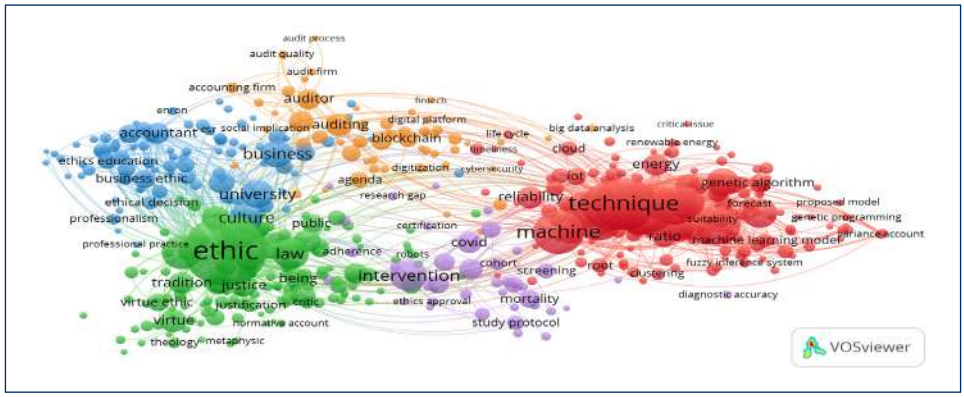

Figure 2. Keyword correlation

Source: Made by the authors.

We can see that there are five clusters that reflect ethics (green), technology (red), accounting (blue) and auditing (orange) professions and certification (purple).

Artificial intelligence and innovative technology are two fields facing significant growth and changes. It is hard to predict where technology will be in ten years. The quality of predictions will greatly improve, especially as machine learning models become better and need less and less data as databases become wider and more complex. However, we are convinced that in five years the essential manual records and classification processes will be automated in emerging countries as well.

Computer technologies have long passed the proof test, as we are in a period where the role of implementation and application of AI, especially in the field of accounting, falls upon us. With the outbreak of COVID-19, more and more activities are implemented through digital processes. A new division of labour is spreading in the corporate world: an increasing number of tasks can be automated – not only in production, where robots have been working for years but also in other areas, such as administration. Even accountants and auditors have had to apply these new technologies in their daily work, although they initially viewed them quite sceptically, being convinced that massive redundancies would follow the implementation of these technologies. However, these layoffs will not happen overnight because human labour is required to support these technologies – robots can only take over routine and repetitive tasks. The activity of an accountant does not only involve routine and repetitive activity, it also includes a series of activities in which decisions and professional reasoning leave their mark (Qasim & Kharbat, 2020; Zakaria, 2021).

Companies can save time and money through the automation of accounting processes. Cost pressures faced by the administration are increasing and, at the same time, it is becoming more and more difficult to find skilled workers at affordable prices. Until recently, companies have often outsourced simple accounting activities abroad, with the main aim of reducing costs. However, this does not provide adequate control and brings with it language barriers. Artificial intelligence makes it possible to immediately control and achieve a previously unthinkable level of efficiency. In addition, AI solutions help to avoid errors and reduce risks. In phases of increasing invoice volume, for example towards the end of a month, the pressure and susceptibility to errors often increases. Incorrect registrations have consequences. At best, correction costs resources, at worst, incorrect registration can even lead to tax fraud. In too many companies, accounting staff spends the first quarter of a new year correcting what they miscalculated the previous year.

With the explosion of investment in new AI-based technologies, even beyond the well-known Silicon Valley, we find a multitude of options for every industry and every field according to their needs. In the age of digitalization, there are countless tools and ways to get started and gain experience with AI-based technologies, the accounting field is just one of many areas of application.

Successful implementation and scaling of AI depends on understanding how the organizational chart, including roles and responsibilities, will change. This also requires upskilling and reskilling employees to become "AI natives" and defining new ways of delineating jobs and tasks (Zemankova, 2019; Kocsis, 2019; Zhang *et al.*, 2020; Gotthardt *et al.*, 2020; Munoko *et al.*, 2020; Mökander & Floridi, 2021; Leitner-Hanetseder *et al.*, 2021).

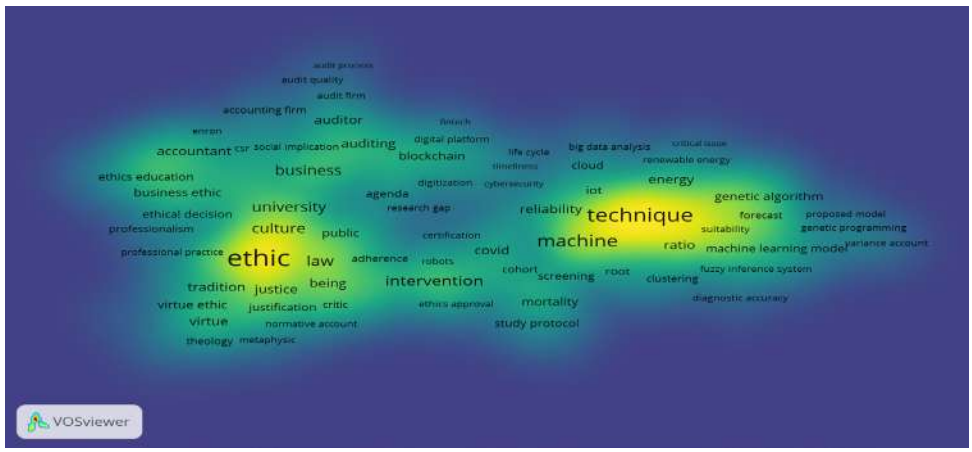

Figure 3. Cluster of keywords

Source: Made by the authors.

Given the many areas of application, especially those that will be universal in the future, there is a need for transparency, clarification, and regulation. Therefore, companies should create an ethical framework for their AI-based applications because companies of all sizes will no longer be able to avoid using AI in the future. However, stakeholders rightly expect responsible use of the technologies and the mitigation of risks that accompany their use. In many areas, regulations set framework conditions, for example, in tax or accounting legislation (Felzmann, 2020; Robinson, 2020; Lehner *et al.*, 2022; Crossnohere *et al.*, 2022; Ashok *et al.*, 2022).

Furthermore, corporate governance codes oblige corporations throughout Europe to provide transparent information as efficient and effective ways of managing and controlling the entities. Businesses that want to adopt AI-based applications and technologies must conduct due diligence on employees, customers, and potential investors. They need to understand which AI options and approaches are right for them and also justify their use. Therefore, the use of AI is always a priority, but we must not forget to develop a strategy suitable to the requirements and profile of our company (Hilb, 2020).

At the moment, when we discuss corporate governance, necessity, development, and social responsibility relative to strategy, the ethical aspect of AI should not be neglected.

The role of ethics regarding the use of AI is increasingly discussed among both researchers and practitioners. Considering that most professions are founded on a code of ethics, as is the case with accountants, and considering the connection between AI and the accounting profession, which uses AI for routine and repetitive activities, a code of ethics is required that takes AI into account. A possible solution for the ethics of AI is represented by employees who, through continuous training, are able to recognize areas of application for a company and develop solutions within ethical limits (Etzioni & Etzioni, 2017).

The effects of applications and technologies based on AI applied within companies are significant and can impact employees, applicants, customers, and other stakeholders. The consequences of AI algorithms can be far-reaching, thus ethics experts must support those who develop these applications to establish an ethical boundary that will not be crossed when developing and implementing these algorithms. Once AI-based applications have been developed, companies must organize seamless quality assurance throughout the lifecycle. This means that regular tests are carried out so that their product does not violate the ethical framework. This aspect is very important, especially with algorithms that are based on self-learning (Shi, 2019; Lee & Tajudeen, 2020; Bhargava *et al.*, 2021)

With rapid technological developments and the integration of artificial intelligence into accounting practice, the profession faces the challenge of adapting existing ethical and regulatory frameworks. While traditional standards such as IAS, GAAP, IFRS and FASB lay a solid foundation, the introduction of AI in accounting reveals a gap in existing ethical guidelines. The need to close this gap is underscored by the efforts of regulators such as the PCAOB and IAASB, which seek to establish monitoring programs to proactively address new risks associated with the use of AI and other advanced technologies encountered. The focus is not only on adjusting standards, but also on guiding and monitoring the ethical use of artificial intelligence in accounting to ensure that the integrity of the profession is maintained, and that practice is consistent with the rapidly changing technologies further developed.

More than ever, societies cannot afford to lose the skills, ideas, and perspectives of half of humanity to realize the promise of a more prosperous and human-centred future that well-governed innovation and technology can bring emerging gender differences in AI-related skills. In an era where human skills are increasingly important and complementary to technology, the world cannot afford to overlook the talent of women in sectors where talent is already limited. (World Economic Forum, 2018)

AlgorithmWatch has compiled an inventory of all guidelines for the ethical development and implementation of automated decision-making systems. In 2020, the list published by AlgorithmWatch contained 167 guidelines.

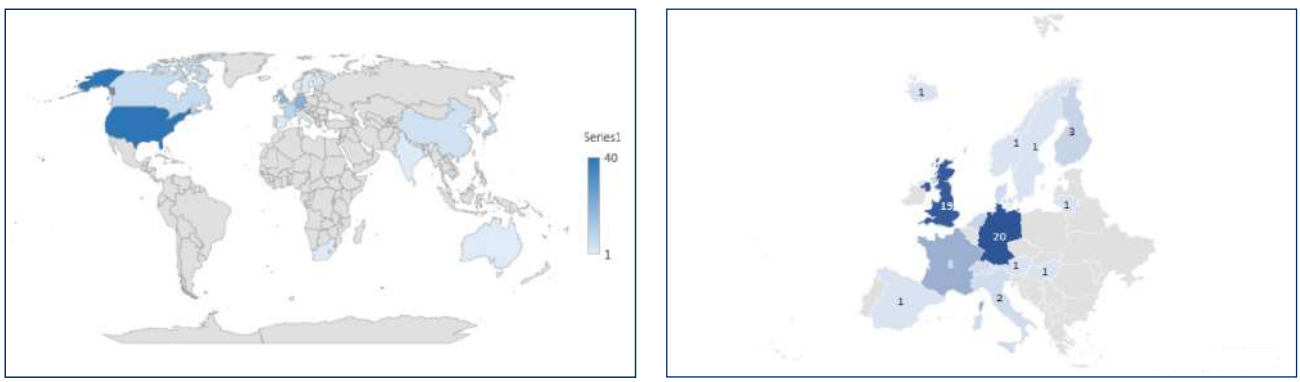

Figure 4. Guidelines for ethical development

Source: Made by the authors.

As noted, there are a number of guidelines for the development and implementation of ethics in decision-making systems. The figure above shows that in Europe these guidelines are under development.

The adoption of AI is considerably varied between states in the European region. Below we can see a table on the application of AI in countries reported on in the McKinsey report (McKinsey Global Institute, 2019). However, European companies are even below ones in the US.

There is a large spread of AI readiness in Europe, but even the most ready countries are behind the US AI frontier.

% — Top 25% rank in AI Readiness Index; Above average (next 25%); Below average (but not in bottom 25%); Bottom 25%

Countries ranked by AI readiness	AI index	Components: AI startup	Automation	Digital readiness	Innovation	Investment capacity	Human skills	ICT connectedness
United States								
United Kingdom								
Sweden								
Finland								
Irelard								
Estonia								
China								
Netherlands								
Denmark								
Germany								
Austria								
France								
Belgium								
Spain								
Lithuania								
Czech Republic								
Portugal								
Italy								
Latvia								
Bulgaria								
Hungary								
Croatia								
Poland								
Greece								
Romania								
Correlation with AI index (%)		91	71	61	90	31	77	61

NOTE: The AI Readiness Index measures where countries stand across a range of AI enablers, including the number of AI startups per capita, automation potential of job activities, digital maturity, the availability of scientists and engineers, ICT business model creation, R&D expenditure, and ICT connectedness.

SOURCE: Eurostat; INSEAD; Directorate-General for Research and Innovation, European Commission; Programme for International Student Assessment (PISA); UNESCO; McKinsey Global Institute AI Diffusion Model; McKinsey Global Institute analysis

Figure 5. Adoption of AI in Europe

Source: McKinsey Global Institute, 2019.

Based on the literature, we want to present an overview of the latest research findings and trends in the field of digitization and artificial intelligence in accounting and the accounting profession. Referenced papers cover a wide range of topics, including the impact of digitization and AI on accounting practices, ethical considerations,

the development of new technologies and their impact on professional roles, and the challenges and opportunities these developments bring.

Agostino *et al.* (2022) provide a comprehensive review of the literature on digitalization, accounting, and accountability, showing how digital technologies are transforming public services. They emphasize the need for further research in this rapidly evolving field. Al-Sayyed *et al.* (2021) specifically examine the impact of AI technologies on audit evidence and highlight their potential to improve audit quality.

The authors Askary *et al.* (2018) and Awang *et al.* (2022) discuss the role of AI in accounting, with a focus on the reliability of invoice information and the professional opportunities and risks caused by digitization. Bose *et al.* (2023) provide an overview of big data, data analytics and artificial intelligence in accounting and highlight the importance of these technologies for the future of the profession.

The challenges and developments following the digitization of accounting are analyzed by Gulin *et al.* (2019) and Ionescu-Feleagă *et al.* (2022), while Kroon *et al.* (2021) examine the impact of new technologies on the role and skills of accountants, particularly in the context of open innovation.

The transformation of the accounting profession through AI is addressed by Leitner-Hanetseder *et al.* (2021) and Li & Zheng (2018) research that focuses on the analysis of both actors and new tasks and changes in professional roles. Mohammad *et al.* (2020) and Munoko *et al.* (2020) examine how AI is changing the future of the accounting industry and what ethical implications this has for auditing.

Finally, Ribeiro *et al.* (2021) and Sabuncu (2022) analyze the role of robotic process automation and AI in the context of Industry 4.0 and digital transformation in accounting. These analyses highlight the importance of adapting to technological developments and the need to consider ethical standards in the application of AI in accounting. Moreover, Zhang (2024) addresses ethical dilemmas in accounting and provides a comprehensive analysis of professional ethics. This paper highlights the complexity of ethical decision-making at a time when financial transparency and integrity are under increasing scrutiny.

Carnegie *et al.* (2021) question the identity of accounting in 2020 and examine how the field has evolved in the face of rapid technological developments and changes in the business world. Cohen *et al.* (2020) examine the perception of the "glass ceiling" in the accounting industry and discuss gender challenges and discrimination in the professional field.

Blockchain technology in accounting is addressed by Lardo *et al.* (2022) and Qasim & Kharbat (2020), focusing on the bibliometric analysis of its application and how this technology, as well as business data analysis and AI, can be integrated into the accounting curriculum. Vărzaru (2022) examines the acceptance of AI technologies in management accounting and highlights the need to adapt to the increasing spread of these technologies.

Last but not least, Opudu & Tonye (2022) and Mutlu *et al.* (2022) discuss the impact of digitization on the accounting profession in emerging markets and during the COVID-19 pandemic. They focus on the challenges of digitization and accounting professionals' perceptions of digitization and remote working.

Taken together, these papers show that the accounting industry is at an inflection point where technological innovations such as blockchain and AI offer new opportunities and challenges as well. The industry must address these challenges by maintaining ethical standards, adapting training, and preparing for a more inclusive and technologically informed future. In short, digitization and the integration of AI technologies in accounting are bringing profound changes. These developments not only offer new opportunities to increase efficiency and improve decision-making, but also present new challenges in terms of professional roles, ethics, and skill development. Research in this area is dynamic and shows a clear direction for further development by examining the impact of these technologies in practice.

Country	Status	Date
Austria	In progress	
Belgium	In progress	
Bulgaria	Published	Dec. 2020
Croatia	In progress	
Cyprus	Published Last update	Jan. 2020 Jun. 2020
Czech Republic	Published	May 2019
Denmark	Published	Mar. 2019
Estonia	Published	Jul. 2019
Finland	Published Last update	Oct. 2017 Nov. 2020
France	Published	Mar. 2018
Germany	Published Last update	Nov. 2018 Dec. 2020
Greece	In progress	
Hungary	Published	Sept. 2020
Ireland	In progress	

Country	Status	Date
Italy	In progress	
Latvia	Published	Feb. 2020
Lithuania	Published	Mar. 2019
Luxembourg	Published	May 2019
Malta	Published	Oct. 2019
Netherlands	Published	Oct. 2019
Norway[AC]	Published	Jan. 2020
Poland	Published	Dec. 2020
Portugal	Published	Jun. 2019
Romania	In progress	
Slovakia	Published	Jul. 2019
Slovenia	Published	May 2021
Spain	Published	Dec. 2020
Sweden	Published	May 2018

Source: JRC – European Commission

Note: Last update of the table on the 1st of June 2021. The information in the table is based on input from national contact points or public sources. It present release dates of national AI strategies in their native language. Countries in bold have published or updated their national AI strategy since the release of the previous AI Watch report in February 2020. In addition to EU Member States, this table also includes Norway as Associated Country highlighted with the superscript [AC]. Switzerland does not intend to release a national AI strategy.

Figure 6. Overview of national AI strategies in the EU Member States and Norway

Source: European Commission, 2021.

Here, in particular, clearer legal foundations are needed. At the same time, AI also offers a great opportunity for accounting companies in terms of the large amounts of data that would be processed using repetitive actions. The advantages of using AI have been proven in the field of accounting.

Again and again, concerns are raised pointing to the negative effects of AI: above all, the loss of jobs. In fact, poorly trained workers face losing their jobs if their tasks can be done better and faster by AI-based technology. At the same time, supporters of AI talk about the formation of completely new professional fields, which appear only due to the use of AI. Of course, there are also fears that highly developed self-learning systems can gain a will of their own and get out of hand.

In any case, purely administrative functions in companies working with AI will change and be enhanced by activities that add value. Implementing AI will require experts who understand how AI works and can adapt it.

➲ Conclusions

The digitization of accounting and the associated integration of artificial intelligence and blockchain technology marks the beginning of a new era in which traditional processes are fundamentally changing. These technological advances not only provide the opportunity to increase efficiency and improve data-driven decision-making processes, but also raise important ethical questions. In particular, the use of AI in accounting confronts the industry with challenges related to transparency, accountability, and the protection of financial data. Ethics in accounting, as a fundamental pillar that creates trust between stakeholders, must be reconsidered in this phase of digital transformation. It is important to ensure a careful balance between using innovative technologies to increase efficiency while maintaining the ethical principles underlying accounting.

The methodological approach of this study, based on the hermeneutic tradition, allowed a deeper analysis of the ethical challenges associated with the application of AI in accounting. Through a semi-systematic literature review, the connections between AI, accounting and ethics were examined, with particular focus on key terms such as *artificial intelligence and the sustainable development goals*, *artificial intelligence ethics* and *ethical*

accounting and auditing. The review highlights the need to bring ethical considerations to the front to maintain the integrity of the profession and to evolve practice in line with rapidly advancing technologies.

The research shows that the accounting industry is at an inflection point where technological innovations such as blockchain and AI offer new opportunities and challenges. To overcome these challenges, the industry must maintain ethical standards, adapt training, and prepare for a more inclusive and technologically informed future. The results suggest that a comprehensive understanding of the impact of these technologies on practice is needed to maintain the integrity of the profession and promote practice that keeps pace with rapidly changing technologies. Finally, successfully implementing and scaling AI requires a deep understanding of how organizational structures, including roles and responsibilities, will change. This also includes the need to further train and retrain employees to make them *AI natives* and define new divisions of labour and tasks.

References

1. Agostino, D., Saliterer, I., Steccolini, I. (2022), *Digitalization, Accounting and Accountability: A Literature Review and Reflections on Future Research in Public Services*, Financial Accountability & Management, Vol. 38, No. 2, pp. 152-176, https://doi.org/10.1111/faam.1230.
2. Al-Sayyed, S., Al-Aroud, S., Zayed, L. (2021), *The Effect of Artificial Intelligence Technologies on Audit Evidence*, Accounting, Vol. 7, No. 2, pp. 281-288, https://doi.org/10.5267/j.ac.2020.12.003.
3. Ashok, M., Madan, R., Joha, A., Sivarajah, U. (2022), *Ethical Framework for Artificial Intelligence and Digital Technologies*, International Journal of Information Management, Vol. 62, https://doi.org/10.1016/j.ijinfomgt.2021.102433.
4. Askary, S., Abu-Ghazaleh, N., Tahat, Y.A. (2018), *Artificial Intelligence and Reliability of Accounting Information*, in S.A. Al-Sharhan, A.C. Simintiras, Y.K. Dwivedi, M. Janssen, M. Mäntymäki, L. Tahat, I. Moughrabi, T.M. Ali, N.P. Rana, *Challenges and Opportunities in the Digital Era*, Springer, pp. 315-324, https://doi.org/10.1007/978-3-030-02131-3_28.
5. Awang, Y., Shuhidan, S.M., Taib, A., Rashid, N., Hasan, M.S. (2022), *Digitalization of Accounting Profession: An Opportunity or a Risk for Future Accountants?*, Proceedings, Vol. 82, No. 1, https://doi.org/10.3390/proceedings2022082093.
6. Bhargava, A., Bester, M., Bolton, L. (2021), *Employees' Perceptions of the Implementation of Robotics, Artificial Intelligence, and Automation (RAIA) on Job Satisfaction, Job Security, and Employability*, Journal of Technology in Behavioral Science, Vol. 6, pp. 106-113, https://doi.org/10.1007/s41347-020-00153-8.
7. Bose, S., Dey, S.K., Bhattacharjee, S. (2023), *Big Data, Data Analytics and Artificial Intelligence in Accounting: An Overview*, in S. Akter, S.F. Wamba, *Handbook of Big Data Research Methods*, pp. 32-51, https://doi.org/10.4337/9781800888555.00007.
8. Brendel, A.B., Mirbabaie, M., Lembcke, T.B., Hofeditz, L. (2021), *Ethical Management of Artificial Intelligence*, Sustainability, Vol. 13, No. 4, https://doi.org/10.3390/su13041974.
9. Carnegie, G., Parker, L., Tsahuridu, E. (2021), *It's 2020: What is Accounting Today?*, Australian Accounting Review, Vol. 31, No. 96, pp. 65-73, https://doi.org/10.1111/auar.12325.
10. Carter, S.M., Rogers, W., Win, K.T., Frazer, H., Richards, B., Houssami, N. (2020), *The Ethical, Legal and Social Implications of Using Artificial Intelligence Systems in Breast Cancer Care*, The Breast, No. 49, pp. 25-32, https://doi.org/10.1016/j.breast.2019.10.001.
11. Cohen, J.R., Dalton, D.W., Holder-Webb, L.L., McMillan, J.J. (2020), *An Analysis of Glass Ceiling Perceptions in the Accounting Profession*, Journal of Business Ethics, No. 164, pp. 17-38, https://doi.org/10.1007/s10551-018-4054-4.
12. Crossnohere, N.L., Elsaid, M., Paskett, J., Bose-Brill, S., Bridges, J.F. (2022), *Guidelines for Artificial Intelligence in Medicine: Literature Review and Content Analysis of Frameworks*, J Med Internet Res, Vol. 24, No. 8, https://doi.org/10.2196/36823.
13. Denyer, D., Tranfield, D. (2009), *Producing a Systematic Review*, in D. Buchanan, A. Bryman (Editors), *The SAGE Handbook of Organizational Research Methods*, SAGE Publications, pp. 671-689.
14. Etzioni, A., Etzioni, O. (2017), *Incorporating Ethics into Artificial Intelligence*, The Journal of Ethics, Vol. 21, No. 4, pp. 403-418, https://link.springer.com/article/10.1007/s10892-017-9252-2.

15. Felzmann, H., Fosch-Villaronga, E., Lutz, C., Tamò-Larrieux, A. (2020), *Towards Transparency by Design for Artificial Intelligence*, Science and Engineering Ethics, Vol. 26, pp. 3333-3361, https://doi.org/10.1007/s11948-020-00276-4.
16. Gotthardt, M., Koivulaakso, D., Paksoy, O., Saramo, C., Martikainen, M., Lehner, O. (2020), *Current State and Challenges in the Implementation of Smart Robotic Process Automation in Accounting and Auditing*, ACRN Journal of Finance and Risk Perspectives, Vol. 9, pp. 90-102, https://doi.org/10.35944/jofrp.2020.9.1.007.
17. Gulin, D., Hladika, M., Valenta, I. (2019), *Digitalization and the Challenges for the Accounting Profession*, in *Proceedings of the ENTRENOVA – ENTerprise REsearch InNOVAtion Conference, Rovinj, Croatia, 12-14 September 2019*, pp. 502-511, https://hdl.handle.net/10419/207712.
18. Hilb, M. (2020), *Toward Artificial Governance? The Role of Artificial Intelligence in Shaping the Future of Corporate Governance*, Journal of Management and Governance, Vol. 24, pp. 851-870, https://doi.org/10.1007/s10997-020-09519-9.
19. Ionescu-Feleagă, L., Dragomir, V.D., Bunea, Ş., Stoica, O.C., Barna, L.-E.-L. (2022), *Empirical Evidence on the Development and Digitalization of the Accounting and Finance Profession in Europe*, Electronics, Vol. 11, No. 23, https://doi.org/10.3390/electronics11233970.
20. Kocsis, D. (2019), *A Conceptual Foundation of Design and Implementation Research in Accounting Information Systems*, International Journal of Accounting Information Systems, Vol. 34, https://doi.org/10.1016/j.accinf.2019.06.003.
21. Kroon, N., do Céu Alves, M., Martins, I. (2021), *The Impacts of Emerging Technologies on Accountants' Role and Skills: Connecting to Open Innovation – A Systematic Literature Review*, Journal of Open Innovation: Technology, Market, and Complexity, Vol. 7, No. 3, https://doi.org/10.3390/joitmc7030163.
22. Lakatos, E.M., Marconi, M.A. (2003), *Fundamentos de Metodologia Científica*, 5th Edition, Atlas, São Paulo.
23. Lardo, A., Corsi, K., Varma, A., Mancini, D. (2022), *Exploring Blockchain in the Accounting Domain: A Bibliometric Analysis*, Accounting, Auditing & Accountability Journal, Vol. 35, No. 9, pp. 204-233, https://doi.org/10.1108/AAAJ-10-2020-4995.
24. Lee, C.S., Tajudeen, F.P. (2020), *Usage and Impact of Artificial Intelligence on Accounting: Evidence from Malaysian Organizations*, Asian Journal of Business and Accounting, Vol. 13, No. 1.
25. Lehner, O.M., Ittonen, K., Silvola, H., Ström, E., Wührleitner, A. (2022), *Artificial Intelligence Based Decision-Making in Accounting and Auditing: Ethical Challenges and Normative Thinking*, Accounting, Auditing & Accountability Journal, Vol. 35, No. 9, pp. 109-135, https://doi.org/10.1108/AAAJ-09-2020-4934.
26. Leitner-Hanetseder, S., Lehner, O.M., Eisl, C., Forstenlechner, C. (2021), *A Profession in Transition: Actors, Tasks and Roles in AI-Based Accounting*, Journal of Applied Accounting Research, Vol. 22, No. 3, pp. 539-556, https://doi.org/10.1108/JAAR-10-2020-0201.
27. Li, Z., Zheng, L. (2018), *The Impact of Artificial Intelligence on Accounting*, in *Proceedings of the 2018 4th International Conference on Social Science and Higher Education (ICSSHE 2018)*, Atlantis Press, https://doi.org/10.2991/icsshe-18.2018.203.
28. Losbichler, H., Lehner, O.M. (2021), *Limits of Artificial Intelligence in Controlling and the Ways Forward: A Call for Future Accounting Research*, Journal of Applied Accounting Research, Vol. 22, No. 2, pp. 365-382, https://doi.org/10.1108/JAAR-10-2020-0207.
29. Mohammad, S.J., Hamad, A.K., Borgi, H., Thu, P.A., Sial, M.S., Alhadidi, A.A. (2020), *How Artificial Intelligence Changes the Future of Accounting Industry*, International Journal of Economics and Business Administration, Vol. 8, No. 3, pp. 478-488, https://doi.org/10.35808/ijeba/538.
30. Mökander, J., Floridi, L. (2021), *Ethics-Based Auditing to Develop Trustworthy AI*, Minds and Machines, Vol. 31, No. 2, pp. 323-327, https://doi.org/10.1007/s11023-021-09557-8.
31. Munoko, I., Brown-Liburd, H.L., Vasarhelyi, M. (2020), *The Ethical Implications of Using Artificial Intelligence in Auditing*, Journal of Business Ethics, Vol. 167, pp. 209-234, https://doi.org/10.1007/s10551-019-04407-1.
32. Mutlu, M.D., Açikgöz, B., Dalkiliç, E. (2022), *Perceptions of Accounting Professionals Regarding Digitalization and Remote Work During the COVID-19 Pandemic*, Journal of Management and Economics Research, Vol. 20, No. 4, pp. 115-137, https://doi.org/10.11611/yead.1159251.
33. Opudu, D.O., Tonye, O. (2022), *Digitalization and the Challenges for Accounting Profession in an Emerging Economy*, BW Academic Journal, Vol. 1, No. 1, https://www.bwjournal.org/index.php/bsjournal/article/view/976.

34. Parker, L.D., Northcott, D. (2016), *Qualitative Generalising in Accounting Research: Concepts and Strategies*, Accounting, Auditing & Accountability Journal, Vol. 29, No. 6, pp. 1100-1131, https://doi.org/10.1108/AAAJ-04-2015-2026.
35. Qasim, A., Kharbat, F.F. (2020), *Blockchain Technology, Business Data Analytics, and Artificial Intelligence: Use in the Accounting Profession and Ideas for Inclusion into the Accounting Curriculum*, Journal of Emerging Technologies in Accounting, Vol. 17, No. 1, pp. 107-117, https://doi.org/10.2308/jeta-52649.
36. Ribeiro, J., Lima, R., Eckhardt, T., Paiva, S. (2021), *Robotic Process Automation and Artificial Intelligence in Industry 4.0 – A Literature Review*, Procedia Computer Science, No. 181, pp. 51-58, https://doi.org/10.1016/j.procs.2021.01.104.
37. Robinson, S.C. (2020), *Trust, Transparency, and Openness: How Inclusion of Cultural Values Shapes Nordic National Public Policy Strategies for Artificial Intelligence (AI)*, Technology in Society, No. 63, https://doi.org/10.1016/j.techsoc.2020.101421.
38. Sabuncu, B. (2022), *The Effects of Digital Transformation on the Accounting Profession*, Academic Review of Economics and Administrative Sciences, Vol. 15, No. 1, pp. 103-115, https://doi.org/10.25287/ohuiibf.974840.
39. Shi, Y. (2019), *The Impact of Artificial Intelligence on the Accounting Industry*, in Z. Xu, K.-K.R. Choo, A. Dehghantanha, R. Parizi, M. Hammoudeh (Editors), *Cyber Security Intelligence and Analytics. CSIA 2019. Advances in Intelligent Systems and Computing*, Vol. 928, Springer, Cham, https://doi.org/10.1007/978-3-030-15235-2_129.
40. Smith, M.J. (2018), *Getting Value from Artificial Intelligence in Agriculture*, Animal Production Science, Vol. 60, No. 1, pp. 46-54, https://doi.org/10.1071/AN18522.
41. Snyder, H. (2019), *Literature Review as a Research Methodology: An Overview and Guidelines*, Journal of Business Research, Vol. 104, pp. 333-339, https://doi.org/10.1016/j.jbusres.2019.07.039.
42. Supri, Z., Antong, Usman, H., Dahri, A., Pontoh, G.T. (2020), *The Reality of Environmental Cost Concepts in Corporate Accountant Interpretation*, in *IOP Conference Series: Earth and Environmental Science*, Vol. 575, No. 1, https://api.semanticscholar.org/CorpusID:228986792.
43. Vărzaru, A.A. (2022), *Assessing Artificial Intelligence Technology Acceptance in Managerial Accounting*, Electronics, Vol. 11, No. 14, https://doi.org/10.3390/electronics11142256.
44. Zakaria, H. (2021), *The Use of Artificial Intelligence in E-Accounting Audit*, in A. Hamdan, A.E. Hassanien, A. Razzaque, B. Alareeni (Editors), *The Fourth Industrial Revolution: Implementation of Artificial Intelligence for Growing Business Success. Studies in Computational Intelligence*, Vol. 935, Springer, Cham, pp. 341-356, https://doi.org/10.1007/978-3-030-62796-6_20.
45. Zemankova, A. (2019), *Artificial Intelligence in Audit and Accounting: Development, Current Trends, Opportunities and Threats-Literature Review*, In *2019 International Conference on Control, Artificial Intelligence, Robotics & Optimization (ICCAIRO)*, IEEE, pp. 148-154, https://doi.org/10.1109/ICCAIRO47923.2019.00031.
46. Zhang, W. (2024), *Ethical Dilemmas in Accounting: A Comprehensive Analysis of Professional Ethics*, Academic Journal of Business & Management, Vol. 6, No. 2, pp. 137-145, https://doi.org/10.25236/AJBM.2024.060220.
47. Zhang, Y., Xiong, F., Xie, Y., Fan, X., Gu, H. (2020), *The Impact of Artificial Intelligence and Blockchain on the Accounting Profession*, IEEE Access, Vol. 8, pp. 110461-110477, https://doi.org/10.1109/ACCESS.2020.3000505.
48. European Commission (2021), *AI Watch – National Strategies on Artificial Intelligence: A European Perspective*, 2021 Edition, https://publications.jrc.ec.europa.eu/repository/handle/JRC122684.
49. IAASB (2018), *Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics*, https://incp.org.co/Site/publicaciones/info/archivos/Data-Analytics-Feedback-Statement16012018.pdf.
50. IAASB (2022), *Disruptive Technologies Roundtable Summary*, https://www.iaasb.org/publications/disruptive-technologies-roundtable-summary.
51. McKinsey Global Institute (2019), *Notes from the AI Frontier Tackling Europe's Gap in Digital and AI*, https://www.mckinsey.com/~/media/mckinsey/featured%20insights/artificial%20intelligence/tackling%20europes%20gap%20in%20digital%20and%20ai/mgi-tackling-europes-gap-in-digital-and-ai-feb-2019-vf.ashx.
52. PCAOB (2018), *Driving Audit Quality Forward: PCAOB 2.0*, https://pcaobus.org/news-events/speeches/speech-detail/driving-audit-quality-forward-pcaob-2-0_683.
53. World Economic Forum (2018), *Insight Report. The Global Gender Gap Report*, https://www3.weforum.org/docs/WEF_GGGR_2018.pdf.
54. https://www.ifrs.org/