Chapter 24:

Auditing in the Age of Digital Assets: Challenges and Opportunities in Blockchain and Cryptocurrency

Puteri Nuramirah binti Mohd Huzairin, Wan Nurul Basirah Wan Mohamad Noor

Faculty of Accountancy, UiTM Cawangan Kelantan

basirah66@uitm.edu.my

ABSTRACT

The rapid growth of digital assets, especially cryptocurrencies and blockchain technology, has transformed the financial landscape, creating both challenges and opportunities for auditors. As more organizations begin using blockchain for transactions, auditors need to adapt their methods to ensure compliance, assess risks, and maintain financial transparency. This paper examines the changing role of auditors in auditing digital assets, focusing on key challenges such as the absence of standardized accounting practices, the complexity of audit trails, and cybersecurity concerns. It also explores how blockchain can improve audit efficiency, enhance fraud detection, and strengthen financial reporting. By addressing these issues, this paper aims to provide insights into how auditors can effectively navigate the complexities of digital assets while ensuring financial integrity and compliance with regulatory standards.

Key Words: Auditing, Blockchain, Compliance, Cryptocurrency, Digital Assets

1. INTRODUCTION

The rise of digital assets has significantly transformed financial transactions, and the audit practices are no exception. Since digital assets such as cryptocurrencies operate on decentralized networks, traditional auditing methods may not be sufficient to verify and assess financial transactions (Pravdiuk, Miroshnichenko, Lukanovska, Tkal & Motorniuk, 2024). Blockchain technology, which forms the backbone of most cryptocurrencies, undeniably provides transparency and immutability. However, it also poses new challenges for the auditors. As a result, auditors need to develop expertise in blockchain and digital assets verification to ensure financial accountability and compliance with the evolving regulations (Sheela, Ramesh & Gupta, 2023).

In Malaysia, digital assets are becoming more popular, whereby the Securities Commission Malaysia (SC) has recognized and regulated digital asset exchanges like Luno and Tokenize (SC, 2022). Despite this, the absence of a globally standardized regulatory framework for cryptocurrencies makes the auditing process more complex. According to Deloitte (2021), only 5% of financial institutions worldwide have established clear audit mechanisms for blockchain transactions. Another study highlighted that 76.6% of internal auditors have limited exposure to cryptocurrencies and blockchain technology, which limits their ability to assess the associated risks effectively (Kloch & Little, 2019).

This paper explores the evolving role of auditors in the context of blockchain and cryptocurrency transactions. It discusses the benefits of incorporating these technologies into accounting systems and addresses key challenges for the auditors such as regulatory ambiguity, security risks, and skills gap. By highlighting the benefits and challenges, the paper offers some insights on how auditors can adapt to ensure financial transparency while complying with global standards.

The Changing Roles of Auditors in the Digital Assets Ecosystem

Cryptocurrencies and blockchain technologies have an impact on accounting and audit systems, which means internal audit roles might have to evolve within an ever-changing digitalization period leading to a higher level of complexity. Generally, auditors play an essential role in maintaining the integrity of financial reporting for

businesses. In the context of cryptocurrency transactions, auditors' responsibilities include assessing risk management procedures, internal controls, and financial disclosures related to digital assets (Richard & Simon, 2019). Traditionally, auditors have relied on well-established frameworks and regulatory guidelines to assess financial statements. However, cryptocurrency transactions are decentralized and often anonymous, which makes it difficult and challenging for auditors to track and verify them. Consequently, auditors need to develop specialized skills and use advanced technologies to effectively audit blockchain transactions.

Besides, the decentralised and dispersed nature of transactions has the potential to conceal the trail for suspicious activities, making fraud detection more difficult. As such, the auditors must communicate with the management to develop effective solutions as communication allows for varied perspectives on problem solving.

The role of auditors in digital asset transactions has gained attention in recent years worldwide. For instance, in 2020, the United States Securities and Exchange Commission (SEC) charged Ripple Labs with conducting an unregistered securities offering worth $1.3 billion through XRP tokens. Auditors played a key role in reviewing financial statements of Ripple Labs and identifying any non-compliance with financial regulations (SEC, 2020). In the same vein, the Initial Coin Offerings (ICOs) has become a crucial part of financial auditing in Malaysia, to ensure that digital asset issuers comply with transparency and disclosure requirements (Bank Negara Malaysia, 2022).

With the growing adoption of digital assets, auditors need to employ new methodologies and equip themselves with advanced technologies to adapt to the complexities of blockchain-based transactions. They should understand the basic principles of the construction of the blockchain, the methods of checking transactions, and the idea of distributed registries. By developing expertise in blockchain technologies, auditors can strengthen their role as financial watchdogs in the digital economy.

Opportunities in Blockchain Auditing

Incorporating blockchain and cryptocurrencies have given significant changes through the audit process. Not only that, by applying incorporating blockchain and cryptocurrencies also provides some benefits to the auditors in many ways especially during the audit process. The first benefit of incorporating blockchain and cryptocurrencies is, it would enable the auditors to get real-time access to the audit information (Pravdiuk et al., 2024). This is because all the transactions and all the data were digitised rather than the traditional audits. This will allow the auditors to monitor the financial activities and allow them to conduct a continuous auditing process without need to attend to the client's place. Since blockchain operates on a decentralized ledger, auditors can instantly access transaction records without relying solely on data provided by the clients. Real-time checking enhances transparency and makes financial reporting more reliable (Schmitz & Leoni, 2019). Besides that, real-time access allows auditors to detect discrepancies earlier and implement continuous auditing techniques, which contribute to improving audit efficiency (Kamau & Yavuzaslan, 2023).

Blockchain technology also strengthens fraud detection and improves data integrity. Once financial data is recorded on the blockchain, it cannot be altered or edited, which is useful for forensic auditing. Auditors can rely on these tamper-proof records to investigate potential fraud cases. A study by PwC in 2022 found that organisations using blockchain-based auditing techniques experienced a 30% reduction in financial fraud cases. Not only the risk of undetected fraud or data manipulation is significantly reduced due to the immutability nature of blockchain records, the use of smart contracts (the self-executing contracts with terms written directly into code) can minimize human error by automating the verification process (Liu, Wu & Xu, 2019).

Another major advantage of blockchain in auditing is the automation. AI-powered analytics and blockchain-based audit software help to streamline transaction verification, which reduces the manual efforts involved in traditional auditing. This is because all the recorded transactions and processes ledger were permanent which means that the data cannot be changed by the third party. This will allow the auditors to verify the transactions in the public blockchain easily, which can also reduce the needs of manual confirmation requests. Smart contracts will automatically execute transactions when predefined conditions are met, eliminating the need for third-party verification and ultimately reduce the time used by the auditors in the audit process, which leads to a good time management in the process. (Mahlangu & Moosa, 2023). Some financial institutions have already implemented blockchain technology in their operations. For example, the Hongkong and Shanghai Banking Corporation (HSBC) used blockchain technology to settle foreign exchange trades which cut settlement times from 48 hours to just a few minutes (HSBC, 2021). This demonstrates how blockchain can enhance financial operations by making auditing faster and more reliable.

Blockchain technology also plays an important role in regulatory compliance. Governments and regulators can use blockchain to maintain audit trails, monitor compliance in real-time, and even automate tax reporting. The Estonian government has already integrated blockchain into its national tax and business registration system, which allows authorities to track financial activities in real-time and reduce tax fraud cases (Estonian

Government, 2022). This indicates that blockchain-based auditing could help regulatory bodies to create a more transparent and efficient compliance system if it is widely adopted.

Cross-border auditing is another area where blockchain offers significant benefits. Since blockchain transactions are not limited to a single jurisdiction, auditing digital assets often involves dealing with multiple regulatory frameworks. Blockchain's ability to provide a verifiable and tamper-proof transaction history allows auditors to conduct audits across different countries more effectively. Some countries, like Singapore, have already implemented blockchain-based identity verification systems to enhance Know Your Customer (KYC) and Anti-Money Laundering (AML) compliance (Monetary Authority of Singapore (MAS), 2022).

Finally, blockchain can improve collaboration between auditors, regulators, and financial institutions. The usage of a shared and distributed ledger allows instant and secure data sharing among all parties involved in an audit. This practice ultimately reduces the risk of discrepancies and data manipulation. As blockchain adoption continues to grow, auditors must seize these opportunities by integrating blockchain analytics into their audit methodologies and techniques. By leveraging blockchain's transparency, automation, and fraud prevention capabilities, auditors can enhance financial accountability and improve the overall quality of audits.

Challenges in Auditing Digital Assets

Despite the benefits of blockchain technology discussed above, auditing digital assets comes with several challenges. One of the biggest challenges is the lack of standardized accounting practices for cryptocurrencies. Unlike traditional financial assets, cryptocurrencies do not follow universally accepted accounting frameworks which lead to inconsistencies in financial reporting. The lack of set guidelines for categorizing, identifying, and measuring cryptocurrency complicates the audit process. Auditors often must rely on evolving regulatory guidelines and their own professional judgment when determining the valuation and classification of digital assets (Pravdiuk et al., 2024). Without clear guidelines, financial statements may lack comparability and transparency, resulting in increased risk of misinformation and financial misrepresentation (Hsieh & Brennan, 2022).

Another significant challenge is the complexity of audit trails in blockchain transactions. While blockchain maintains a permanent record of transactions that cannot be altered, the semi-anonymous nature of cryptocurrency addresses makes it difficult for auditors to trace transactions to specific individuals or businesses. Participants are recognized using cryptographic addresses rather than personal information in the blockchain network, thus, the auditors struggle to link these cryptographic addresses to real-world individuals or entities, which leads to difficulty in identifying the parties involved in the transactions (Hsieh & Brennan, 2022). A study by PwC (2021) found that 60% of financial fraud cases involving cryptocurrencies were hard to investigate due to the lack of traceable audit trails. Since blockchain transactions operate without centralized oversight, auditors must develop innovative techniques to verify ownership, transaction accuracy, and compliance with Anti-Money Laundering (AML) regulations (Sheela et al., 2023).

Cybersecurity risks also pose a considerable challenge for auditors dealing with digital assets. Cryptocurrencies and blockchain systems are frequent targets for cyberattacks, including hacking, phishing, and ransomware attacks. The digital currency platform has become a target and has attracted hackers for financial gain. A hacking incident happens when hackers gain unauthorised access to cryptocurrency wallets, resulting in theft or loss of funds (Hsieh & Brennan, 2022). For instance, the Ronin Network hack resulted in a loss of $620 million in cryptocurrency in 2022, raising concerns about the security of digital asset transactions (Elliptic, 2022). Ensuring the security of private keys and preventing unauthorized access to digital wallets are critical responsibilities for organizations handling cryptocurrencies. Auditors must assess cybersecurity controls, conduct vulnerability testing, and recommend robust risk management strategies to mitigate digital asset fraud (Dupuis, Kannan & Gleason, 2021).

Recommendations for Strengthening Digital Asset Auditing

To improve auditing practices in the blockchain ecosystem, regulatory bodies need to create standardized accounting guidelines for cryptocurrencies and digital assets. Having clear financial reporting standards will help make financial statements more consistent, comparable, and transparent (Pravdiuk et al., 2024). Global financial organizations, like the International Financial Reporting Standards (IFRS) Foundation, should take the lead in developing uniform guidelines for reporting on digital assets (Lombardi et al., 2022).

In addition, auditors must commit to continuous learning and technological adaptation to keep up with the rapid developments in blockchain auditing. This transition to more automated processes requires a fundamental shift in the knowledge base of the auditors. Currently, there is low IT proficiency among the external auditors in identifying IT such as cognitive technologies, data analytical tools, smart digital platforms, and the blockchain systems as highlighted by Mahlangu and Moosa (2023). Auditing of smart business transactions requires highly qualified personnel with knowledge of complex analytical procedures, which in turn emphasizes the importance of specialized training in these areas (Tušek, Ježovita & Halar, 2021). They must now cultivate special expertise

in higher-order data analysis, coding, and blockchain to harness these new techniques and understand the output (Schmitz & Leoni, 2019). Professional organizations such as the Malaysian Institute of Accountants (MIA) should provide certification programs and workshops specifically focused on blockchain auditing (MIA, 2023). Collaboration between auditors, blockchain experts, and regulatory authorities will be key in developing strong auditing frameworks that are tailored to digital asset transactions.

Moreover, companies should invest in cybersecurity measures to reduce risks related to digital assets. Setting up best practices to secure cryptocurrency wallets, using multi-signature authentication, and performing regular security audits are essential steps in maintaining the integrity of financial data (Elliptic, 2022). By incorporating blockchain-specific cybersecurity measures, auditors can enhance the reliability and trustworthiness of their audits.

2. CONCLUSION

The integration of blockchain and digital assets into financial systems brings both challenges and opportunities for auditors. Issues like the lack of standardized accounting frameworks, complexities in audit trails, and cybersecurity risks require auditors to adapt their methods and develop new technological skills. However, blockchain also offers advantages such as improved transparency, fraud prevention, and automation in auditing processes. To keep up with these changes, auditors need to focus on continuous professional development, use blockchain analytics tools, and work closely with regulatory bodies. Future research should explore empirical studies on auditors' preparedness and best practices in auditing blockchain-based transactions. By embracing new technologies, auditors can continue to play an important role in ensuring financial accountability and integrity in the digital asset ecosystem.

REFERENCES

Bank Negara Malaysia. (2022). Regulatory framework for digital assets. Retrieved from https://www.bnm.gov.my

Blockchain Technology and Its Potential Impact on the Audit Profession. (n.d.). American Institute of Certified Public Accountants. Retrieved from https://www.aicpa.org

Deloitte. (2021). Global blockchain survey: Financial institutions and the path to adoption. Retrieved from https://www2.deloitte.com

Dupuis, D., Kannan, Y., & Gleason, K. (2021). Bitcoin and beyond: Crypto-asset considerations for auditors. *Journal of Accounting and Finance.*

Elliptic. (2022). The Ronin Network hack: Understanding the $620 million crypto heist. Retrieved from https://www.elliptic.co

Estonian Government. (2022). Blockchain in public services: Enhancing transparency and efficiency. Retrieved from https://www.eesti.ee

HSBC. (2021). HSBC successfully settles forex trades using blockchain technology. Retrieved from https://www.hsbc.com

Hsieh, S. F., & Brennan, G. (2022). Issues, risks, and challenges for auditing crypto asset transactions. *International Journal of Accounting Information Systems, 46*, 100569.

Kamau, C., & Yavuzaslan, A. (2023). CryptoAudit: Nature, requirements and challenges of blockchain transactions audit. *African Journal of Commercial Studies.* https://doi.org/10.59413/ajocs/v3.i2.3

Kloch, R. C., Jr., & Little, S. J. (2019). *Blockchain and internal audit*. Internal Audit Foundation. Retrieved from https://www.crowe.com/-/media/Crowe/LLP/folio-pdf/Blockchain-IA-Research-Report-RISK-19001-003k.pdf?la=en-US&modified=20210806172741&hash=65ACC5A82661D0C9A1B00727F2F9673FFAC3F18A

Liu, M., Wu, K., & Xu, J. J. (2019). How will blockchain technology impact auditing and accounting: Permissionless versus permissioned blockchain. *Current Issues in Auditing, 13(2)*, A19-A29.

Lombardi, R., Villiers, C., Moscariello, N., & Pizzo, M. (2021). The disruption of blockchain in auditing – A systematic literature review and an agenda for future research. *Accounting, Auditing & Accountability Journal.* https://doi.org/10.1108/AAAJ-10-2020-4992

Malaysian Institute of Accountants (MIA). (2023). Blockchain analytics training for auditors. Retrieved from https://www.mia.org.my

Monetary Authority of Singapore (MAS). (2022). Blockchain and digital identity verification in financial transactions. Retrieved from https://www.mas.gov.sg

Pravdiuk, N., Miroshnichenko, M., Lukanovska, I., Tkal, Y., & Motorniuk, U. (2024). The impact of cryptocurrencies and blockchain technologies on the accounting and audit systems. *Economic Affairs, 69(1)*, 107–115. https://doi.org/10.46852/0424-2513.1.2024.13

PwC. (2022). Blockchain and fraud prevention: The impact of distributed ledger technology on financial integrity. Retrieved from https://www.pwc.com

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

Securities Commission Malaysia. (2022). Guidelines on digital asset offerings. Retrieved from https://www.sc.com.my

Tušek, B., Ježovita, A., & Halar, P. (2021). Critical auditors' expertise for blockchain-based business environments. *Zagreb International Review of Economics and Business, 24*, 49-61. https://doi.org/10.2478/zireb-2021-0019