

The Role of Technology in The Transformation of Accounting Financial Audit Case Study of Blockchain Implementation in The Audit Process

Bahri Lifaldi^{1*}, Agus Ismaya Hasanudin², Iis Ismawati³

^{1*,2,3}Fakultas Ekonomi dan Bisnis, Universitas Sultan Ageng Tirtayasa, Indonesia

Corresponding author: bahri.lifaldi@gmail.com^{1*}

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Abstract: *with the increasing number of cyber attacks and data security breaches, the protection of financial information is becoming increasingly important. Conventional financial audit systems may not have adequate mechanisms to protect sensitive data from the rapidly evolving digital security threats. The aim of this research is to determine the role of technology, particularly blockchain technology, in transforming the financial audit process in accounting practice, and to understand the impact of implementing blockchain technology in the financial audit process on the efficiency, transparency, and accuracy of financial information. The research method used in this study is a Systematic Literature Review (SLR). The results of this study indicate that the use of blockchain technology in financial audit practice provides an effective solution for improving the integrity, reliability, and quality of financial reports presented by companies.*

Introduction

The use of conventional financial audit systems has long been common practice in the world of accounting. However, as technology advances and the business world develops, these systems begin to show some limitations in responding to contemporary needs and challenges. According to (Sari, 2020) one of the main limitations of the conventional financial audit system is the lack of ability to handle the increasing

complexity of financial transactions. In the modern business environment, financial transactions often involve many parties and involve a variety of complex financial instruments. Conventional systems may struggle to effectively track and verify these types of transactions. Conventional financial audit systems may also face challenges in meeting demands for greater transparency.

In an era where trust and integrity of financial information are becoming increasingly important, stakeholders expect a high level of transparency in financial reporting. However, conventional systems may not be flexible or responsive enough to meet this need for greater transparency. Another challenge faced by conventional financial audit systems is data security risks. With the increasing number of cyber attacks and data security breaches occurring, protecting financial information is becoming increasingly important (Naurah Nahifah Arramadani, 2019) . Conventional financial audit systems may not have adequate mechanisms to protect sensitive data from today's rapidly evolving digital security threats. Blockchain technology has become one of the most significant innovations in recent years, with the potential to change various aspects of our lives, including the fields of finance and accounting.

Basically, blockchain is a system that allows recording digital transactions in a decentralized, secure and transparent manner. This is achieved by storing transaction records in "blocks" that are linked to each other chronologically and encrypted, forming a block chain that cannot be manipulated. One aspect that makes blockchain technology stand out is its security. Built on advanced cryptography, blockchain creates a system that is difficult to manipulate or change, because each block is linked to the previous block and has a clear time stamp. (Marfiana & Kurniasih, 2013) . This means that data stored in blockchain tends to be more secure than conventional centralized systems, where the risk of manipulation or fraud is greater. Apart from security, blockchain also offers high transparency. Because every transaction is recorded openly and distributed across the blockchain network, all parties involved have access to the same transaction records.

Creates a high level of transparency and enables easier auditability, as any changes or additions to data can be tracked directly and openly. The potential of blockchain to change the paradigm in the financial audit process is very promising. By leveraging features such as high security, transparency, and data distribution, blockchain can help improve the reliability and efficiency of financial audits. Auditors can use blockchain to verify transactions quickly and accurately, reducing the risk of errors and fraud. According to (Ratnaningsih & Suaryana, 2014) blockchain can also facilitate automatic recording of transactions, simplify the financial reporting process, and improve overall data integrity. The development of blockchain technology has become an exciting trend in the world of finance and accounting, with many organizations and companies starting to explore its potential applications.

However, while blockchain offers a number of attractive benefits, there are still several challenges that need to be overcome, including the availability of adequate infrastructure, regulatory compliance, and data privacy issues. Blockchain implementation in financial auditing has become a topic of increasing interest in accounting and technology discussions. According to (Natanael et al., 2023) blockchain offers a number of significant benefits in increasing audit efficiency and reliability, allowing auditors to verify transactions more quickly and accurately. One of the main benefits of blockchain implementation is the high level of transparency it offers. By leveraging features such as decentralized data distribution and sophisticated cryptographic systems, blockchain creates an environment where transaction records can be accessed openly and transparently by all parties involved. Apart from transparency, blockchain implementation can also increase audit accuracy.

By leveraging automated and encrypted technology, blockchain allows auditors to verify transactions with lower error rates than traditional methods. This helps reduce the risk of errors and fraud in the audit process, which in turn can increase stakeholder confidence in the audited financial statements. Concrete case studies regarding the implementation of blockchain in audit practice are also an important part of this discussion (Pasyarani, 2023). Through case studies, researchers and practitioners can see how blockchain technology is applied in real-world situations, both at the organizational and industrial levels. These case studies can cover a variety of aspects, from using blockchain to verify financial transactions to automatic tracking and recording of assets and liabilities. By seeing concrete examples of blockchain implementation in audit practice, professionals can gain better insight into the potential and challenges of this technology in improving the audit process.

It is important to remember that implementing blockchain in financial auditing also raises a number of challenges and considerations that need to be carefully considered. For example, it is important to ensure that the blockchain infrastructure used meets the required security and compliance standards, as well as considering the availability of resources and technical capabilities required to manage and maintain the system (Rahmawati & Subardjo, 2023). However, by understanding the potential benefits and challenges of blockchain implementation in financial audits, organizations and practitioners can better prepare themselves to take steps toward a more efficient, accurate, and trustworthy audit future. The challenges faced cover a variety of issues, including complex regulatory aspects, changing accounting standards, and the need for interoperability between different platforms.

Security issues are also a major concern, as blockchain infrastructure must be able to protect sensitive data from security threats and cyber attacks. Culture and paradigm changes in organizations can also be a challenge in adopting this new technology. The process of adapting and integrating blockchain technology into existing audit systems may require a significant investment of time, resources and training for

audit professionals. According to (Natanael et al., 2023) issues of data use and privacy also need to be considered carefully, because blockchain presents new challenges related to managing and using data ethically and in accordance with regulations. Nonetheless, there are significant opportunities offered by blockchain technology in financial auditing. One of them is the potential to increase transparency in the audit process, by allowing all parties involved to access data in real-time and transparently. Blockchain can also increase audit accountability and reliability, by creating an immutable and verifiable transaction trail.

Efficiency advantages are also an attractive opportunity, with the adoption of blockchain technology reducing the time and costs required to conduct audits. An automated and decentralized system allows the audit process to be more efficient and can produce faster and more accurate results. Thus, blockchain technology has the potential to change the financial audit paradigm, improving overall audit quality, reliability and efficiency. Taking these challenges and opportunities into account, organizations and audit practitioners must conduct a thorough evaluation of their readiness and implementation strategies (Sovia, 2022) . This involves a deep understanding of the risks and benefits of blockchain technology, as well as the ability to overcome challenges that may arise during the adoption process. With the right approach, blockchain technology has great potential to change the financial audit landscape, bringing greater innovation and efficiency to existing audit practices. The development of blockchain technology has become a significant global phenomenon, influencing various sectors, including financial audit practices around the world.

In various countries, blockchain has been accepted and adopted in financial audit processes to varying degrees. Developed countries such as the United States, United Kingdom, and Germany have become centers of innovation in applying blockchain technology in financial auditing, with several audit institutions and regulators having begun to integrate blockchain into their practices. On the other hand, there are also countries that are still in the exploration and testing stage of the potential of blockchain technology in financial audits (Suprانتiningrum & Lukas, 2021) . This can be caused by factors such as limited technological infrastructure, regulations that are not yet well established, or government policies that do not yet support the use of blockchain technology in financial audits. However, there is a clear trend towards wider acceptance of blockchain in the financial audit sector, due to its globally recognized benefits in increasing audit transparency, reliability and efficiency.

A comparison between the acceptance and application of blockchain in financial auditing in various countries is important in understanding the global context of the development of this technology. Through this benchmarking, we can identify the factors influencing the level of blockchain adoption in financial auditing, as well as the barriers and opportunities faced by various countries in implementing this technology. It is also important to consider differences in regulatory approaches between countries

regarding the use of blockchain in financial audits (Hanif et al., 2021) . Some countries may have more mature and clear regulatory frameworks, encouraging the adoption of blockchain in financial auditing, while other countries may still be in the process of developing regulatory frameworks that suit the challenges and opportunities offered by blockchain technology. In the context of these global developments, research on the implementation of blockchain in financial auditing must take into account the diversity of acceptance, regulation and practice in different countries.

Trends and future prospects of blockchain technology in financial auditing are an important focus point in discussing the research background. As blockchain technology continues to grow, there are trends indicating that the acceptance and implementation of this technology in financial audit practices will continue to increase in the future. Industry experts and practitioners widely agree that blockchain has great potential to change the financial audit landscape in significant ways (Kurniawati, 2022) . One growing trend is the increasing use of blockchain in financial audit settings. By utilizing blockchain technology, the audit process can be carried out more efficiently, transparently and accurately. This allows auditors to access data in real-time and better secure the audit trail, reducing the risk of manipulation or fraud.

The future prospects of blockchain technology in financial auditing also include the development of more sophisticated and diverse solutions and applications. This includes the use of smart contracts, big data analysis, and artificial intelligence to improve analytical and predictive capabilities in financial audits. With the continued development of blockchain technology and related innovations, financial audit practices will continue to evolve to meet the demands of an increasingly complex and dynamic business environment (Hadi Muhammad, 2023) . However, there are also challenges that must be overcome in dealing with this trend. One of the main challenges is the development of a regulatory framework that is compatible with developments in blockchain technology. Regulators and governments need to update relevant policies and rules to facilitate the adoption of blockchain technology in financial audits, while still ensuring proper security, privacy and compliance. The issue of interoperability between different blockchain systems and integration with existing technological infrastructure is also a concern. Internationally agreed standards and protocols are needed to ensure that blockchain technology can operate effectively and efficiently across complex financial audit systems.

Research Method

The research method used in this study is Systematic Literature Review (SLR), which is a very relevant approach for exploring knowledge related to the role of technology, especially blockchain, in the transformation of financial auditing. SLR is a systematic and structured research method for identifying, evaluating, and synthesizing all the relevant scientific evidence that exists on a particular research topic. The initial

step in SLR is to formulate a clear and well-defined research question. In this case, the focus of the research question will relate to the role of technology, especially blockchain, in the transformation of the financial audit process. Relevant keywords such as “technology”, “financial audit”, and “blockchain” will be used to search for journals and related scientific articles in databases such as PubMed and Google Scholar.

After the research questions have been determined, the next step is to conduct a systematic and comprehensive literature search using the determined keywords. In this search process, researchers will evaluate and select journals and articles that match the previously established inclusion criteria. These inclusion criteria may include topic relevance, methodological quality, and year of publication. After the literature search is complete, the next step is to evaluate the quality and relevance of each article that has been found. Researchers will conduct a critical analysis of the methodology, findings, and conclusions of each article to determine whether they can make a significant contribution to the understanding of the role of technology in the transformation of financial auditing, particularly blockchain implementation.

Next, the researcher will synthesize and analyze the findings from the selected literature. This involves identifying patterns, trends, and general findings from the existing literature, as well as evaluating the concordance and consistency of findings between different studies. Finally, the research will present the findings from this SLR in the form of a systematic and structured scientific report or article. This report will include a summary of the relevant literature, analysis of the findings, and implications for financial audit practice, as well as suggestions for further research. By using the SLR method, this research will be able to present a comprehensive and in-depth review of the role of technology, especially blockchain, in the transformation of financial auditing. This will provide valuable insights for audit practitioners, researchers and other stakeholders in the financial industry to understand the impact of this technology on future financial audit practices.

Result and Discussion

Preferred Reporting Systematic Reviews and Meta-analysis (PRISMA) guidelines and consists of several stages. The initial stage involved searching for articles, and at this stage, the number of articles found in the 2020-2023 period was 15 articles. Then, it continues with the screening stage, where these articles are analyzed further. After the *screening process*, 5 articles were selected to proceed to the next stage. The next stage is article quality evaluation, where each article is checked to ensure its reliability and quality. The results of this evaluation stage were that 5 articles met the requirements and were worthy of inclusion in the final literature review report. This reflects a rigorous and systematic article selection process in accordance with PRISMA guidelines.

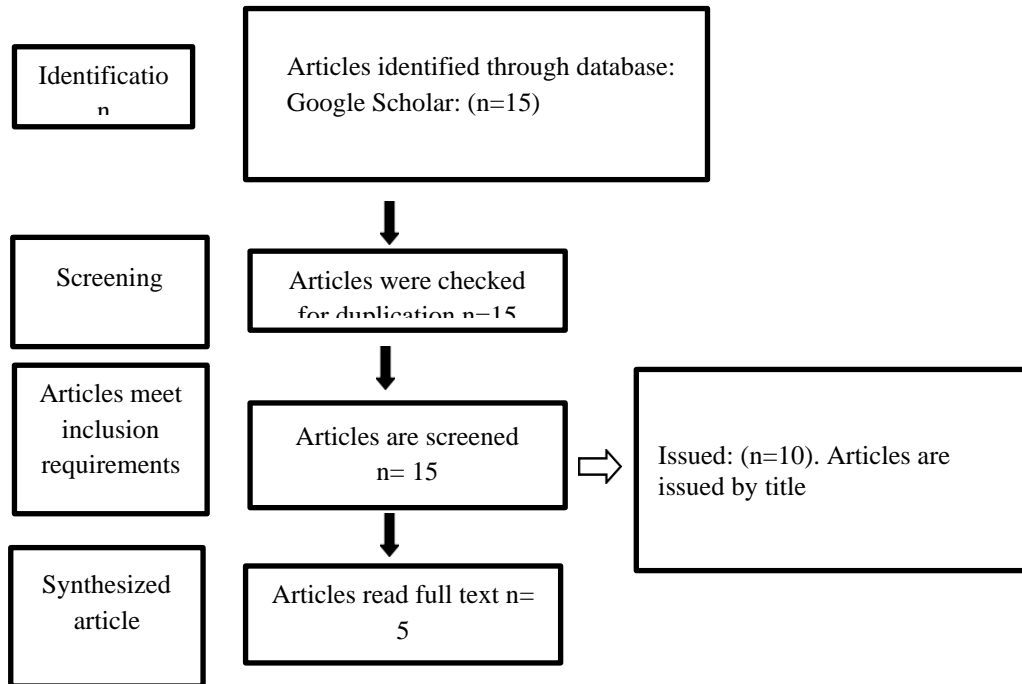


Figure 1. PRISMA diagram

Researchers carry out a decision-making process regarding articles found relating to this research issue, as well as identifying each article contained in each database accessed. Based on these articles, an in-depth review was carried out regarding the Role of Technology in the Transformation of Accounting Financial Auditing. Case Study of Blockchain Implementation in the Audit Process .

Table 1. The Role of Technology in Transforming Accounting Financial Audit Case Study of Blockchain Implementation in the Audit Process

Title and Researchers	Objective	Results
Critical Study of the Impact of Blockchain Technology in the Audit Field in the Era of Industrial Revolution 4.0 (Novisari, 2020)	Delving deeply into how blockchain technology impacts audit practices.	The use of blockchain technology has a significant impact on the audit process, the auditor profession, and audit regulations in companies.
Causal Study of Blockchain Technology in Auditing in the Era	The impact of blockchain technology in audit practice.	The use of blockchain technology has a significant impact on the audit process, the auditor profession, and audit regulations in companies.

of Industrial Revolution 4.0 (Munir et al., 2021)		Blockchain technology has the potential to provide substantial improvements in the scope of audits, optimize existing processes, and create a more efficient environment.
Artificial Intelligence and Blockchain Technology: An Inevitability for Accountants and Auditors (Rahmawati & Subardjo, 2023)	Explores changes in the accounting and auditing professions along with the latest technological advances, and analyzes their impact on the future	Taking into account the significant developments in artificial intelligence and blockchain technology in the accounting and auditing sector, this research highlights how both technologies will improve the effectiveness and efficiency of accounting and auditing processes and practices.
Company Audit Quality During the Covid 19 Pandemic (Literature Study) (Darmawan Suwandi, 2021)	Evaluate the quality of company audits during the COVID-19 pandemic using the literature review method.	The COVID-19 pandemic has significantly impacted various aspects of audits, including costs, actions, business continuity considerations, human resources and remuneration of audit staff. Thus, the impact of the pandemic has substantially affected audit quality.
The Influence of the Use of Regional Financial Accounting Information Systems, the Role of Internal Audit and Human Resource Competence on the Quality of Financial Reports at the Sabang City Navigation District Office (Syawalina, 2020)	Examining the impact of the use of regional financial accounting information systems, the role of internal audit, and human resource competency on the quality of financial reports at the Sabang City Navigation District Service Office, both separately and simultaneously	The use of regional financial accounting information systems, the role of internal audit, and human resource competence together have a positive effect on the quality of financial reports.

Source: Data processed by researchers, 2024

The use of blockchain technology in the financial audit process, process automation is one very prominent aspect. Blockchain technology enables the automation of a number of audit processes that previously required significant human intervention. According to (Adisetya et al., 2022) the process of recording financial transactions and creating proof of transactions can be done automatically through the use of smart contracts in the blockchain network. Thus, intensive manual intervention is no longer required to collect, verify and record transaction data. Automating this process provides several significant benefits. Increases operational efficiency by reducing human involvement in routine tasks that can be automated.

The time required to complete the audit process can be minimized, resulting in more time and resources to focus on more complex and strategic audit activities. According to (Hendriyati Haryani et al., 2023) process automation can also reduce the risk of human error that may occur during the audit process. By eliminating or reducing human involvement in data processing, input and output errors can be minimized, thereby increasing the accuracy and reliability of audit results. Process automation supported by blockchain technology has great potential to change the way financial audit practices work. By reducing human involvement in administrative and routine tasks, auditors can focus more on data analysis, risk evaluation, and deep understanding of the audited entity.

Not only does it increase the efficiency and accuracy of the audit process, but it also allows auditors to provide greater added value to their clients. Blockchain technology offers a powerful solution in terms of data security. With its decentralized nature and strong cryptography, blockchain provides a high level of security for the financial transaction data stored on it. According to (Hadi Muhammad, 2023) every transaction that occurs in the blockchain is recorded permanently in blocks that are connected to each other and encrypted with very strong cryptography. This encryption process means that transaction data cannot be changed or manipulated without the appropriate encryption key. This concept has significant implications in the financial audit process. By using blockchain technology, financial transaction data stored in it becomes safer and protected from attempts at forgery or manipulation.

Auditors can rely on this high level of security to verify the authenticity and integrity of audited transaction data. Thus, blockchain provides a greater level of confidence in the integrity of financial reports and audit results. The high data security offered by blockchain technology also has a positive impact in reducing the risk of identity theft or fraud that may occur in the financial audit process. According to (Bahanan & Al-Utsmani Bondowoso, 2023) with encrypted and decentralized data, blockchain creates a system that is difficult to penetrate and protects transaction data from unauthorized access. This helps reduce the risk of data leaks or misuse of sensitive information during the audit process. The high data security provided by blockchain

technology not only provides protection for financial transaction data, but also increases the level of trust and integrity in the financial audit process.

Provides major benefits to all parties involved, including auditors, audited entities and other stakeholders, by providing a strong foundation for informed decision making and greater transparency in financial reporting. Blockchain technology provides an effective solution in this regard. Every transaction that occurs in the blockchain is recorded permanently and cannot be changed, creating a complete and transparent audit trail for auditors (Nugraha, 2022) . The uniqueness of blockchain is that each data block is connected to each other in a certain time sequence, forming a continuously evolving block chain. Transaction data in a blockchain is available for viewing by all parties involved, and cannot be modified without the consent of the majority of the network. This means that every transaction recorded in the blockchain can be monitored and verified by anyone, including auditors, in real-time.

Blockchain technology provides extraordinary transparency in the financial audit process. Auditors can access a complete and accurate audit trail of all transactions that occur in the blockchain. They can verify the authenticity and integrity of each transaction quickly and efficiently, without needing to rely on data from external sources or risk data manipulation. According to (Diasca et al., 2021) this advantage provides great benefits for auditors, because they can carry out audits more efficiently and accurately. They have direct access to complete and verified transaction data, so they can carry out analysis and evaluation more quickly and precisely. In addition, the presence of a transparent audit trail also increases the level of trust of the parties involved, including the audited entity, investors and other stakeholders, because they can clearly see how the audit process was carried out and the results.

Blockchain technology is able to make a significant contribution in strengthening this compliance. By storing information about each transaction permanently and irreversibly, blockchain creates a complete and unbroken audit trail. Through blockchain, every transaction can be monitored and verified with great accuracy. This allows auditors to track each step in the audit process more efficiently and effectively. They can ensure that all audit procedures are carried out in accordance with applicable standards and regulations, without any gaps or gaps in information. According to (Hidayat et al., 2023) blockchain also allows the implementation of smart contracts, which can be programmed to execute automatic actions based on predetermined conditions. For example, smart contracts can be used to organize audit workflows, validate each audit step, or even automatically assign corrective actions if non-compliance with audit standards is discovered.

With the increased compliance and tracking provided by blockchain technology, financial audit practices become more structured, transparent and trustworthy. Auditors can easily verify compliance with standards and regulations, while audited entities can have greater confidence that the audit process was conducted correctly and

accurately. One important aspect of using blockchain technology in financial audits is the cost efficiency that it can produce (Utomo, 2022) . Although it requires an initial investment that may be quite large, the use of blockchain in the audit process can result in significant cost savings in the long term. The use of blockchain technology can significantly reduce human involvement in the audit process. This is because blockchain allows the automation of many aspects of the audit process, such as transaction verification and report generation.

Operational costs typically associated with the involvement of human auditors can be reduced substantially. According to (Elan Maulani et al., 2023) with the transparency provided by blockchain, the risk of human error can also be minimized. Because every transaction is recorded permanently and cannot be changed, errors or manipulation of the data become more difficult. This reduces the risk of errors that can cause additional costs in the audit process. The use of blockchain can also reduce overhead costs associated with administration and data storage (Suryawijaya, 2023) . Because data is stored decentralized on the blockchain, there is no need for expensive data storage infrastructure. This can reduce storage and administration costs typically associated with conventional data storage systems.

While the initial investment in blockchain technology may be high, its use in the financial audit process can result in significant cost savings in the long run. Reduction of operational costs, risk of error, and overhead costs associated with data administration and storage are some of the key benefits that can be gained from using blockchain technology in financial audit practices. The use of blockchain technology in the financial audit process also brings benefits in terms of better collaboration between the various parties involved (Argani & Taraka, 2020) . In traditional audit practices, there are often challenges related to communication, coordination and information exchange between auditors, companies and regulators. However, with the adoption of blockchain, collaboration between these parties can be significantly improved. Blockchain provides a secure and transparent platform for various parties to collaborate in the audit process.

Transactions recorded in the blockchain can be accessed by all authorized parties, allowing audit information to be provided in real-time and well documented. This reduces communication barriers and improves coordination between auditors, companies and regulators. With better collaboration, the audit process can be carried out more efficiently. According to (Rahmawati & Subardjo, 2023) Auditors can easily access the information they need without having to rely on manual reports or slow communication processes. This speeds up the overall audit process and allows auditors to focus on deeper analysis and evaluation. Better collaboration can also improve the quality of audit results. With easy access to accurate and verified information, auditors can make more informed decisions and provide more valuable recommendations to the company.

This can help companies improve their financial governance and better identify potential risks. The better collaboration enabled by blockchain technology brings huge benefits to the financial audit process. With increased communication, coordination and exchange of information between the various parties involved, the audit process can be carried out more efficiently and produce higher quality audit results. This can help increase public trust in financial reports and strengthen the integrity of financial markets as a whole (Munir et al., 2021) . The application of blockchain technology in the financial audit process also results in increased transparency in financial reporting. Through blockchain, financial information can be presented more transparently and accurately to all stakeholders, including investors, creditors and regulators.

Blockchain allows financial transactions to be automatically recorded and encrypted in immutable blocks, which can be accessed by all authorized parties with appropriate permissions. In this way, the monitoring and audit process becomes more open and can be verified more easily by external parties. According to (Harahap et al., 2017) the reliability and security of blockchain ensures that the data presented in financial reports is an accurate representation of actual transactions. When information is stored in a blockchain, it is impossible to change or falsify that data without being detected by the network. This helps prevent detrimental practices, such as manipulation of financial reports, and increases stakeholder confidence in the integrity of the company.

With a higher level of transparency, financial reporting presented by companies becomes more trustworthy and relevant to stakeholders . Investors and creditors can access accurate and verified financial information to make better investment decisions, while regulators can carry out supervision more efficiently. The application of blockchain technology in the financial audit process brings significant benefits in increasing reporting transparency (Munir et al., 2021) . By providing easier and more accurate access to financial information, blockchain helps strengthen stakeholder trust in companies and financial markets as a whole. The implementation of blockchain technology in the financial audit process has a significant impact on the efficiency, transparency and accuracy of financial information.

In terms of efficiency, blockchain enables the automation of many audit processes that previously required manual intervention. This automation process can reduce the time required to conduct audits, reduce operational costs, and increase auditor productivity. According to (Adisetya et al., 2022) by using smart contracts on the blockchain, financial transactions can be executed automatically based on certain criteria, eliminating the need for human intervention in the process. Furthermore, in terms of transparency, blockchain technology provides a complete and transparent audit trail for auditors. Every transaction recorded in the blockchain is transparent, monitorable, and immutable. This allows auditors to track every transaction accurately

and in real-time, thereby strengthening the integrity of the audit process and increasing stakeholder confidence in financial reports.

In terms of accuracy of financial information, the implementation of blockchain technology brings significant benefits. By using blockchain, financial transaction data is stored in encrypted and decentralized blocks, so the risk of data manipulation or falsification is greatly minimized (Hendriyati Haryani et al., 2023). The data presented in financial reports is an accurate representation of actual transactions, because it is impossible to change or falsify the data without being detected by the blockchain network. Blockchain also helps improve the accuracy of financial information by enabling automatic validation of transactions. Every new transaction entered into the blockchain must be verified by the network with a pre-agreed consensus, thus ensuring that the transaction is valid and legal.

In this way, human errors in recording or interpreting data can be minimized, and the financial information presented in reports becomes more reliable and accurate. The implementation of blockchain technology in the financial audit process has a positive impact on efficiency, transparency and accuracy of financial information. By leveraging features such as automation, transparent audit trails, and automatic validation, blockchain helps improve the integrity of the audit process and strengthen stakeholders' trust in financial reports.

Conclusion

The implementation of blockchain technology in the financial audit process has a positive impact on efficiency, transparency and accuracy of financial information. In terms of efficiency, blockchain enables the automation of many audit processes that previously required manual intervention, thereby reducing the time required and operational costs associated with the audit process. Additionally, the transparency provided by blockchain provides a complete and transparent audit trail for auditors, strengthening the integrity of the audit process and increasing stakeholders' confidence in financial reports.

In terms of accuracy of financial information, blockchain implementation brings significant benefits by ensuring accurate representation of financial transactions that occur. Transaction data is stored securely and decentralized in the blockchain, so the risk of data manipulation or falsification is greatly minimized. The use of blockchain technology in financial audit practices provides an effective solution to improve the integrity, reliability and quality of financial reports presented by companies.

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