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BLOCKCHAIN AND THE EVOLUTION OF ACCOUNTING PROFESSION: SKILLS, ROLES, AND ETHICAL IMPLICATIONS

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Abstract

The development of blockchain technology has brought significant changes to the practice and profession of accounting, particularly in terms of transparency, security, and efficiency in recording financial transactions. This study aims to analyze how blockchain influences the evolution of the accounting profession in terms of required skills, the professional role of accountants, and emerging ethical implications. The method used is a literature review, examining various scientific sources, including international journals, academic books, and research reports relevant to the topic of blockchain and accounting. The study results indicate that blockchain adoption is driving the transformation of accountants' skills from conventional to technology-based competencies, such as understanding distributed systems, data analysis, and digital-based auditing. Furthermore, the role of accountants is shifting from transaction recorders to strategic analysts and business advisors. Furthermore, blockchain implementation also raises ethical implications, such as issues of data privacy, professional responsibility, and the need for clear regulatory standards. Therefore, the accounting profession is required to proactively adapt to technological developments to maintain relevance and integrity in an increasingly digital business environment.

Keywords: Blockchain, Accounting Profession, Digital Transformation, Accountant Skills, Professional Ethics

INTRODUCTION

The development of digital technology in recent decades has brought significant changes to various sectors, including the accounting profession. This transformation is marked not only by the adoption of computer-based accounting information systems but also by the emergence of disruptive technologies such as blockchain, which have the potential to change the

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fundamental paradigms in financial recording, verification, and reporting. Blockchain, as a distributed ledger technology, offers characteristics of transparency, immutability, and decentralization that fundamentally differ from conventional accounting systems (Hossain et al., 2024a). The emergence of this technology raises fundamental questions about how the accounting profession will evolve to face these changes, particularly in terms of required skills, professional roles, and the accompanying ethical implications.

Traditionally, the accounting profession has focused on the process of recording transactions, preparing financial statements, and providing assurance of the reliability of financial information. However, with blockchain, many of these basic functions have the potential to be automated. This technology enables real-time transaction recording that can be verified by all parties in the network without the need for intermediaries. This implies a reduced need for manual reconciliation processes and increased efficiency in financial reporting (Eyo-Udo et al., 2025). On the other hand, these changes also require accountants to adapt to an increasingly technology-driven work environment, where analytical skills, an understanding of information systems, and digital literacy are becoming increasingly important.

This transformation has consequences for the skills required of accounting professionals (Hasan & Che Hassan, 2025a). Traditional technical skills such as recording and processing financial data are no longer sufficient to face the challenges of the digital age. Accountants are required to have a deeper understanding of blockchain technology, including how the system works, how data is secured, and how blockchain can be integrated with other accounting systems. Furthermore, skills in data analysis, basic programming, and an understanding of related technologies such as artificial intelligence and big data analytics are also significant advantages. Thus, the evolution of the accounting profession involves not only changes in work practices but also in education and training, which must adapt to the needs of the times (Karim et al., 2025).

Technological changes have also redefined the role of accountants within organizations. While previously primarily recorders and reporters of financial information, in the blockchain era, this role has shifted to analysts, strategic advisors, and managers of financial information systems. Accountants are expected to provide added value through data interpretation, informed decision-making, and risk management associated with the use of new technologies (Kardys-Stone & Kasztelnik, 2025). With increasingly transparent and automated systems, the focus of accountants' work is shifting from simply

ensuring data accuracy to ensuring the relevance and quality of information used in decision-making. This suggests that the accounting profession is not disappearing, but rather undergoing a transformation toward a more strategic role.

However, the adoption of blockchain in accounting also poses various challenges, particularly ethical ones. One key issue relates to data privacy and security. While blockchain is known for its high level of security, its transparent nature can pose risks to information confidentiality if not properly managed. Furthermore, the use of smart contracts in blockchain raises questions about responsibility and accountability in the event of errors or misuse. In this context, accountants must have a strong understanding of professional ethics and be able to navigate the dilemmas that arise from the use of new technologies.

Another ethical implication relates to the potential reduction in the workforce due to automation. As more processes can be automated by blockchain systems, there are concerns that the role of humans in accounting will diminish. This poses a challenge for the accounting profession: ensuring that technological transformation focuses not only on efficiency but also on the sustainability of the profession and the well-being of its workforce. Therefore, it is crucial for educational institutions, professional organizations, and regulators to collaborate in developing comprehensive adaptation strategies.

Furthermore, accounting regulations and standards also need to adapt to developments in blockchain technology (Ajayi-Nifise et al., 2024). Currently, many accounting standards do not fully accommodate the unique characteristics of blockchain-based transactions. This can create uncertainty in reporting and auditing, and open up the possibility of differing interpretations. Therefore, collaborative efforts between policymakers, practitioners, and academics are needed to develop a regulatory framework that is relevant and adaptable to technological developments.

In the context of globalization, blockchain adoption also has the potential to create new standards in international accounting practices. With a decentralized and globally accessible system, blockchain enables uniformity in financial recording and reporting. This can increase transparency and trust between entities across borders (Fachruddin et al., 2025). However, on the other hand, differences in technological readiness and regulations between countries can hinder equitable implementation. Therefore, an inclusive and collaborative approach is needed to ensure that blockchain's benefits are widely felt.

Based on this description, it can be concluded that blockchain has significant potential to transform the landscape of the accounting profession. These changes encompass the skills, roles, and ethics that professionals in this field must face. Therefore, research on "Blockchain and the Evolution of the Accounting Profession: Skills, Roles, and Ethical Implications" is crucial. This research is expected to provide a comprehensive understanding of how the accounting profession can adapt to technological developments and identify the challenges and opportunities that arise in this transformation process. Thus, the results of this study can be a meaningful contribution to the development of accounting science and professional practice in the digital era.

RESEARCH METHOD

This research uses a qualitative approach with a literature review method. The aim is to analyze the development of blockchain technology and its implications for the evolution of the accounting profession, particularly in terms of skills, roles, and ethics. The data used in this study are sourced from various scientific literature, including reputable international journals, academic books, research reports, and official publications from accounting professional organizations and technology institutions. The data collection process was carried out systematically by searching academic databases such as Google Scholar, ScienceDirect, and SpringerLink using relevant keywords, including "blockchain in accounting," "accounting profession transformation," and "ethical implications of blockchain." The selected literature was then vetted based on criteria of relevance, source credibility, and publication recency to ensure the quality and validity of the analyzed data.

The data analysis technique in this study employed a descriptive and thematic analysis approach, namely by identifying, categorizing, and interpreting various findings from the collected literature. The researchers mapped the key changes occurring in the accounting profession due to the adoption of blockchain technology, including the transformation of required skills, the shift in the role of accountants from a traditional to a strategic function, and the emergence of new ethical challenges such as data transparency, information security, and professional responsibility. The analysis results are then synthesized to produce a comprehensive understanding of how blockchain is reshaping the landscape of the accounting profession in the digital age. This approach is expected to provide in-depth conceptual contributions and serve as a foundation for further research and policy development.

RESULT AND DISCUSSION

New Technical Skills Required by Accountants (Data Analytics, Blockchain Literacy, IT Governance)

The development of digital technology has fundamentally changed the landscape of the accounting profession, requiring a transformation in the technical skills of accountants (Satjawisate et al., 2025). Amidst increasingly complex digitalization, traditional skills such as recording transactions and preparing financial reports are no longer sufficient to meet the needs of modern organizations. Accountants are now expected to integrate technological understanding with data analysis to produce more valuable and relevant information for decision-making. In this context, skills such as data analytics, blockchain literacy, and an understanding of IT governance are becoming crucial as core competencies for future accountants.

Data analytics skills are becoming a key skill for accountants in the digital age (Imjai et al., 2024). This is due to the increasing volume, variety, and velocity of data generated by an organization's accounting and operational information systems. Accountants no longer serve solely as presenters of historical data, but also as analysts capable of interpreting data to provide strategic insights. By utilizing data analysis techniques, such as data mining, predictive analytics, and data visualization, accountants can identify patterns, trends, and anomalies that were previously difficult to detect using conventional methods. This capability enables accountants to provide significant added value, particularly in financial planning, internal control, and risk management.

Furthermore, the use of data analytics also improves audit quality and the accuracy of financial reporting. In the audit process, for example, accountants can use analytical techniques to examine the entire data population, not just a sample, thereby increasing the reliability of audit results. Furthermore, real-time data analysis enables early detection of potential fraud or errors in transaction recording. Thus, accountants serve not only as supervisors but also as strategic partners capable of providing data-driven recommendations to management (“Developing Accountants for the Future,” n.d.). However, to optimally utilize data analytics, accountants need to master various analytical tools and software, as well as a strong understanding of statistics and programming logic.

In addition to data analytics, literacy in blockchain technology is also an essential skill for accountants. Blockchain, as a distributed record-keeping technology, offers transparency, security, and immutability in transaction

recording. This has the potential to transform the way accounting is conducted, particularly in terms of verifying and recording financial transactions. With blockchain, the recording process can be automated and decentralized, reducing the need for manual reconciliation and increasing operational efficiency. Accountants who understand the concepts and mechanisms of blockchain will be better prepared to face these changes and will be able to leverage the technology to improve the quality of financial reports.

Understanding blockchain also enables accountants to play a role in the development of technology-based accounting systems. For example, in the context of smart contracts, accountants can help design transaction rules that are automatically executed based on certain conditions (Imjai et al., 2025). This opens up new opportunities for accountants to participate in the development of a more transparent and efficient digital financial system. However, the use of blockchain also presents new challenges, such as technical complexity, regulatory issues, and the need for appropriate accounting standards. Therefore, accountants need to continue developing their technological literacy to fully understand the implications of blockchain use, both technically and conceptually.

Furthermore, IT governance skills are becoming increasingly crucial for accountants. IT governance relates to how organizations manage and control the use of information technology to align with business objectives. In this context, accountants play a crucial role in ensuring that the information systems they use produce reliable, accurate information, and comply with applicable standards. An understanding of IT governance frameworks, such as technology-based internal controls, IT risk management, and regulatory compliance, is crucial to support oversight and accountability functions.

IT governance skills also help accountants identify and manage risks associated with the use of information technology. As organizations increase their reliance on digital systems, risks such as data breaches, cyberattacks, and system failures become increasingly significant. Accountants with an understanding of IT governance can contribute to designing and evaluating effective internal control systems to mitigate these risks. Furthermore, accountants can play a role in ensuring that the use of information technology complies with good governance principles, thereby supporting organizational transparency and accountability.

The Role of Professional Institutions in Preparing Accountants for Technological Disruption

The increasingly rapid development of digital technology has brought fundamental changes to various sectors, including the accounting profession. Technological disruption, marked by the advent of automation, artificial intelligence, big data analytics, and blockchain, has significantly transformed the way accountants work (Suhardjo et al., 2023). In this context, professional institutions play a crucial role in ensuring that accountants not only survive but also thrive and remain relevant amidst these changes. Professional institutions no longer merely function as organizations that regulate ethical and practical standards, but also as agents of transformation, encouraging competency development, technological adaptation, and strengthening professional values in the digital era.

One of the primary roles of professional institutions is to establish competency standards that align with current demands. The increasingly complex business environment demands that accountants possess skills beyond financial recording and reporting, but also encompass data analysis skills, an understanding of information systems, and adequate technological literacy (Andriani & Wahyudi, 2024). In this regard, professional institutions play a role in formulating a new competency framework that integrates technical and non-technical aspects. This framework then serves as a reference in education, training, and professional certification, thus producing accountants who are ready to face digital challenges.

Furthermore, professional institutions also play a role in organizing continuing education and training programs. The concept of lifelong learning is becoming increasingly relevant amidst rapid technological change. Accountants are required to continuously update their knowledge and skills to stay ahead of the curve. Professional institutions can facilitate this through various programs such as workshops, seminars, online courses, and additional certifications focused on the latest technology. Through these programs, accountants can understand the application of technologies such as artificial intelligence in auditing, the use of big data for financial analysis, and the implementation of blockchain in accounting systems (Tavares et al., 2023).

The role of professional institutions is also evident in developing ethical standards that adapt to technological developments. Technological disruption brings not only opportunities but also risks, particularly related to data security, privacy, and information integrity (Jackson et al., 2023). Therefore, professional institutions must be able to update their codes of ethics to remain relevant to

current conditions. Accountants are required to understand the ethical implications of technology use, including the responsibility to maintain data confidentiality and ensure the reliability of the systems used. With clear ethical guidelines, accountants can carry out their profession professionally and responsibly amidst the complexities of technology.

Furthermore, professional institutions play a strategic role in bridging collaboration between academia, industry, and government. This collaboration is crucial for creating an ecosystem that supports the development of the accounting profession in the digital age. Through collaboration with educational institutions, professional institutions can ensure that the curriculum taught is relevant to industry needs. Meanwhile, collaboration with the industrial sector enables the exchange of knowledge and best practices in the application of technology. Furthermore, cooperation with the government is necessary to support regulations conducive to the development of the accounting profession in the digital age.

Equally important, professional institutions also play a role in increasing the awareness and mental readiness of accountants in facing change. Technological disruption often raises concerns about job losses due to automation (Grosu et al., 2023). Therefore, professional institutions need to provide an understanding that technology is not a threat, but rather a tool that can increase the efficiency and added value of the accounting profession. Accountants need to be encouraged to develop more strategic roles, such as business advisors, data analysts, and decision-makers. This way, accountants will not only focus on routine tasks but also contribute to creating value for the organization.

In the context of globalization, professional bodies also have a responsibility to ensure that accountants are internationally competitive. Increasingly globally integrated accounting standards and professional practices require accountants to possess internationally recognized competencies. Professional bodies can support this through harmonization of standards, international cooperation, and cross-border certification recognition. This way, accountants can compete in the global marketplace and contribute to the international economy.

Ethical Implications of Blockchain Use in the Accounting Profession

The ethical implications of blockchain use in the accounting profession are becoming increasingly relevant with the growing digital transformation in finance and reporting. Blockchain, as a distributed ledger technology, offers high transparency, security, and traceability in transaction recording (Hossain

et al., 2024b). However, despite these advantages, there are various ethical challenges that accounting professionals must consider to ensure its use aligns with the principles of integrity, objectivity, and professional responsibility.

One of the main ethical implications of blockchain use in accounting relates to data transparency and confidentiality (Hasan & Che Hassan, 2025b). Blockchain allows all transactions to be permanently recorded and accessible to specific parties within the network. This has the potential to increase the transparency of financial reports and reduce data manipulation practices. However, on the other hand, this openness can raise ethical dilemmas regarding the protection of sensitive information. Accountants have an obligation to maintain client confidentiality, so the use of blockchain must be designed in a way that does not violate the principle of confidentiality. The use of technologies such as permissioned blockchain is one solution, but it still requires strict ethical oversight to prevent misuse of data access.

Another implication relates to professional responsibility and accountability. In a blockchain system, transaction recording is automated and immutable, reducing human intervention in the recording process. While this increases efficiency and reduces human error, the question arises as to who is responsible for errors in the system (Egiyi & Onuegbu, n.d.). Does the responsibility lie with the system developer, the user, or the accountant overseeing the process? In this context, accountants are required not only to understand the technical aspects of blockchain but also to ensure that the system they use meets applicable ethical and professional standards. Accountants cannot completely abdicate their responsibilities to technology but must maintain their role as guardians of the integrity of financial information.

Furthermore, the use of blockchain also raises ethical issues related to accountants' independence and objectivity. In an increasingly digitalized environment, accountants are often involved in the development or implementation of blockchain systems for their clients. This can create a conflict of interest, especially if the same accountant is also tasked with auditing the system. This situation has the potential to undermine auditor independence, a fundamental principle of the accounting profession (Al-Okaily et al., 2023). Therefore, a clear separation of roles and the implementation of strict ethical standards are necessary to ensure that accountants maintain their objectivity.

Other ethical implications relate to fairness and access to technology. Blockchain, as a sophisticated technology, requires significant investment, both

in terms of infrastructure and human resources (Fülöp et al., 2023). This can create a gap between large organizations capable of adopting the technology and smaller organizations with limited resources. In this context, accountants face an ethical dilemma regarding how to ensure that the use of technology does not create unfairness or discrimination in access to financial information. Accountants have a crucial role in providing recommendations that consider sustainability and inclusivity, so that blockchain technology can be utilized more equitably.

Furthermore, ethical aspects also arise in relation to security and the potential for misuse of the technology. Although blockchain is known as a secure system, this does not mean it is completely risk-free. Cyberattacks, errors in smart contracts, or misuse of access by internal parties can still occur. In this case, accountants have a responsibility to ensure that the systems used have undergone adequate auditing and testing. Furthermore, accountants must also have the ethical awareness to report potential system risks or weaknesses, even if this could impact the reputation of the organization or a particular party.

The use of smart contracts in blockchain also carries significant ethical implications. Smart contracts enable the automatic execution of agreements without the need for third-party intervention. While this increases efficiency, there is a risk that the code in the smart contract does not fully reflect the intent or agreement of the parties. If errors occur in the code, the consequences can be immediate without any room for negotiation or correction (Jayasuriya & Sims, 2022). In this situation, accountants need to ensure that smart contracts are designed with fairness and regulatory compliance in mind. Accountants must also understand that ethical responsibility extends beyond the final outcome to the design and implementation process of the system.

Another ethical implication relates to the changing role of accountants in the blockchain era. With high automation, some traditional accounting functions, such as transaction recording, may be reduced. This encourages accountants to shift to more strategic roles, such as data analysis and decision-making. However, this change also demands increased competency and a broader understanding of ethics. Accountants are not only required to understand accounting standards, but also the technological, legal, and ethical aspects related to blockchain use. Without adequate understanding, there is a risk that accountants will be unable to identify or address emerging ethical issues (Elmaasrawy et al., 2024).

Furthermore, regulations and ethical standards governing the use of blockchain in accounting are still evolving. This regulatory uncertainty can create ethical dilemmas for accountants in determining appropriate actions. In this context, accountants must adhere to the basic principles of professional ethics, such as integrity, objectivity, professional competence, and due care. Accountants also need to be proactive in keeping abreast of regulatory developments and participating in professional discussions to establish clearer and more relevant standards in line with technological developments.

Ultimately, the ethical implications of blockchain use in the accounting profession should not be viewed as obstacles, but rather as challenges that must be wisely managed. Blockchain technology has significant potential to improve the quality and reliability of financial information, but its success depends heavily on how it is used ethically. Accountants, as guardians of public trust, have a crucial role to play in ensuring that blockchain implementation is not only oriented toward efficiency and innovation, but also upholds the ethical values that underpin the profession. Therefore, the integration of technology and ethics is key to realizing transparent, accountable, and sustainable accounting practices in the digital age.

CONCLUSION

This study concludes that the development of blockchain technology has brought fundamental changes to the accounting profession, in terms of skills, roles, and professional responsibilities. Based on the literature review, blockchain not only functions as a transparent and decentralized transaction recording tool but also drives the transformation of accounting systems toward more real-time, accurate, and automated auditable processes. This has resulted in a shift in the competency requirements of accountants, which are no longer limited to technical skills in financial recording and reporting but also encompass digital literacy, understanding of information systems, data analysis, and the ability to interpret technology-based information. Therefore, accountants are required to continuously adapt to remain relevant amidst increasingly rapid technological disruption.

Furthermore, this study confirms that blockchain implementation raises complex ethical implications for accounting practices. The high transparency and immutable nature of blockchain can enhance accountability, but also raise challenges related to data privacy, information security, and the potential for misuse of the technology. The role of accountants has evolved from mere financial report preparers to strategic advisors capable of bridging the technical

and ethical aspects of technology use. Therefore, an adaptive regulatory framework and ethical standards are needed to anticipate emerging risks and maximize the benefits of blockchain. Overall, this study confirms that the future of the accounting profession is heavily influenced by the ability of individuals and institutions to integrate technological innovation with strong ethical and professional principles.

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