African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

Investigating Opportunities, Challenges, and Threats of Artificial Intelligence in Accounting Functions Using A Systematic Literature Review.

Auteur 1 : AYAD Meryem
Auteur 2 : EL MEZOUARI Said

AYAD Meryem, (PhD student)
Research Laboratory in Finance, Accounting, Management, and Decision Support Information Systems
Hassan First University / National School of Commerce and Management, Settat

EL MEZOUARI Said, (Professor)
Research Laboratory in Finance, Accounting, Management, and Decision Support Information Systems
Hassan First University / National School of Commerce and Management, Settat

Déclaration de divulgation : L'auteur n'a pas connaissance de quelconque financement qui pourrait affecter l'objectivité de cette étude.

Conflit d'intérêts : L'auteur ne signale aucun conflit d'intérêts.

Pour citer cet article : AYAD .M & EL MEZOUARI. S (2024) « Investigating Opportunities, Challenges, and Threats of Artificial Intelligence in Accounting Functions Using A systematic Literature Review», African Scientific Journal « Volume 03, Numéro 24 » pp: 0841 – 0857.

Date de soumission : Mai 2024

Date de publication : Juin 2024

DOI : 10.5281/zenodo.12926948

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

Abstract

Nowadays, Accounting one of the main functions in every company, is constantly developing due to several disruptive technologies such as Artificial Intelligence, this paper provides a systematic literature review to cover what opportunities Artificial Intelligence brings to the Accounting function, challenges as well as threats that Accounting is facing with the adoption of this technology, using Scopus as database, 30 research articles between 2010 and 2022, were selected, analyzed and synthesized.

The results show that Artificial Intelligence technologies have great opportunities and are highly suitable for accounting activities. Further, improving cybersecurity by companies and the accounting workforce's ability are some of the main challenges. The unemployment crisis in the job market caused by artificial intelligence technologies poses a threat in the field of accounting.

Keywords : Artificial intelligence ; Accounting ; Systematic Literature Review.

Résumé

De nos jours, la comptabilité, l'une des principales fonctions dans chaque entreprise, se développe constamment grâce à plusieurs technologies perturbatrices telles que l'Intelligence Artificielle. Cet article propose une revue systématique de la littérature pour couvrir les opportunités que l'Intelligence Artificielle apporte à la fonction comptable, ainsi que les défis et les menaces auxquels la comptabilité est confrontée avec l'adoption de cette technologie. En se basant sur Scopus comme base de données, 30 articles de recherche publiés entre 2010 et 2022 ont été sélectionnés, analysés et synthétisés.

Les résultats montrent que les technologies d'Intelligence Artificielle offrent de grandes opportunités et sont particulièrement adaptées aux activités comptables. Cependant, l'amélioration de la cybersécurité par les entreprises et les compétences du personnel comptable représentent les principaux défis. La crise de l'emploi sur le marché du travail, due aux technologies d'Intelligence Artificielle, constitue une menace dans le domaine de la comptabilité.

Mots clés : Intelligence Artificielle ; Comptabilité ; Revue de littérature systématique

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

Introduction

Nowadays, disruptive technologies are significantly reshaping the accounting field (Bonsón & Bednárová, 2019; Brennan & Subramaniam, 2019). Several studies have investigated the application of these technologies, including blockchain (Kokina et al., 2017 ; Dai & Vasarhelyi, 2017), cloud computing (Marand, 2013); (Moudud, 2020), big data (Warren et al., 2015; Vasarhelyi et al., 2015), internet of things (Wu et al., 2019; Cao, 2012) and artificial intelligence (Ionescu, 2019 ; Zhang et al., 2020 ; Shi, 2019).

Among these technologies, artificial intelligence has the potential to shift and disrupt the practice of accountants, over the last decade, the Big Four (Deloitte KPMG, PricewaterhouseCoopers, Ernst & Youn) have integrated artificial intelligence into accounting processes (Yang, 2021). This trend is driven by repetitive and mechanical nature of many accounting tasks; these characteristics enable the field of accounting to be highly suitable for the application of artificial intelligence (Zemánková, 2019).

Recent literature reviews have explored the impacts of artificial intelligence on accounting, (Zhang et al, 2020) provided a comprehensive review of current developments in big data, machine learning, artificial intelligence, and blockchain in the accounting field, especially the opportunities and challenges in their applications. Zemánková, (2019) highlighted the newest trends, opportunities, and threats regarding artificial intelligence in audit and accountings blockchain and AI in accounting.

furthermore, Moll & Yigitbasioglu, (2019) reviewed 38 published peer-reviewed papers on the accounting literature that focuses on four Internet-related technologies (cloud, big data, blockchain, and AI), Lehner et al, (2022) identifies ethical challenges of using artificial intelligence based accounting systems. Mardini & Alkurdi, (2021) applied a panel systematic approach that aims to identify relations, gaps and inconsistencies in the literature on AI and accounting in order to suggest new research gaps. Yoon (2020) conducted a detailed systematic review to explore the integration of new accounting technologies such as Cloud, Artificial Intelligence, Big Data, and Blockchain, illustrating the adoption of these technologies by Korean companies in their accounting process, Finally, Atayah et al, (2021) combined a bibliometric and content analysis to analyze 154 relevant English articles published over the last 35 years s to review the existing literature on audit and tax in the context of emerging technologies.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

However, the implications of AI technology in accounting still represent an emerging research topic that is under-researched. To address this gap, our study aims to provide a systematic literature review focusing on opportunities, challenges as well as threats posed by AI in accounting. This paper aims to deepen our understanding of artificial intelligence in accounting through a systematic literature review of primary research articles.

We believe that our study will be a useful resource for both current and future researchers who are interested in this emerging research topic, we present a comprehensive literature review on the current state and trajectories of the research, which will facilitate further research on this emerging subject. Our research question focuses What existing literature reveals about the potential opportunities, threats, and challenges related to the implication of Artificial Intelligence in accounting functions?

Our paper is structured as follows: Section 1 covers the research methodology followed within this paper; the next section analyses and discusses the finding regarding the Opportunities, challenges, and threats of the application of Artificial Intelligence in the Accounting field, and Section 3 provides the conclusion.

1. Methodology

In response to the established research question, we undertake a systematic literature review, according to Petticrew & Roberts, (2008) a systematic literature review is “A review that aims to comprehensively identify all relevant studies to answer a particular question » (P.19).

We adhered to five main steps, as outlined in various scientific works, notably Petticrew & Roberts, (2008) and Denyer & Tranfield, (2009). These steps involved formulating the questions, undertaking the literature search, evaluating the inclusion/exclusion criteria, screening the results and assessing the study quality, synthesis, and analysis of findings.

1.1. Formulating the Reseach Question

Formulating the research questions is a critical step in every systematic review. Based on the purpose of this research, the main question in our study is: ***What existing literature reveals about the potential opportunities, threats, and challenges related to the application of Artificial Intelligence in accounting functions?***

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

1.2. Literature Search

First, we identified the academic research database suitable for our study, after multiple advanced research, we selected the Scopus, and this database cover most of the published research about the implication of Artificial Intelligence in accounting,

The second step was to build our research query. Initially, we focused on identifying articles where “artificial intelligence” and “accounting” appear in the title, few articles have been selected. Consequently, to broaden our search scope, we incorporated alternative terms related to Artificial intelligence, table 1 outlines these alternative terms integrated into the research query string on Scopus.

Tableau N°1 : Alternative terms related to Artificial intelligence and accounting

Alternative terms for artificial intelligence	Alternative terms Accounting
Expert systems, knowledge Engineering, Machine learning, Natural Language Processing, Neural networks, Robotics, Fuzzy Logic, Multi-agent system, Cognitive Computing, Deep Learning, Optical Character Recognition, Data Mining, Computer Vision, AI, NLP, ML	Accountancy, Accounting Information, Financial Accounting, Financial Statement, Bookkeeping, Financial Information, Accountable, Account.

Source: Author's elaboration

1.3. Inclusion and Exclusion Criteria

AI is a vast field of study, Scopus output according to our search request, contained 539 documents. To specify the outcome, we selected the following document sources: article, conference paper, book chapter, and book. We excluded articles in the press and those written in languages other than English, and we limited the analysis period between the period (2011-2022).

1.4. Screening the Results and Assessing the Quality of the Selected Articles

Establishing inclusion and exclusion criteria allowed us to refine the results and select 394 articles for in-depth analysis to determine their pertinence regarding our research question. The first step was to critically examine the title, keywords, and abstracts of selected articles; after

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

this initial screening process, 64 articles were considered relevant for our study, and 330 articles were excluded due to their non-compliance with the aim of the review.

We carefully reviewed and critically evaluated the 64 articles identified through screening titles, keywords, and abstract. Ultimately, 30 articles were considered because they directly addressed our research question, 30 articles were excluded and four were not available.

Table 2 provides an overview of the methodology used to ensure that only relevant articles identified by our research query were included in the final analysis.

Tableau N°2 : Articles identification and screening process.

Step 1: Compiling records from each database - Records identified through Scopus	539
Step 2: Refine results - Not English - Published before 2011 - not article or conference paper or book chapter or book - Articles press	14 96 15 20
Total excluded	**145**
Step 3: the title, keywords, and abstracts screening - Articles not directly link to the aim of our study, after the title, keywords, and abstracts screening - Articles review	314 16
Total excluded after abstract and title screening	**330**
Step 4: full-text screening - Articles excluded after full-text screening or - Articles not available	**30** **4**
Articles included clearly linked to our research questions (*opportunities, challenges, and obstacles)*	**30**

Source: Author's elaboration (adapted from Gittings and al., (2020)).

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

1.5. Synthesis and analysis of findings

We synthesized the key finding from each of the remaining 30 papers; we conducted an in-depth analysis by grouping the most relevant and commonly emerging findings from the articles into distinct thematic areas, as recommended by Pettigrew & Roberts., (2008)

3. Opportunities, challenges, and threats related to the application of Artificial Intelligence in Accounting Functions: Analysis and synthesis

In this section, we will present the results of our analysis of the 30 selected articles. Each article was carefully reviewed to extract its most significant findings, leading to the identification of eight key research themes. These themes have been categorized and detailed according to their relevance to opportunities, challenges, or threats associated with the integration of Artificial Intelligence in accounting.

1.1. Opportunities of Artificial Intelligence (AI) for Accounting Functions

We identified four research themes highlighting opportunities for Artificial Intelligence in accounting, namely: **Improvement of the quality of financial and accounting information; Enhancing process governance; Optimization and transformation of accountants' role; Improvement of the efficiency of accounting work.**

1.1.1. Research Theme 1: AI Improves the quality of financial and accounting information

- **Finding 1: Financial statement fraud detection**

Several studies (Yao and al, 2018; Ravisankar et al, 2011; Perols, 2011; Lokanan et al, 2019; Lin, 2015; Hajek & Henriques,2017) have tested the utility of data mining and machine learning algorithms in detecting financial statement fraud by using financial ratios broadly as indicators of fraud risk. This detection improves the accuracy of financial statements and allows it to present a faithful representation of the financial situation of the company.

Yao et al, (2018) presented a hybrid detection model using machine learning and data mining methods for detecting financial fraud using a dataset of financial information such as sales growth rate, Liquidity ratio. Along with non-financial information such as the proportion of the largest shareholder, the author’s extracted data from 120 fraudulent financial statements disclosed by the China Securities Regulatory Commission (CSRC) between 2007 and 2016,

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

compared the performance of five machine-learning methods, and found that the Random Forest outperformed the other four methods.

Ravisankar et al, (2011) applied data mining techniques to identify companies engaging in financial statement fraud. Their study utilized a dataset comprising 35 items from the financial statements from 202 companies to detect instances of fraud

Jan,(2021) and Craja et al,(2020) used deep learning algorithms to construct financial statement fraud detection models, on their study Čičak & Vašiček, (2019) focused on Fuzzy logic and explained its enormous potential in the field of determining bias in financial reporting.

- **Finding 2: Improve the reliability and the accuracy of Accounting information.**

In their study, Askary et al, (2018) proposed a practical model of using Artificial Intelligence to be applied for producing quality accounting information by removing weaknesses of internal control to enhance the efficiency and effectiveness of the internal control system in producing highly reliable accounting information.

Rahahleh et al, (2021) proposed to use artificial intelligence to automate the removing the audit weaknesses. This will ultimately improve the quality of the audit by minimizing the risk of earnings manipulation, in the other hand the accounting information can be processed according to the computer setting program, which can avoid the calculation error in the manual account and improve the accuracy of the accounting information Guo and al, (2020).

The financial robot can ensure the correctness and specification of each link according to the established procedures, so it can effectively reduce the occurrence of errors; thus, it ensures the authenticity of the company's data Li and al, (2020)

1.1.2. Research theme 2: AI enhances process governance

- **Finding 1 : AI improves risk management capabilities**

In their study, Lee & Tajudeen, (2020) explained that by adopting AI-based technology in the organization's accounting software, purchase orders (POs) can be matched with invoices and the risk of invoice manipulation by irresponsible staff can be addressed. With the implementation of AI in the accounting workflow organizations can implement better internal controls and involve fewer human interventions in their accounts payable functions Cao,. (2021).

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

Shi, (2019) Discussed how in small and medium-sized businesses, the incompatible posts do not allow for true Separation, which creates an opportunity for financial fraud in the context of artificial intelligence, a large volume of accounting work has been passed to the computer, and the accounting personnel only need to check it. At the end of the period, the system will automatically check the balance and create a trial balance,

Song et al, (2014) demonstrate that classification algorithms (logistic regression, back-propagation neural network, decision tree, and support vector machine) can help assess the risk of financial statement fraud, and support stakeholders to reduce financial risk, and, therefore, make better decisions.

Papík & Papíková, (2021) used classification, decision tree, and random forest to predict unintentional accounting errors that lead to financial restatements based on information from companies' financial statements and concluded that by applying the random forest method, it is possible to detect unintentional accounting errors with high levels of accuracy based on financial ratios.

- **Finding 2: AI improves the efficiency of decision-making.**

Guomin, (2019) revealed that data storage capabilities and computing power intelligently analyze the business data and financial data of the enterprise, which provides strong support for the company's strategic decision-making, business decision-making, and financial decision-making,

Abdi et al, (2021) discussed that Machine Learning algorithms can be used to interpret data from the world around us to predict outcomes and learn from successes and failures, which enhance decision-making.

1.1.3. Research theme 3: AI optimizes and transforms the role of accountants

Many researchers pointed out the shifting role of accountants due to AI implementation, with AI technologies accountants will no longer deal with repetitive and time-consuming tasks Machines will take over the more mundane and repetitive tasks Which will free up more time for the accountant to play advisory function Abdi et al, (2021) . Lee & Tajudeen, (2020) who stated that by using IA techniques on tedious tasks, accountants could free up their valuable time for more complex matters that require critical thinking also noticed this. Their study in the

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

Delphi Company for Leitner-Hanetseder et al, (2021) found that AI technologies would have an important impact on the roles and tasks of accountants.

1.1.4. Research theme 4: AI improves the efficiency of accounting work

- **Finding 1: AI increases the clarity and honesty of bookkeeping.**

For Cao. (2021) Some basic accounting document management and bookkeeping operations, such as invoices, Transfer, billing, reimbursement, settlement, etc., are all handled by these intelligent accounting robots, which improves the efficiency and accuracy of accounting work by avoiding human omissions and errors.

- **Finding 2: AI Automate time-consuming accounting activities.**

Accounting researchers analyze manually large bodies of text this makes this process time-consuming (Li and al, 2020) and demonstrates that the use of a text classification algorithm will greatly improve the classification speed of unstructured information while maintaining very high accuracy.

- **Finding 3: AI removes repetitive accounting activities**

Multiple researchers have highlighted the role of AI in removing basic and repetitive accounting tasks, Artificial Intelligence can manage the processes from the production of vouchers to the completion of financial reports quickly, especially in companies with large business volume tasks (Li and al., 2020), by reducing repetitive and time-consuming accounting processes this contributes to reducing low-level errors Guo and al, (2020) ; Abdi et al, (2021).

Technology like OCR used to convert typed or handwritten text into machine-encoded text enables the company to eliminate time-consuming manual data entry It brings a considerable advantage to accountants who spend time manually coding documents such as receipts, checks, and invoices Shaffer, (2020) and contribute to the enhancement of the business records (Lee & Tajudeen, (2020).

- **Finding 4: AI Identification and Extraction of the invoice information**

In Accounting the information on bills that need to be processed is increasing, Artificial intelligence technology based on image processing can solve the issue of invoice information collection, Tian & Li, (2022) used this technology to achieve the acquisition of VAT invoice-

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

related information and showed that the method is effective to improve the efficiency and accuracy of accounting information processing.

1.2. Challenges of Artificial Intelligence (AI) in the Accounting Functions

We found four research themes of Artificial Intelligence challenges in accounting namely: **Accounting curriculum, costs related to the implementation of AI technology, cyber Security, Accounting, and financial personnel's ability and mindset.**

1.2.1. Research theme 1: Accounting curriculum

Incorporation of recent technologies into the accounting curricula is a serious challenge for universities Leitner-Hanetseder et al, (2021) Concluded that AI application in the accounting field will be accompanied by a need for a highly skilled workforce, and the unbalanced response of the accounting curricula regarding technological advancements in business operations, will affect the employability of accounting graduates, choose to hire IT graduates with technical skills, rather than accounting graduates.

In alignment, Guomin, (2019) concluded the changing demand for accounting talent in society will necessarily require professional accounting education to cultivate new accounting talent that fits the requirements of artificial intelligence development, and colleges and universities will need to move progressively toward a computerized teaching mode, Colleges, and universities will need to move progressively towards a computerization-teaching mode. To prepare graduates for the market and to ensure their employability. Qasim & Kharbat, (2020) provided solutions for the inclusion of Blockchain Technology, Business Data Analytics, and Artificial Intelligence into the accounting curriculum.

1.2.2. Research theme 2: costs related to the implementation of AI technology

The implementation of AI is costly, but in the long term lowering the number of employees required by accounting firms may lead to cost savings Mohammad et al, (2020).

1.2.3. Research theme 3: improving cybersecurity

Cybersecurity represents a major challenge for artificiel intelligence, Li, (2020) the company stores all financial vouchers in electronic form in a database, and once the database is hacked, it may lead to all information being stolen over damaged Qasim & Kharbat, (2020). Artificial

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

Intelligence relies heavily on the data model. If a hacker attacks the original code, it may lead to a large number of important data leaks Wu, (2021).

1.2.4 Research theme 4: Accounting and Financial Personnel's Ability and minds

In modern accounting, accountants' professional and technical abilities need to be improved (Guo et al., 2019). Accounting personnel not only need professional knowledge in the accounting field but also need to master information technology.

1.3. Upcoming potential threats of Artificial Intelligence (AI) in Accounting functions

The major threat posed by artificial intelligence, as identified in our research, is the crisis of unemployment in the accounting job market.

1.3.1. Research theme 1 : The crisis of unemployment in the labor market

The unemployment crisis in the job market is a topic of debate in research around the implementation of AI technologies in accounting, through their study Peng & Chang, (2019) showed that 35% of accounting practitioners think that the current extent of AI development affects work, while 34% thinks otherwise, Guo et al, (2020) and Li, (2020) agreed that intelligent accounting will replace traditional accounting function. low-level accounting practitioners will be replaced by artificial intelligence Liu, (2021), Shi, (2019) on the other hand Leitner-Hanetseder et al, (2021) pointed out That Humans will work alongside with AI technologies, in alignment Abdi et al, (2021) revealed that the human workforce will not be eliminated in public accounting firms, but will be joined by new colleagues, machines that will team up with them to provide more efficient services to clients.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

Conclusion

The implications of AI technology in accounting still represent an emerging research topic that is not yet fully explored, therefore, we conducted a Systematic Literature Review to analyze existing research on the topic. We reviewed thirty articles to explore what opportunities Artificial Intelligence brings for accounting, challenges as well as threats that Accounting is facing with the adoption of this technology.

The study has identified, classified, and detailed nine opportunities of AI Accounting: AI Improve the quality of financial and accounting information by detecting Financial statement fraud (1) and removing weaknesses of internal control, which improves the reliability and accuracy of Accounting information (2), AI increases process governance by making the decision-making process more efficient (3) and improving risk management capabilities (4), AI features provided benefits, either for the enterprise management by producing reliable and accurate accounting information and for accountants by shifting their role to more add-value activities like consulting (6) removing basic repetitive (7) and cumbersome tasks (8) and automation of time-consuming accounting activities (9).

We identified several challenges facing AI adoption in accounting. This include the need for colleges and universities to incorporate artificial intelligence into accounting curricula to enhance graduates' employability, cybersecurity and the initial cost of implementing IA are serious challenges for the company to take full advantage of this technology, also implementation of artificial intelligence may cause a crisis of unemployment in the accounting job market.

Artificial intelligence represents a common fear for accountants because it will replace them in their jobs. We found that machine learning, neural networks, data mining, robots, fuzzy logic, and optical character recognition are the most commonly discussed Artificial Intelligence technologies in the literature.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

BIBLIOGRAPHIE

1. Bonsón, E., & Bednárová, M. (2019). Blockchain and its implications for accounting and auditing. Meditari Accountancy Research.
2. Brennan, N. M., Subramaniam, N., & Van Staden, C. J. (2019). Corporate governance implications of disruptive technology: An overview. *The British Accounting Review*, *51*(6), 100860.
3. Kokina, J., Mancha, R., & Pachamanova, D. (2017). Blockchain: Emergent industry adoption and implications for accounting. Journal of Emerging Technologies in Accounting, 14(2), 91-100.
4. Dai, J., & Vasarhelyi, M. A. (2017). Toward blockchain-based accounting and assurance. Journal of Information Systems, 31(3), 5-21.
5. Marand, A. A., Marand, E. A., & Dashtebayaz, M. L. (2013). Investigating the effects of cloud computing on accounting and its comparison with traditional models. Advances in Environmental Biology, 7(10 S1), 2836-2847.
6. Moudud-Ul-Huq, S., Asaduzzaman, M., & Biswas, T. (2020). Role of cloud computing in global accounting information systems. The Bottom Line, 33(3), 231-250.
7. Warren Jr, J. D., Moffitt, K. C., & Byrnes, P. (2015). How big data will change accounting. Accounting horizons, 29(2), 397-407.
8. Vasarhelyi, M. A., Kogan, A., & Tuttle, B. M. (2015). Big data in accounting: An overview. Accounting Horizons, 29(2), 381-396.
9. Wu, J., Xiong, F., & Li, C. (2019). Application of Internet of Things and blockchain technologies to improve accounting information quality. IEEE Access, 7, 100090-100098.
10. Cao, H., & Zhu, Z. (2012, June). Research on future accounting information system in the internet of things era. In 2012 IEEE International Conference on Computer Science and Automation Engineering (pp. 741-744). IEEE.
11. Ionescu, L. (2019). Big data, blockchain, and artificial intelligence in cloud-based accounting information systems. Analysis and Metaphysics, (18), 44-49.
12. Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The impact of artificial intelligence and blockchain on the accounting profession. Ieee Access, 8, 110461-110477.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

13. Shi, Y. (2019, February). The impact of artificial intelligence on the accounting industry. In The International Conference on Cyber Security Intelligence and Analytics (pp. 971-978). Springer, Cham.
14. Yang, W. (2021, September). Cultivation of Accounting Professionals in Private Engineering Colleges in the Era of Artificial Intelligence–Take GDLGXY as an Example. In 2021 4th International Conference on Information Systems and Computer Aided Education (pp. 890-895).
15. Zemánková, A (2019). Artificial intelligence and blockchain in audit and accounting: Literature review. wseas Transactions on Business and Economics, 16(1), 568-581.
16. Zemankova, A. (2019, December). 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) (pp. 148-154). IEEE
17. Moll, J., & Yigitbasioglu, O. (2019). The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. The British Accounting Review, 51(6), 100833.
18. 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*, *35*(9), 109-135.
19. Mardini, G. H., & Alkurdi, A. (2021). Artificial Intelligence Literature in Accounting: A Panel Systematic Approach. In *The Fourth Industrial Revolution: Implementation of Artificial Intelligence for Growing Business Success* (pp. 311-323). Springer, Cham.
20. Yoon, S. (2020). A study on the transformation of accounting based on new technologies: Evidence from Korea. *Sustainability*, *12*(20), 8669.
21. Atayah, O. F., & Alshater, M. M. (2021). Audit and tax in the context of emerging technologies: A retrospective analysis, current trends, and future opportunities. *International Journal of Digital Accounting Research*, *21*.
22. Petticrew, M., & Roberts, H. (2008). Systematic reviews in the social sciences: A practical guide. John Wiley & Sons.
23. Denyer, D., & Tranfield, D. (2009). Producing a systematic review. ISO 690

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

24. Gittings, L., Taplin, R., & Kerr, R. (2020). Experiential learning activities in university accounting education: A systematic literature review. Journal of Accounting Education, 52, 100680.

25. Yao, J., Zhang, J., & Wang, L. (2018, May). A financial statement fraud detection model based on hybrid data mining methods. In 2018 international conference on artificial intelligence and big data (ICAIBD) (pp. 57-61). IEEE.

26. Ravisankar, P., Ravi, V., Rao, G. R., & Bose, I. (2011). Detection of financial statement fraud and feature selection using data mining techniques. Decision support systems, 50(2), 491-500.

27. Perols, J. (2011). Financial statement fraud detection: An analysis of statistical and machine learning algorithms. Auditing: A Journal of Practice & Theory, 30(2), 19-50.

28. Lokanan, M., Tran, V., & Vuong, N. H. (2019). Detecting anomalies in financial statements using machine learning algorithm: The case of Vietnamese listed firms. Asian Journal of Accounting Research, 4(2), 181-201.

29. Lin, C. C., Chiu, A. A., Huang, S. Y., & Yen, D. C. (2015). Detecting the financial statement fraud: The analysis of the differences between data mining techniques and experts' judgments. Knowledge-Based Systems, 89, 459-470.

30. Hajek, P., & Henriques, R. (2017). Mining corporate annual reports for intelligent detection of financial statement fraud–A comparative study of machine learning methods. Knowledge-Based Systems, 128, 139-152.

31. Jan, C. L. (2021). Detection of financial statement fraud using deep learning for sustainable development of capital markets under information asymmetry. Sustainability, 13(17), 9879.

32. Craja, P., Kim, A., & Lessmann, S. (2020). Deep learning for detecting financial statement fraud. Decision Support Systems, 139, 113421.

33. Čičak, J., & Vašiček, D. (2019). Determining the level of accounting conservatism through the fuzzy logic system. Business Systems Research: International journal of the Society for Advancing Innovation and Research in Economy, 10(1), 88-101.

34. Askary, S., Abu-Ghazaleh, N., & Tahat, Y. A. (2018, October). Artificial intelligence and reliability of accounting information. In Conference on e-Business, e-Services and e-Society (pp. 315-324). Springer, Cham.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

35. Rahahleh, M. H., Hamzah, A. H. B., & Rashid, N. (2021). The Artificial Intelligence in the Audit on Reliability of Accounting Information and Earnings Manipulation Detection. In The Big Data-Driven Digital Economy: Artificial and Computational Intelligence (pp. 315-323). Springer, Cham.
36. Guo, W. W., & Li, T. (2020). Accounting Professional Orientation and Talent Training Based on Artificial Intelligence. In Journal of Physics: Conference Series (Vol. 1453, No. 1, p. 012066). IOP Publishing.
37. Lee, C. S., & Tajudeen, F. P. (2020). Impact of artificial intelligence on accounting: evidence from Malaysian organizations. Asian Journal of Business and Accounting, 13(1)
38. Cao, Y. (2021, May). Innovation and Reform of Accounting Professional Training Model Based on the Artificial Intelligence. In Journal of Physics: Conference Series (Vol. 1915, No. 4, p. 042023). IOP Publishing
39. Shi, Y. (2019, February). The impact of artificial intelligence on the accounting industry. In The International Conference on Cyber Security Intelligence and Analytics (pp. 971-978). Springer, Cham.
40. Guomin, S. O. N. G. (2019, July). Reform and Exploration of Accounting Professional Practice Teaching under the Background of Artificial Intelligence. In IOP Conference Series: Materials Science and Engineering (Vol. 563, No. 5, p. 052005). IOP Publishing.
41. Abdi, M. D., Dobamo, H. A., & Bayu, K. B. (2021). EXPLORING CURRENT OPPORTUNITY AND THREATS OF ARTIFICIAL INTELLIGENCE ON SMALL AND MEDIUM ENTERPRISES ACCOUNTING FUNCTION; EVIDENCE FROM SOUTH WEST PART OF ETHIOPIA, OROMIYA, JIMMA AND SNNPR, BONGA. Academy of Accounting and Financial Studies Journal, 25(2), 1-11.
42. 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.
43. Li, C., Haohao, S., & Ming, F. (2020, April). Research on the impact of artificial intelligence technology on accounting. In Journal of Physics: Conference Series (Vol. 1486, No. 3, p. 032042). IOP Publishing
44. Shaffer, K. J., Gaumer, C. J., & Bradley, K. P. (2020). Artificial intelligence products reshape accounting: time to re-train. Development and Learning in Organizations: An International Journal.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 24, Juin 2024

45. Song, X. P., Hu, Z. H., Du, J. G., & Sheng, Z. H. (2014). Application of machine learning methods to risk assessment of financial statement fraud: evidence from China. Journal of Forecasting, 33(8), 611-626.
46. Tian, J., & Li, L. (2022). Research on artificial intelligence of accounting information processing based on image processing. Mathematical Biosciences and Engineering, 19(8), 8411-8425.
47. Papík, M., & Papíková, L. (2021). Application of selected data mining techniques in unintentional accounting error detection. Equilibrium. Quarterly Journal of Economics and Economic Policy, 16(1), 185-201.
48. Wu, X. (2021, May). Research on Accounting Risk Based on AI. In Journal of Physics: Conference Series (Vol. 1915, No. 2, p. 022052). IOP Publishing.
49. Li, Z. (2020, June). Analysis on the Influence of Artificial Intelligence Development on Accounting. In 2020 International Conference on Big Data, Artificial Intelligence and Internet of Things Engineering (ICBAIE) (pp. 260-262). IEEE.
50. Liu, M. (2021, May). Exploring the Methods of Artificial Intelligence Development on Accounting Bookkeeping System. In Journal of Physics: Conference Series (Vol. 1915, No. 4, p. 042029). IOP Publishing.
51. 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, 17(1), 107-117.
52. Peng, Y., & Chang, J. S. (2019, September). An Exploration on the Problems of Replacing Accounting Professions by AI in the Future. In Proceedings of the 2019 5th International Conference on Industrial and Business Engineering (pp. 378-382).
53. 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, 8(3), 478-488.
54. Guo, X. (2019, November). Research on the Transition from Financial Accounting to Management Accounting under the Background of Artificial Intelligence. In Journal of Physics: Conference Series (Vol. 1345, No. 4, p. 042031). IOP Publishing.