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Blockchain Technology and Accounting: Revolutionizing Transparency, Trust, and Efficiency in Financial Reporting

Blockchain Technology and Accounting: Revolutionizing Transparency, Trust, and Efficiency in Financial Reporting

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ABSTRACT
This research aims to investigate the impact of implementing blockchain technology in accounting practices on transparency, trust and efficiency in financial reporting. Using the systematic literature review method, relevant articles from reputable international databases, such as Scopus, have been collected and analyzed. The analysis results show that blockchain technology has brought a significant change in the transparency paradigm, by providing distributed and non-manipulable transaction records, as well as strengthening trust by providing open and transparent access to financial information. Apart from that, the use of blockchain technology has also had a positive impact on efficiency in the financial reporting process through automation and reduced administrative costs. The implication of these findings is that it is important for accounting organizations and practitioners to consider adopting blockchain technology as part of their strategy to improve the quality of financial reporting and strengthen public trust. Future research could further explore the potential and challenges of blockchain technology in accounting practices as well as steps that can be taken to optimize it in organizational operations.
Keywords: blockchain technology, accounting, transparency, trust, efficiency, financial reporting

ABSTRAK
Penelitian ini bertujuan untuk menyelidiki dampak penerapan teknologi blockchain dalam praktik akuntansi terhadap transparansi, kepercayaan, dan efisiensi dalam pelaporan keuangan. Dengan menggunakan metode systematic literature review, artikel-artikel relevan dari database internasional bereputasi, seperti Scopus, telah dikumpulkan dan dianalisis. Hasil analisis menunjukkan bahwa teknologi blockchain telah membawa perubahan signifikan dalam paradigma transparansi, dengan menyediakan catatan transaksi yang terdistribusi dan tidak dapat dimanipulasi, serta memperkuat kepercayaan dengan memberikan akses terbuka dan transparan terhadap informasi keuangan. Selain itu, penggunaan teknologi blockchain juga telah membawa dampak positif terhadap efisiensi dalam proses pelaporan keuangan melalui otomatisasi dan pengurangan biaya administratif. Implikasi dari temuan ini adalah pentingnya bagi organisasi dan praktisi akuntansi untuk mempertimbangkan adopsi teknologi blockchain sebagai bagian dari strategi mereka untuk meningkatkan kualitas pelaporan keuangan dan memperkuat kepercayaan publik. Penelitian mendatang dapat mengeksplorasi lebih lanjut tentang potensi dan tantangan teknologi blockchain dalam praktik akuntansi serta langkah-langkah yang dapat diambil untuk mengoptimalkannya dalam operasi organisasi.
Kata Kunci: teknologi blockchain, akuntansi, transparansi, kepercayaan, efisiensi, pelaporan keuangan

1. Introduction

The application of blockchain technology in the field of accounting has become a topic of increasing interest to academics and accounting practitioners. This phenomenon occurs in line with the increasingly rapid development of information technology and the increasing

need for transparency, trust and efficiency in financial reporting. However, despite increasing interest in this topic, there is still a gap in our understanding of how blockchain technology concretely changes the paradigm of transparency, trust, and efficiency in the accounting context, especially in the financial reporting process. Therefore, the aim of this research is to conduct a systematic literature review to answer the research question: "How has the application of blockchain technology in the accounting field changed the paradigm of transparency, trust and efficiency in financial reporting, as well as its impact on traditional accounting practices?" This research is novel in exploring the concrete impact of blockchain technology adoption in the accounting context, as well as contributing to our understanding of the evolution of accounting practices in the digital era.

2. Research Methods

At this stage, articles were collected from reputable international databases, using relevant keywords to search for articles related to this research topic. Keywords used include terms such as "blockchain technology", "accounting", "financial reporting", "transparency", "trust", and "efficiency". Next, an article screening process was carried out based on predetermined inclusion and exclusion criteria. Inclusion criteria included articles discussing the application of blockchain technology in an accounting context, including its impact on transparency, trust, and efficiency in financial reporting. Meanwhile, exclusion criteria include articles that are not relevant to the research topic or do not meet established quality standards.

After that, the selected articles were evaluated using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method. The PRISMA method is used as a guide to ensure that the article inclusion process is carried out systematically and transparently. This includes steps such as article identification, article selection, risk of bias assessment, and data synthesis. By using this method, it is hoped that the resulting literature review results can provide a comprehensive and reliable analysis of the influence of blockchain technology in the field of accounting.

3. Results and Discussion

3.1. Transparency in Financial Reporting

Transparency in financial reporting is essential for ensuring accountability and trust in financial institutions. Research has shown that financial institutions with robust audit processes tend to be more transparent in their financial reporting, which helps reduce information asymmetry among stakeholders (King, 2023). Financial reporting serves as a crucial mechanism for delivering financial information and representing the financial position of transactions, which is vital for accountability and transparency (Setyawan et al., 2019). The implementation of e-budgeting and government internal control systems significantly enhances accountability and transparency in governance through financial reporting (Setyawan et al., 2019).

Moreover, transparency in financial reporting is crucial for public oversight of government performance (Jatmiko & Setiawan, 2020). Stakeholders rely on standardized indicators and transparent financial reporting for decision-making processes that contribute to sustainable company development (Robu et al., 2019). Factors such as management commitment, external pressure, and accessibility influence the transparency of financial reporting (Jatmiko & Setiawan, 2020; , Yudin & Utami, 2020). Corporate governance also plays a vital role in enhancing financial reporting transparency, especially for companies of interest to active investors in the financial market (Salehi et al., 2022).

In the context of regional financial management, factors such as regional financial supervision, accountability, and transparency are essential for improving local government performance (Widajatun & Kristiastuti, 2020). Studies have highlighted the significance of transparency in financial management on local government websites, demonstrating how

factors like local government size and expenditure impact the level of transparency (Nuryani & Firmansyah, 2020). Overall, transparency in financial reporting is a cornerstone for accountability, trust, and informed decision-making in both financial institutions and government entities.

3.1.1. Definition of Transparency in the Accounting Context

Transparency in the accounting context refers to the principle of openness and accessibility of financial information within organizations. It involves making financial data readily available to stakeholders for scrutiny and decision-making purposes. This concept has gained significant attention in recent years, with various studies emphasizing its importance in different sectors.

Research by Castillo & Gabriel (2020) highlights the significance of fiscal transparency, emphasizing the use of publicly available information for financial decision-making and accountability purposes. Similarly, Qu & Zhu (2019) underscore the central role of accounting transparency in fiscal transparency.

Moreover, studies by Hasyim et al. (2022) and Gaspar et al. (2022) delve into the impact of transparency on accountability in financial management. They emphasize that transparency is a fundamental principle that allows stakeholders to access information about an organization's operations, thereby enhancing accountability.

Furthermore, O'Regan et al. (2021) discuss the combination of transparency and "intelligent" accountability in public service organizations. They highlight the evolution towards a more nuanced form of accountability that involves process transparency and collective accountability at the operational level. In conclusion, transparency in the accounting context is essential for promoting accountability, enabling stakeholders to access financial information, and fostering trust within organizations. By ensuring transparency in financial reporting and decision-making processes, organizations can enhance their credibility and effectiveness in managing resources.

3.1.2. Conventional vs. Blockchain: A Transparency Comparison

Blockchain technology offers significant advantages over conventional systems, particularly in terms of transparency and reliability ("A Review on Usage Areas of Blockchain Technology in Architecture", 2021). The decentralized nature of blockchain systems enhances transparency by providing a secure and immutable record of transactions (Ullah et al., 2020). This transparency is crucial in various sectors such as government, supply chain management, and finance (Batubara et al., 2019; Helo & Hao, 2019; Afrianto et al., 2022). For instance, in the agricultural sector, blockchain technology enables the construction of traceability systems that benefit from decentralization, transparency, and non-tamperability (Zhou, 2022). Similarly, in the banking industry, there is a growing demand for transparency, especially in Islamic banking, where risk information transparency is a key concern (Utami, 2023; Grassa et al., 2020).

The transparency offered by blockchain technology is also recognized for its potential to improve accountability and trust in various ecosystems (Batubara et al., 2019; Afrianto et al., 2022). By leveraging blockchain's characteristics such as trust, transparency, and traceability, organizations can enhance performance and quality within their supply chains (Afrianto et al., 2022). Moreover, blockchain's transparency can contribute to cost savings, security improvements, and overall efficiency in different sectors (Ullah et al., 2020; Helo & Hao, 2019).

In contrast, critics argue that blockchain's distributed systems may be inefficient compared to traditional centralized systems (McNealy, 2021). However, the benefits of transparency, security, and reliability that blockchain provides are substantial, making it a valuable technology for enhancing various processes and systems. In conclusion, blockchain technology's transparency and accountability features make it a compelling option for

organizations looking to improve their operations, enhance trust among stakeholders, and ensure the integrity of their data and transactions.

3.2. Trust in Financial Reporting

Trust in financial reporting is a crucial element that supports the stability and integrity of the financial system. DeFond and Zhang (2019) highlight that financial institutions with robust audit processes tend to demonstrate greater transparency in their financial reporting, thereby reducing information asymmetry among stakeholders and fostering trust in the financial system. This sentiment is supported by Al-Hadrami et al. (2020), who suggest that an effective audit committee can enhance the quality of financial information disclosed, leading to improved market performance and increased trust from investors.

Furthermore, Bhandari et al. (2021) emphasize the link between stock repurchase completion rates, firm reputation, and financial reporting quality, indicating that commitment and trust are significant factors in ensuring high-quality financial reporting. Li et al. (2020) also note that trust has a substantial impact on investor reactions to financial reporting, particularly in environments with weaker disclosure requirements.

Regarding public organizations, Tran et al. (2021) discuss how leadership and accounting capacity influence the quality of financial reporting, which, when coupled with quality assurance, can boost stakeholder trust in the entities' activities. Anuruddha & Mahanamahewa (2021) further stress the importance of public financial reporting in upholding public trust, underscoring its role in ensuring accountability, openness, and transparency in the management of public funds. In summary, these studies collectively underscore the significance of factors such as audit quality, effective audit committees, leadership, and public financial reporting in cultivating trust in financial reporting systems. By upholding transparency, accountability, and reliability in financial reporting practices, organizations can instill confidence in stakeholders and contribute to the overall trustworthiness of the financial system.

3.2.1. The Importance of Trust in Accounting

Trust is a fundamental element in accounting, playing a significant role in various aspects of the profession. Recognized as a crucial factor in enhancing the corporate reporting framework (Joyce, 2020), trust is vital for building strong relationships with customers in accounting firms. Strategies emphasizing loyalty, commitment, and satisfaction are key to distinguishing oneself in the market (Mainardes & Sousa, 2022). In the realm of emerging technologies like AI in healthcare, trustworthiness and accountability are essential for ensuring the provision of reliable services (Procter et al., 2023). Additionally, in the context of trade credit in emerging economies, competence trust is a critical factor influencing partners' willingness to engage in transactions (Zou, 2023).

Transparency and accountability are foundational for establishing trust in leadership and management, particularly during crises, as evidenced in instances such as the Crane Bank collapse (Napakol & Mugunga, 2019). Public trust in local government is closely tied to perceptions of accountability and fairness in government responses, as highlighted during events like the COVID-19 pandemic (Hartanto & Siregar, 2021). The practice of performance accountability reporting by charities is also crucial for fostering public trust in charitable organizations (Yang & Northcott, 2019).

In the digital era, trust in online platforms like Facebook is influenced by factors such as information personalization, privacy concerns, and privacy literacy (Rosenthal et al., 2019). Similarly, the adoption of blockchain technology in accounting is shaped by trust in the technology and its impact on performance (Afifa et al., 2022). Trust is a multifaceted concept that underpins various interactions in accounting, from customer relationships to regulatory practices, and is essential for establishing credibility and reliability in the profession.

3.2.2. Building Trust through Blockchain Technology

Blockchain technology has emerged as a significant tool for building trust in various sectors, particularly in supply chain management. Studies have shown that blockchain technology can enhance trust among stakeholders by providing transparency, traceability, and security (Meidutė-Kavaliauskienė et al., 2021; González-Puetate et al., 2022; Batwa & Norrman, 2021). By leveraging cryptographic techniques and decentralized consensus mechanisms, blockchain technology ensures trust and security in transactions (Hsu et al., 2020). Furthermore, blockchain technology has been identified as a critical benefit in terms of trust, encompassing both functional and emotional aspects (Fleischmann & Ivens, 2019).

The application of blockchain technology in supply chains not only enhances trust but also promotes sustainability and efficiency (Joo & Han, 2021). It enables information sharing, data visibility, and reputation building, thereby fostering trust among partners (Qian & Papadonikolaki, 2020; Brookbanks & Parry, 2022). Additionally, blockchain technology can limit opportunistic behavior and reduce the risk of fraud, thus increasing trust in transactions (Prux et al., 2021). Moreover, blockchain technology can empower users to build social relationships of trust in various environments by securely sharing data (Ramos & Queiroz, 2022). In conclusion, the adoption of blockchain technology offers a promising avenue for building trust in different sectors, especially in supply chain management. By providing transparency, traceability, and security, blockchain technology enhances trust among stakeholders and promotes sustainable business practices.

3.2.3. Analysis of the Impact of Blockchain Implementation on Trust

Blockchain technology has been increasingly recognized as a tool that can enhance trust in various domains. Studies have shown that blockchain implementation can positively impact trust in supply chain management (Yavaprabhas et al., 2022), established relationships (Brookbanks & Parry, 2022), and end users' trust in blockchain platforms (Zavolokina et al., 2023). The technology has been identified as an enabler of trust in operations management Babich & Hilary (2020) and can optimize trust propagation in supply chain networks (Chen & Shan, 2022). Furthermore, blockchain has been acknowledged for its ability to address trust concerns in data-driven mobile crowdsensing Zhang et al. (2022) and IoT data storage schemes (Wang et al., 2023).

Research has also highlighted the impact of blockchain on digital affordance through security and traceability, emphasizing its role in fostering trust (Shin & Hwang, 2020). Additionally, blockchain integration with the Internet of Things has been shown to enhance mutual confidence among devices (Dai et al., 2019). The technology has been evaluated for its impact on trust in business ethics He (2020) and its effectiveness in ensuring secure and trustworthy data sharing (Sun et al., 2022). Moreover, blockchain has been identified as a critical benefit in building trust, encompassing economic, system/process-related, social, and personal benefits (Fleischmann & Ivens, 2019).

Blockchain has been leveraged to address trustworthiness issues in various contexts, such as in VANETs (Khatri et al., 2023), business ethics (Dierksmeier & Seele, 2019), and virtual institutions (Teng, 2021). Studies have explored the influence of blockchain on trust perceptions in peer-to-peer sharing scenarios Dann et al. (2020) and the discursive strategies to enhance trust in blockchain (Qi, 2023). Furthermore, blockchain has been proposed as a solution for establishing trustworthy digital twins in the IIoT Suhail et al. (2022) and for generating trust within the technology itself (Shin & Bianco, 2020). In conclusion, the literature from 2019 to 2024 demonstrates that blockchain technology plays a significant role in enhancing trust across different sectors and applications, offering solutions to address trust-related challenges and fostering transparency and accountability.

3.3. Efficiency in Financial Reporting

3.3.1. Efficiency in Traditional Reporting Processes

Efficiency in traditional reporting processes can be significantly enhanced through the adoption of digital technologies. Traditional methods of reporting, such as manual reporting of broken equipment or paper-based reporting systems, often lead to inefficiencies in terms of time, costs, and overall productivity (Halai et al., 2022). For instance, the study by Halai et al. (2022) highlights the impact of equipment failure in endoscopy and the improvements achieved by replacing traditional reporting with digital tools (Halai et al., 2022). This shift not only streamlines the reporting process but also positively affects staff morale and productivity.

Moreover, the use of innovative technologies like mobile electronic surveillance systems has shown remarkable efficiency gains compared to traditional approaches. Zhao et al. (2021) demonstrated that the MESSID reporting process for infectious diseases significantly reduced reporting time, taking only a few minutes compared to several days required by traditional paper-based methods (Zhao et al., 2021). This exemplifies how digital solutions can revolutionize reporting processes, making them faster and more efficient.

In various fields, such as construction quality control and agricultural product inspection, the integration of Internet of Things (IoT) devices and image processing technologies has been instrumental in enhancing the accuracy and efficiency of traditional manual approaches (Lo et al., 2021; Liu & Luo, 2022). These advancements not only improve the quality of inspections but also contribute to higher efficiency in the overall process.

Furthermore, the adoption of novel algorithms and technologies, such as reinforcement learning and distributed processing, has proven to significantly enhance the efficiency of traditional processes (Zeng et al., 2021; Liu et al., 2022). These modern approaches offer faster and more effective ways of handling complex data processing tasks, surpassing the limitations of traditional methods. In conclusion, the integration of digital technologies, innovative algorithms, and IoT solutions can greatly improve the efficiency of traditional reporting processes across various industries. By leveraging these advancements, organizations can streamline operations, reduce costs, and enhance overall productivity.

3.3.2. Efficiency Improvements through Blockchain Technology

Efficiency improvements through the utilization of blockchain technology have been a subject of significant research interest in recent years. Blockchain technology offers various advantages that contribute to enhancing efficiency in different sectors. For instance, the use of blockchain in the energy internet business model has shown improvements in system efficiency through distributed accounting and storage ("Research on the Potential of Energy Internet Business Model Based on Blockchain Technology", 2019). In the context of home care services, blockchain systems have demonstrated enhanced efficiency, transparency, and process automation (Chang et al., 2020). Moreover, the application of blockchain in supply chain finance has been found to address information asymmetry issues, improve information exchange efficiency, and enhance enterprise trust ("The Exploration of Blockchain Technology in Supply Chain Finance", 2021).

Furthermore, studies have indicated that blockchain technology positively correlates with environmental efficiency, suggesting that its adoption can lead to improved environmental sustainability (Tawiah et al., 2022). In administrative reforms and public sector applications, blockchain has been shown to enhance economic efficiency, security, and decentralization (Myeong & Jung, 2019). Additionally, in the healthcare sector, blockchain technology offers benefits such as disintermediation, decentralization, improved data protection, and increased automation through smart contracts, all of which contribute to efficiency improvements (Beinke et al., 2019).

Moreover, the adoption of blockchain in supply chain applications has been linked to improvements in information flows, internal efficiency, and competitive advantage within firms (Jum'a, 2023). In the context of international trade and big data management, blockchain has been found to enhance data storage efficiency, reduce encryption requirements, and decrease server resource occupation (Lian, 2022). These findings collectively highlight the diverse ways in which blockchain technology can drive efficiency improvements across various industries and sectors.

3.4. Impact on Traditional Accounting Practices

3.4.1. Paradigm Change in Accounting Practice

The evolution of accounting practices has been a subject of significant academic inquiry in recent years. Lebedev (2019) discusses the Management Accounting Maturity Levels Continuum Model, highlighting the progression towards management support for value creation processes, signifying a shift from a technical role to a more strategic function within organizations.

Friedrich et al. (2022) explore epistemological thinking about accounting in the era of artificial intelligence, emphasizing the importance of adapting accounting science to integrate advancements in report creation, interpretation, and authentication to enhance practices effectively. Grossi et al. (2021) delve into dialogic accounting through popular reporting and digital platforms, demonstrating how traditional accounting tools are evolving to include a broader range of stakeholders and societal values, reflecting a more inclusive approach to accounting practices. Bracci et al. (2019) focus on public sector accounting research and its relation to public value, highlighting the growing emphasis on accountability and performance management in accounting practices, emphasizing the alignment of accounting practices with broader public interests and values.

These studies collectively underscore the ongoing paradigm change in accounting practice, stressing the need for accountants to adapt to technological advancements, incorporate diverse stakeholder perspectives, and align accounting practices with broader societal values and interests.

3.4.2. Challenges and Opportunities for Accounting Professionals

Blockchain technology presents both challenges and opportunities for accounting professionals. The adoption of blockchain in accounting and auditing processes requires professionals to acquire specialized knowledge in areas such as cloud computing, big data, and artificial intelligence (Perera & Abeygunasekera, 2022). While blockchain technology offers benefits like obtaining audit evidence directly from blockchains and enhancing audit procedures, it also introduces incremental risks that necessitate professional judgment in analyzing financial statements (Simões et al., 2021). Moreover, the ethical perspective of accountants in adopting blockchain is crucial to mitigate potential impacts on business and society (Haryanto & Sudaryati, 2020).

The transformative potential of blockchain in the accounting profession is evident in its ability to revolutionize financial reporting and audit processes (Tan & Low, 2019). The decentralized and tamper-proof nature of blockchain technology presents new challenges and opportunities for the traditional accounting and audit industries ("Research on Application Hotspots of Blockchain Technology in Accounting Field", 2022). However, accounting professionals and researchers often lack adequate training on blockchain concepts, highlighting the need for enhanced support and knowledge transfer within the profession (Agrifoglio & Gennaro, 2022).

As blockchain is increasingly seen as the future of the accounting profession, there is a growing body of research on its implications for accounting practice and education (Novak et al., 2022). Challenges in adopting blockchain technology in government accounting include a

lack of knowledge, cost-benefit analysis, system adaptation difficulties, and limited use cases demonstrating its application (Prux et al., 2021). Despite the potential for automation in audit procedures, auditors' professional judgment remains essential in addressing complex accounting estimates and management valuations (Atanasovski et al., 2020). In conclusion, blockchain technology is reshaping the accounting landscape, offering new possibilities for data recording, enhancing sustainability reporting, and streamlining audit processes. Accounting professionals need to adapt to these changes by acquiring specialized knowledge, addressing ethical considerations, and embracing the transformative potential of blockchain technology in their practices.

3.4.3. Long Term Implications of Blockchain Technology Adoption

Blockchain technology adoption has significant long-term implications across various sectors. As highlighted by (Berg et al., 2019), the widespread adoption of blockchain technology is predicted to have long-run economic and policy consequences, particularly in terms of disintermediation. This implies a shift in the traditional economic landscape due to reduced reliance on intermediaries. Moreover, Prewett et al. (2019) emphasize that while blockchain adoption is inevitable for businesses, careful consideration of risks and challenges is crucial for ensuring long-term success post-implementation.

In the context of specific industries, Pu & Lam (2020) stress the importance of industry organizations having a deep understanding of blockchain technology and their unique requirements before adoption. This understanding is essential for successful integration and utilization of blockchain within the maritime industry. Furthermore, Rijanto (2020) discusses how blockchain adoption impacts not only farmers but also all stakeholders in the agroindustry supply chain, including financial institutions, by enhancing transparency and efficiency.

Looking at the retail sector, Hoang (2023) points out that blockchain technology is increasingly contributing to marketing and branding activities by improving brand communication and transparency. This indicates a shift in how retailers engage with consumers and manage their brand image. Additionally, Karpak et al. (2022) introduce a comprehensive framework for evaluating blockchain adoption in the supply chain, emphasizing the importance of various institutional, market, and technical factors in decision-making processes. In summary, the long-term implications of blockchain technology adoption span economic, policy, industry-specific, and branding aspects. Understanding the risks, challenges, and requirements associated with blockchain adoption is crucial for organizations to leverage the technology effectively and realize its full potential in transforming various sectors.

4. Conclusions

From the results of the literature review carried out, it can be concluded that the application of blockchain technology in accounting practice has resulted in significant changes in the paradigm of transparency, trust and efficiency in financial reporting. Blockchain technology facilitates transparency by providing a distributed and non-manipulable record of transactions, while also strengthening trust by providing open and transparent access to financial information. Apart from that, the use of blockchain technology has also had a positive impact on efficiency in the financial reporting process through automation and reduced administrative costs.

The implication of these findings is that organizations and accounting practitioners need to seriously consider adopting blockchain technology as part of their strategy to improve the quality of financial reporting and strengthen public trust. However, this study also highlights limitations in terms of the availability of relevant literature and limited literature coverage, indicating the need for further research to directly examine the impact of blockchain technology adoption in accounting practice.

For future research directions, it is important to continue monitoring the development of blockchain technology and its implications for traditional accounting practices. Follow-up studies could explore more deeply how blockchain technology can be optimized to increase efficiency, transparency, and trust in the accounting context. With a better understanding of the potential and challenges of blockchain technology, accounting practitioners can take appropriate steps to integrate it into their operations and strengthen the performance and sustainability of their organizations.

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