Journal of
Information System and Technology Auditing

Research Paper

Auditing with Blockchain Technology from the Knowledge Perspective[1,2]

Amir Heidari[3] and Bahareh Banitelebi Dehkordi *[4]

Journal of Information System and Technology Auditing
Iranian Information Technology Audit Scientific Association
Vol. 1, No. 1, Spring & Summer 2025
pp. 9-17

Received: 2025.02.01
Revised: 2025.05.29
Accepted: 2025.09.02

1. Introduction

Today, competition between companies has increased dramatically, and the use of new technologies is one of the things that helps companies to keep up with the competition; Blockchain, as an emerging technology, has this ability. However, the use of this technology, like the use of all new technologies, brings challenges that companies must recognize, identify, and plan to overcome. This technology facilitates the ability to compare information, respond, and make the right decisions. Recording transaction records in a ledger is the basis of the accounting process. Now, by decentralizing this ledger in a secure way, it is possible to increase cooperation between different institutions and increase the efficiency and effectiveness of accounting. Decentralized systems make it possible to turn financial reports into a living document, so that all stakeholders have access to it. The inherent problems of accounting and auditing, both from a financial and time perspective, that have remained unresolved for a long time include the low quality of

[1] https://doi.org/10.22034/JISTA. 2025. 527561.1048
[2] Selected Paper of 22nd National Accounting Conference of Iran
[3] Department of Accounting, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran. Email: Amhe844@gmail.com
[4] Department of Accounting, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran. (Corresponding Author) Email:banitalebi57@yahoo.com

financial statements, high financial and time costs of accounting, lack of shareholder control over the company, and inadequate security of financial data. Companies with many branches and a large geographical spread, or companies that have joint business activities with other companies, as well as private and public companies, are most inclined to implement blockchain technology for accounting purposes due to their high confidence in it. Because by using it, shareholders can also be fully aware of the company's financial situation (agency theory) using this technology, the core of which is a distributed ledger. Given the increasing development of new technologies, the need to keep up with these technologies is essential in order not to fall behind the global competition. One of these technologies that is rapidly expanding and its use in various industries is increasing day by day is blockchain technology; but just knowing the technology and being familiar with it is not enough, and assessing the readiness of organizations to accept the technology is important and necessary. Therefore, the present study is a theoretical study based on scientific literature that deals with a comprehensive and classic explanation of blockchain technology and its application in the field of auditing from a knowledge perspective.

2. MATERIALS AND METHODS

The present study, based on a philosophical and scientific approach and on the historical method of cognition, deals with the issue of auditing with blockchain technology and examines its application in the field of auditing in Iran from the perspective of knowledge. In fact, based on this approach, the researcher intends to introduce and explain the role and function of blockchain technology in the field of auditing and answer the main question of the research, namely, can the role and function of blockchain technology in the field of auditing be explained from the perspective of knowledge? To collect the required resources, archival documents and evidence that are the result of empirical research were reviewed, and the theoretical foundations and background of the research were identified and used using a library method.

3. RESULTS AND DISCUSSION

3.1. Theoretical Findings

Based on the research findings, there are three main themes in the literature derived from blockchain accounting that explain how blockchain impacts accounting and auditing well. These themes include the event-based approach to accounting, real-time accounting, three-way accounting, and continuous auditing in accounting using blockchain tools. In addition, some other functions of blockchain such as changing the role of accountants and auditors, choosing between different types of blockchain, along with the specific capacity of blockchain in the field of accounting and auditing .The research findings show that since the technology improves real-time access to accounting data, blockchain creates research opportunities for the accounting event approach. Using blockchain technology to maintain accounting records makes them traceable and observable, so that all interested parties who receive such rights can view transaction data with less congestion in real time on the network, based on their individual needs for decision-making. On the other hand, the excitement and interest in blockchain-based technologies has increased awareness about the lack of financial standards in emerging fintech products such as crypto assets. However, any aggregation generally involves the loss of information. The availability of data on social media also shows the government why investor decision-making is likely to be influenced by isolated data. In other words, business partners and lenders prefer disaggregated data to help them better understand the business and better guide their decisions. Furthermore, the development of machine learning will provide better tools to improve decision-making capabilities using disaggregated data. Furthermore, the research findings show that real-time blockchain auditing significantly reduces opportunistic management behaviors to engage in accounting practices and value-distorting actions to manipulate reported earnings. This is because such accounting can allow participants to immediately detect suspicious asset transfers and other transactions that pose a risk of conflict of interest.

Also, based on the findings of the research, continuous auditing, which refers to the use of advanced technology to automate audit

activities on a continuous basis to test controls, analyze risks, identify exceptions or anomalies, analyze patterns, and review processes, is likely to move towards blockchain integration to create a coherent ecosystem for improving assurance. Therefore, large companies are looking to use blockchain systems, especially machine learning, which allows a system to learn from data to recognize/apply patterns and develop how to present new data. In this regard, the adoption of machine learning has paved the way for advanced auditing, which can be enhanced with blockchain and transform the current audit into a more accurate and timely automated assurance system.

3.2. Practical Findings

However, despite all the theoretical achievements of the research, it must be acknowledged that with blockchain, the technology is expanding, and the research findings indicate that companies are currently facing technical, organizational, and legal challenges in adopting blockchain. For example, the most discussed challenges are energy consumption, storage capacity, privacy, scalability, interoperability, cybersecurity, senior management support, organizational readiness, access to financial resources, technical competence, governance issues, and lack of blockchain standardization.

4. CONCLUSION

The research findings revealed four themes that emerged from the study to determine how accounting and auditing can be transformed by blockchain technologies to improve transparency and trust in accounting practice. However, it must be acknowledged that while blockchain provides technological tools for auditors, auditors still need comprehensive and well-defined standards to provide meaningful reporting. On the other hand, the question of whether current standards for scalable business reporting will be sufficient for use with blockchain also remains an issue. This is because it is not yet clear whether scalable business reporting can provide the high-quality, unambiguous machine-readable data that is essential for blockchain applications. Furthermore, blockchain can be quite

situational and is not a solution to all business problems, and the use of the technology must be aligned with the organizational purpose. Not all data may reside on the blockchain, and the choice between permissionless and permissioned blockchains has important implications for security and performance. Finally, based on the research findings, it is suggested that accounting professionals can improve their decision-making with the capacity of blockchain to provide immutable, aggregated, shared, verified, and agreed-upon data (i.e., consensus-based) and the ability to learn from data that informs successful decision-making. Real-time accounting based on blockchain can improve efficiency, reduce payment settlement time, and reduce revenue manipulation. Blockchain, along with artificial intelligence technology, enables continuous auditing. These advanced technologies will automate many of the audit and accounting workforce processes. This will improve the efficiency of accounting and auditing functions, while simultaneously profoundly changing the way professionals work.

Keywords: Blockchain, Auditing, Knowledge Approach

JEL classification: *M, M4, M42*

References

Abdoli Abatari, Z., Kamali, E., Rostami, A. & Aghaei Chadegani, A. (2012). Future of Auditing from the Perspective of Information Technology, Changing the Auditor-Client Relationship and Changing the Concept of Auditing, Professional Auditing Research. (in persian)

Bertino, E., Kundu, A. & Sura, Z. (2019). Data transparency with Blockchain and AI ethics. *J. Data Inform. Qual*. 11 (4), 1 – 8.

Boillet, J. (2017). Are auditors ready for blockchain? The audit profession is eyeing blockchain. Account. Today. 31 (9), 34.

Buterin, V. (2014). Ethereum White Paper: A Next Generation Smart Contract & Decentralized Application Platform. Etherum, January, 1 – 36. Available at. https://github.com/ethereum/wiki/wiki/White-Paper (Accessed: 6 June 2020).

Cai, C.W. (2019). Triple-entry accounting with blockchain: How far have we come? Account. Fin. 1 – 23.

Carlin, T. (2019). Blockchain and the journey beyond double entry. Aust. Account. Rev. 29 (2), 305 – 311.

Casino, F., Dasaklis, T.K. & Patsakis, C. (2019). A systematic literature review of blockchain-based applications: Current status, classification and open issues. *Telemat. Inform*. 36, 55 – 81.

Chen, M.A., Wu, Q. & Yang, B. (2019). How valuable Is FinTech innovation? *Rev*. *Financ. Stud*. 32 (5), 2062 – 2106.

Christie, L. (2018). Distributed Ledger Technology. POSTbrief Houses of Parliament. Available at. https://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PB-0028 (Accessed: 26 November 2019) .

Clohessy, T. & Acton, T. (2019). Investigating the influence of organizational factors on blockchain adoption: An innovation theory perspective. *Ind. Manag. Data Syst*. 119 (7), 1457 – 1491.

Cong, Y., Du, H. & Vasarhelyi, M.A. (2018). Technological disruption in accounting and auditing. *J. Emerg. Technol. Account*. 15 (2), 1 – 10.

Coyne, J.G. & McMickle, P.L. (2017). Can blockchains serve an accounting purpose? J. Emerg. Technol. Account. 2017,14, 101–111.

Cuomo, J. (2020). How blockchain adds trust to AI and IoT. IBM. Available at. https://www.ibm.com/blogs/blockchain/2020/08/how-blockchain-adds-trust-to-ai- and-iot/ (Accessed: 17 July 2021).

Dai, J. & Vasarhelyi, M.A. (2017). Toward blockchain-based accounting and assurance. *J. Inf. Syst*. 31 (3), 5 – 21.

Davani, Gh. (2019). The Future of the Accounting Profession in the Light of Cloud Computing and Blockchain, Accountant Monthly, 35(326-327). (in persian)

Deloitte. (2017). Blockchain in banking While the interest is huge, challenges remain for large scale adoption. Available at. https://www2.deloitte.com/content/dam/Deloitte/in/Documents/strategy/in-strategy-innovation-blockchain-in-banking-noexp.pdf (Accessed: 7 July 2020).

Fanning, K. & Centers, D. (2016). Blockchain and its coming impact on financial services. *J. Corp. Acc. Financ*. 53 – 57.

Foote, K. D. (2019). Blockchain and Artificial Intelligence: Driving the Fourth Industrial Revolution. Dataversity. Available at. https://www.dataversity.net/blockchain-and-artificial-intelligence-driving-the-fourth-industrial-revolution/ (Accessed: 2 January 2020).

Gilbert, D. (2016). Bitcoin' s Big Problem: Transaction Delays Renew Blockchain Debate. International Business Times. Available at.

Guo, Y. & Liang, C. (2016). Blockchain application and outlook in the banking industry. *Fin. Innov*. 2 (1).

Hinings, B., Gegenhuber, T. & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Inf. Organ*. 28 (1), 52 – 61.

Hughes, A., Park, A., Kietzmann, J. & Archer-Brown, C. (2019). Beyond Bitcoin: What blockchain and distributed ledger technologies mean for firms. *Bus. Horiz*. 62 (3), 273 – 281.

Iansiti, M. & Lakhani, K.R. (2017). It will take years to transform business, but the journey begins now. *Harv. Bus. Rev*. 95 (1), 172.

ICAEW. (2018). Blockchain and the future of accountancy. Available at. https://www.icaew.com/technical/technology/blockchain/blockchainarticles/blockchain-and-the-accounting-perspective (Accessed: 3 December 2019).

Ijiri, Y., (1967). The Foundations of Accounting Measurement. *Prentice-Hall Inc*, pp. 12 – 19.

Khowanas SQ & Kemal Ce. (2024). Influence of blockchain and artificial intelligence on audit quality: Evidence from Turkey, *Heliyon*, Volume 10, Issue 9, 15, e30166.

Kiviat, T.I. (2015). Beyond bitcoin: issues in regulating blockchain transactions, Duke Law Journal, Vol. 65, 569-608.

Kokina, J. & Davenport, T.H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *J. Emerg. Technol. Account*. 14 (1), 115 – 122.

Kozlowski, S. (2018). An Audit Ecosystem to Support Blockchain-based Accounting and Assurance. *Continuous Auditing*, 299–313. https://doi.org/10.1108/978-1-78743-413-420181015

Lee.W, Miou, C. Kuan, Y. Hsieh, T. & Chou, C .(2018). A Peer-TO-Peer transaction authentication platform for mobile commerce with semi-offline architecture,June 2018. *Electronic Commerce Research*, 18(2),413-431. doi10.1007/s10660-017-9254-y.

McWaters, R. J., Bruno, G., Galaski, R. & Chatterjee, S. (2016). The future of financial infrastructure An ambitious loo at how blockchain can reshape financial services.World Economy Forum.

Moll, J. & Yigitbasioglu, O. (2019). The role of Internet-related technologies in shaping the work of accountants: New directions for accounting research. *Brit. Account. Rev*. 51 (6), 100833.

Munoko, I., Brown-Liburd, H.L. & Vasarhelyi, M. (2020). The ethical implications of using artificial intelligence in auditing. *J. Bus. Ethics* 167 (2), 209 – 234.

Murray, J. (2018). The coming world of blockchain: A primer for accountants and auditors. *CPA J.* 88 (6), 20 – 27.

O'Leary, & D.E. (2019). Some issues in blockchain for accounting and the supply chain, with an application of distributed databases to virtual organizations. *Intell. Syst. Account. Fin. Manage*. 26 (3), 137 – 149.

Oluoch, M. (2021). *Impact Of Blockchain Technology In Financial Services* (Doctoral dissertation). DOI:10.1145/3409934.3409949.

Potekhina, A. & Riumkin, I. (2017). *Blockchain – a new accounting paradigm* (Master degree thesis). Umeå School of Business and Economics.

Rajabi, A. & Farivar, R. (2017). Introduction to Strategic Blockchain Technology and Its Applications, Communications and New Technologies Studies (Communications and Information Technology Group) Islamic Consultative Assembly. Tehran: 1-23. (in persian)

Rozario, A.M. & Vasarhelyi, M.A. (2018). Auditing with smart contracts. Int. *J. Digit. Account. Res*. 18, 1 – 27.

Saghafi, A. & Jamalianpour, M. (2018). Blockchain and the Future of Accounting and Auditing, *Accountant Monthly*. (in persian)

Salah, K., Rehman, M.H.U., Nizamuddin, N. & Al-Fuqaha, A. (2019). Blockchain for AI: Review and open research challenges. IEEE Access 7, 10127 – 10149.

Schär, F. (2021). Decentralized finance: On blockchain-and smart contract-based financial markets. *FRB of St. Louis Review*. doi.org/10.20955/r.103.153-74

Schmitz, J. & Leoni, G. (2019). Accounting and auditing at the time of blockchain technology: A research agenda. *Aust. Account. Rev*. 29 (2), 331 – 342.

Shaw, J. (2019). Artificial Intelligence and Ethics. Harvard Magazine. Available at.https://www.harvardmagazine.com/2019/01/artificial-intelligence-limitations (Accessed: 27 July 2021).

Sheldon, M.D. (2018). Using blockchain to aggregate and share misconduct issues across the accounting profession. *Curr. Issues Audit*. 12 (2), A27 – A35.

Shimamoto, D. C. (2018). Why Accountants Must Embrace Machine Learning. IFAC. Available at. https://www.ifac.org/knowledge-gateway/preparing-future-ready-professionals/discussion/why-accountants-must-embrace-machine-learning (Accessed: 22 July 2021).

Singh, M. (2020). Blockchain and XBRL: The Myth. CFA Institute. https://blogs.cfainstitute.org/marketintegrity/2020/10/19/blockchain-and-xbrl-the-myth/ (Accessed: 02 November 2021).

Sogaard, J. S. (2021). A blockchain-enabled platform for VAT settlement. *International Journal of Accounting Information Systems*. 40(March 2021, 100502), 1 – 18.

Soleimaniyan, M. & Banitalebi Dehkordi, B. (2011). The role of digital innovation in financial markets from the perspective of knowledge and presenting a proposed model, *Quarterly Journal of Financial and Investment Advances*. (in persian)

Sorter, G.H. (1969). An " Events " approach to basic accounting theory. *Account. Rev*. 44 (1), 12 – 19.

Tan, B.S. & Low, K.Y. (2019). Blockchain as the database engine in the accounting system. *Aust. Account. Rev*. 29 (2), 312 – 318.

Vincent, N. E., Skjellum, A. & Medury, S. (2020). Blockchain architecture: A design that helps CPA firms leverage the technology. International Journal of Accounting Information Systems. 38(September (2020, 100466), 1 – 13.

Wang, Y. & Kogan, A. (2018). Designing confidentiality-preserving Blockchain-based transaction processing systems. *International Journal of Accounting Information Systems*. 30(September 2018), 1 – 18.

Wills, B. & Atlam, H. (2018). Characteristics of blockchain, in Technical Aspects of Blockchain and IOT. *Advances in Computers*, 115 ,1-39. doi: 10.1016/BS.ADCOM.2018.10.006.

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.

Xu, M., Chen, X. & Kou, G. (2019). A systematic review of blockchain. *Fin. Innov*. 5 (1).

Yermack, D. (2017). Corporate governance and blockchains. *Eur. Finan. Rev*. 21 (1), 7 – 31.

Yu, T., Lin, Z. & Tang, Q. (2018). Blockchain: The introduction and its application in financial accounting. *J. Corpor. Account. Fin*. 29 (4), 37 – 47.

Zare Bahnamiri, M. J. , Maleki, M. H. , Hasankhani, F. & Ramsheh, M. (2023). A Framework for Identifying and Analyzing Key Drivers Affecting Future of Auditing in Iran with a Focus on Blockchain Technology. *Empirical Research in Accounting*, 13(3), 27-56. (in persian)