

Chapter 8:

The Impact of New Technologies (AI, Blockchain & Big Data) in the Accounting Profession

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ABSTRACT

The adoption of new technologies such as Artificial Intelligence, Blockchain and Big Data will bring an advancement and improvement to the accounting field, but it will also raise some issues that the accountant must face. One of the major issues resulting from the adoption of new technology is job displacement. The need for traditional accounting-related employment will decline as AI systems become increasingly capable of handling more mundane activities like data entry, transaction processing, and even simple audits. Furthermore, the implementation of blockchain technology raises concerns about data privacy, the irreversibility of errors, and the misuse of private information even as it improves transaction security and transparency. Moreover, the reliance on AI and Big Data analytics introduces concerns about algorithmic bias, inaccuracies, and the ethical use of data. All these new technologies require accountants to have a significant amount of skill set to optimize the system. As the profession is getting restructured into a digital system, the demand for those professionals is rising who can interpret Big Data analytics and other technologies to provide strategic insights. This transition from traditional accounting methods to new digital methods poses a threat to the accountants that do not want to embrace these new systems because they do not want to leave the comfort zone. If the accountants fail to embrace these new technologies into their accounting skill set, they will fall behind their competitors and miss out on many opportunities that can grow their career in the profession. This paper explores the implications of these technologies on the accounting profession, discussing both the benefits and the potential pitfalls that need to be navigated for a balanced integration.

Key Words: Artificial Intelligence, Blockchain, Big Data, Accounting, Job Displacement, Data Privacy.

1. INTRODUCTION

New technologies such as AI, blockchain and big data analytics are quickly changing the accounting profession on how financial data is prepared, analyzed, and reported. AI has been becoming increasingly adept at machine learning and automation of a wide range of tasks traditionally done by human accountants. For example, the repetitive processes that involve data entry, processing invoices and even elements of auditing (Frey & Osborne, 2016, as cited in Yoon, 2020). AI can accelerate processes and increase the accuracy of accountancy processes, providing the accountants to concentrate on higher strategic pursuits like financial analysis and advisory services. The adoption of AI not only increases speed but also reduces manual errors, thus making the whole process of financial reporting and decision-making more robust (Yoon, 2020).

Blockchain is another innovative technology that has raised the accounting profession to higher and secure levels of security and transparency in financial reporting. For instance, a transaction will be impossible to change or modify once it was submitted to the blockchain decentralized ledger (Anewalt, 2018, as cited in Yoon, 2020). This attribute is also very useful for auditors, as it enables them to verify each transaction in real time, hence adding to the accuracy of financial records (Rückeshäuser & Institute of Computer Science and Social Studies, Department of Telematics, Freiburg, Germany, 2017, as cited in Yoon, 2020). Another advantage of blockchain involves the facilitation of wider collaboration among stakeholders through having one source of truth, which all

parties to a transaction can refer to. Therefore, the role of the accountant is changing from mere recording to trusted adviser who can interpret and analyze data in this new setup.

Big data analytics completes the evolution of changes that were brought by AI and blockchain by turning over to accountants even more insights from a greater volume of data. An accountant can contextualize large quantities of data to identify trends and patterns and even predict performance, that would otherwise go unnoticed (Theodorakopoulos et al., 2024). This capability amplifies the quality of financial reporting and gives organizations better insights into proactive business decisions focused on data-driven insights. However, with the volume of information growing exponentially, the demand is growing too for accountants to effectively analyze and interpret the information. The accounting profession is evolving toward a model that places significant emphasis on analytical skills and strategic thinking that make accountants have a major role to play to ensure business success (Theodorakopoulos et al., 2024).

2. LITERATURE REVIEW AND DISCUSSION

The adoption of new technologies such as Artificial Intelligence (AI), Blockchain, and Big Data has the potential to transform the accounting field by improving efficiency, security, and accuracy. However, these developments also present important problems that industry experts need to solve. Job displacement, data privacy issues, ethical considerations, the need for skill development, and the impact on the regulatory landscape are among the topics covered in this literature review.

Job Displacement due to Automation and AI

One of the major issues resulting from the adoption of new technology is job displacement. As AI systems can perform more routine tasks such as data entry, transaction processing and even basic auditing, this will cause the demand for traditional accounting-related jobs to decrease (Yoon, 2020). Entry-level positions are more susceptible because many of the tasks they would do are repetitive. This advancement causes a great concern to many accounting professionals in terms of job security, as the system and nature of the profession is changing and the need for human intervention in those areas will continue to diminish. Many accountants will probably lose their job as studies have shown that accounting and tax preparation occupations are among those with a high probability of being computerized that will result in a potential reduction in human workforce (Manyika, 2011, as cited in Yoon, 2020).

Data Privacy and Blockchain Technology

Apart from the job displacement issue, new technology also poses a significant challenge and disruption to the accounting profession. Although blockchain technology improves and enhances the level of security and transparency in financial transactions, it raises concerns about data privacy and the potential danger of misusing sensitive information by third parties (Yoon, 2020). According to blockchain's nature, it is immutable which means once the data was recorded into the system, it cannot be changed or modified (Anewalt, 2018, as cited in Yoon, 2020). This will raise the issue when the recorded data was a mistake that can cause the result of the system to be wrong at the end of accounting works. Moreover, the dependence on AI and Big Data analytics can raise the risks regarding algorithmic bias and ethics in the use of data. For example, if the data collection used to train AI systems is not diverse, it will cause AI to be biased that lead to inaccurate outcomes (Adelakun et al., 2024). Because of that, the accountants are having an issue in avoiding the potential mistakes caused by blockchain technology and maintaining the independence of AI algorithms to ensure the output produced by the systems are accurate and transparent.

Skill Development and Adaptation to New Technologies

Besides, all these new technologies require accountants to have a significant amount of skill set to optimize the system. As the profession is getting restructured into a digital system, the demand for those professionals is rising who can interpret Big Data analytics and other technologies to provide strategic insights (Theodorakopoulos et al., 2024). This transition from traditional accounting methods to new digital methods poses a threat to the accountants that do not want to embrace these new systems because they do not want to leave the comfort zone. If the accountants fail to embrace these new technologies into their accounting skill set, they will fall behind their competitors and miss out on many opportunities that can grow their career in the profession (Schmidt et al., 2020). This resistance to embrace the new accounting system will cause them to lose many opportunities such as new knowledge, new skill sets and others that can enhance their job security in this profession. Hence, the accountants are required to embrace these new technologies by learning and training constantly to equip them with the right skill sets to function in the new modern system.

Quality and Reliability of Financial Information

Another risk with this rapid adoption of AI, blockchain, and big data analytics is the quality and reliability of financial information. When accountants rely more on automated systems, the possibility of errors in algorithms or data processing could be the cause of inaccurate financial reporting (Yoon, 2020). This potential for error

shows the need for strong and robust internal controls and oversight mechanisms to ensure that the integrity of financial data is maintained. It is not just the use of such technologies but also the critical judgment by an accountant to review the outputs from automated systems (Yoon, 2020). Thus, the overreliance on these new technologies without any involvement by human critical judgement will produce inaccurate and unreliable financial information for the users.

Impact on the Regulatory Landscape

Lastly, the issue caused by these technologies also brings an impact on the regulatory landscape regarding the accounting profession. When AI, Blockchain and Big Data analytics become common to the accounting works, the regulatory authorities will be required to update their accounting regulations and frameworks to face the potential uncertainties and challenges caused by these technologies (N et al., 2024). The regulatory bodies will have difficulty in addressing the complexities caused by these technologies. For example, legal implications on data recorded in the blockchain system, the accountability on the use of AI decision-making processes and the privacy regulations for the vast amounts of data used in big data analytics (N et al., 2024). Hence, regulators have to evolve their approaches to stay up to date with technological developments in a way that not only fosters innovation but also protects the ethical and legal standards of the accounting profession.

3. RECOMMENDATION

One of the most serious issues that may result from technological changes is a loss of jobs to machines which is called "technological unemployment" (Yoon, 2020). This shows that it is necessary for continuing education and training programs to be provided to accounting professionals. These are the reasons why educational institutions and professional organizations should collaborate in developing accounting knowledge that consists not only of traditional accounting principles but also includes the latest technologies such as artificial intelligence, blockchain, and data analytics (Yoon, 2020). That way, accountants would be prepared to work with emerging technologies and finally enable the profession to shift from routine tasks to strategic ones that require critical thinking and problem-solving skills. The result of this proactive approach will be that accountants will be relevant and valuable in a world of increased automation, therefore reducing the risk of technological unemployment.

At the same time, these technologies create a lot of ethical problems related to the integration of new technologies into accounting practices which are issues of data privacy, accountability and technology misuse. Professional accountants will have to act by elaborating clear, full-scale ethical guidelines and implying from them the specific impacts of the use of technology (Yoon, 2020). In the process, guidelines should be developed to ensure that automated process decisions are transparent, integral, and ethical. Besides that, organizations should develop an internal policy that would foster good behavior and educate their employees about the ethical issues involving technology (Schweitzer, 2024). Since accountants can have a culture of ethics in the profession, the challenge of technology would be handled in such a way that the public trust is preserved, and integrity of financial reporting is maintained accordingly.

As technology is integrated into accounting practices, it becomes essential to ensure that financial data is not only accurate but also secure (Adelakun et al., 2024). An organization should make sure that internal controls and security measures are in place to prevent sensitive information from breaches and unauthorized access (Adelakun et al., 2024). This will involve regular audits, validation processes for data, and the use of robust cybersecurity protocols. Moreover, accountants need to train on how to identify and correct potential vulnerabilities in automated systems. Therefore, the accounting profession will minimize most of the risks in manipulated data and ensure the validity of financial reporting to maintain confidence among stakeholders by establishing a robust data governance and security framework.

Because of the fast pace of advancement in technology in the accounting profession, the accountants are required to engage actively with the regulators to assist in developing the nature of regulation. Discussions between accountants and regulators are important to determine on how to address any challenges arising by these technologies and develop regulations to maintain and protect the integrity of financial information (N et al., 2024). For this reason, the collaboration that occurred can also lead to statements of guidelines that govern AI and blockchain technologies in which their use is implemented safely for the protection of the public interest. Yoon (2020) states a balanced framework can be designed to encourage innovation while defending ethical standards and accountability through the accounting profession.

Although technology can improve efficiency and accuracy in accounting processes, it is important for human judgement to be involved to maintain accountability and ethical decision making (Schweitzer, 2024). The organizations should use a hybrid approach that combines automated machines with human judgement in one accounting process. The automated machines will be doing the early stage of accounting processes that are repetitive such as data entry and invoice processing while human judgement is required for strategic financial analysis and ethical consideration ("European Journal of Accounting, Auditing and Finance Research," 2020).

Accountants will have to be trained and made capable of critically looking at the outputs generated from the automated machines and must practice professional scepticism in such assessments. It thus allows the accounting profession to gain the benefits of automation without exposing vulnerabilities to ethical dilemmas or mistakes by encouraging a mutual relationship between technology and professional judgment. This approach not only reinforces the quality of financial reporting but strengthens the skill for human judgment in the accounting profession.

4. CONCLUSION

The implementation of new technologies such as Artificial Intelligence, Blockchain and Big Data analytics in the accounting profession has both advantages and disadvantages that may arise. The accountants must always adapt to these changes with the same ethical standards because these technologies will continue to reshape the accounting frameworks and standards. Although there are many advantages that accountants can gain from these technologies, it also brings serious issues such as technological unemployment, misuse of confidential data and complexity in accounting regulations (Yoon, 2020). It is essential for accounting professionals to continue developing themselves through learning in relation to being relevant and dealing with complexities introduced by those technologies. The improvement in their technical ability and reinforcement of commitments toward ethical practices in an evolving environment is surely enhanced with such a proactive approach.

Moreover, strong and robust guidelines are needed in order to help accountants in embracing these technologies. Because of new technologies, the accounting profession's frameworks and standards will change into modern systems that require a more updated and latest accounting's guidelines. Comprehensive and clear guidelines assist in mitigating the risks arising by the use of technological advancement to maintain and ensure the accountants can work with integrity, accountability and transparency in their profession (Schweitzer, 2024). Thus, the accounting profession will be able to protect its good name and further build up public trust in the profession. The development of formal guidelines and codes of ethics is the necessary framework that must be used to navigate these new ethical implications of technology in accounting.

Lastly, human judgement has a crucial role to be involved in the current accounting profession although most of the early accounting processes can be completed by automated machines. New technologies can enhance the efficiency and effectiveness of accounting processes, but it is important to balance the work with human judgement (Schweitzer, 2024). It is expected that accountants be able to critically review the output of the automated systems and apply professional judgment in decision-making processes. In this direction, the accounting profession will gain from innovations yet avoid all pitfalls that may come associated with such innovation through the combination of technology with human judgment.

REFERENCES

- Adelakun, N. B. O., Majekodunmi, N. T. G., & Akintoye, N. O. S. (2024). AI and ethical accounting: Navigating challenges and opportunities. *International Journal of Advanced Economics*, 6(6), 224–241. <https://doi.org/10.51594/ijae.v6i6.1230>
- Anewalt, P. (2018). Why blockchain works for data integrity. *Uledger*. Available at: <https://www.uledger.co/blockchain-works-data-integrity>
- European Journal of Accounting, Auditing and Finance Research. (2020). *European Journal of Accounting Auditing and Finance Research*. <https://doi.org/10.37745/ejaaf.2013>
- Frey, C. B., & Osborne, M. A. (2016). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, 114, 254–280. <https://doi.org/10.1016/j.techfore.2016.08.019>
- Manyika, J. (2011). An economy that works: Job creation and America's future. *VOCEDplus, the International Tertiary Education and Research Database*. <https://www.voced.edu.au/content/ngv:75561>
- N, A., Suraj, N., Rahiman, H. U., Nawaz, N., Kodikal, R., Kulal, A., & Raj, K. (2024). Digital transformation in accounting: Elevating effectiveness across accounting, auditing, reporting and regulatory compliance. *Journal of Accounting & Organizational Change*. <https://doi.org/10.1108/jaoc-01-2024-0039>
- Rückeshäuser, N., & Institute of Computer Science and Social Studies, Department of Telematics, Freiburg, Germany. (2017). Do we really want blockchain-based accounting? In *13th International Conference on Wirtschaftsinformatik* [Conference proceeding]. <https://wi2017.ch/images/wi2017-0112.pdf>

Schmidt, P. J., Riley, J., & Church, K. S. (2020). Investigating accountants' resistance to move beyond Excel and adopt new data analytics technology. *Accounting Horizons*, 34(4), 165–180. <https://doi.org/10.2308/horizons-19-154>

Schweitzer, B. (2024). Artificial intelligence (AI) ethics in accounting. *Journal of Accounting Ethics & Public Policy*, 25(1), 67. <https://doi.org/10.60154/jaepp.2024.v25n1p67>

Theodorakopoulos, L., Thanasis, G., & Halkiopoulos, C. (2024). Implications of big data in accounting: Challenges and opportunities. *Emerging Science Journal*, 8(3), 1201–1214. <https://doi.org/10.28991/esj-2024-08-03-024>

Yoon, S. (2020). The impact of new technology on ethics in accounting: Opportunities, threats, and ethical concerns. *Korean Management Review*, 49(4), 983–1010. <https://doi.org/10.17287/kmr.2020.49.4.983>