International Islamic Multidisciplinary Conference
Main Campus IAI Tazkia
Jl.Ir.H. Djuanda No.78 Sentul City, Citaringgul
https://tazkia.ac.id/international-islamic-multidisciplinary-conference

Blockchain Implementation in Islamic Accounting

Karina Megawangi [1], Najwa Azka Khairani[2] and Muhammad Ikhsan Riyadi[3]

[1]Islamic Accounting Department, Tazkia University, Jl.Ir.H. Djuanda No.78 Sentul City, Citaringgul, Bogor, Indonesia. (Email: karinamegawangi1@gmail.com)
[2]Social Studies Education Department, Tazkia University, Jl.Ir.H. Djuanda No.78 Sentul City, Citaringgul, Bogor, Indonesia.. (Email: azkakhairani17@gmail.com)
[3]Islamic Accounting Department, Tazkia University, Jl.Ir.H. Djuanda No.78 Sentul City, Citaringgul, Bogor, Indonesia. (Email: ikhsanriyadim@gmail.com)

ABSTRACT

This study aims to explore and examine blockchain technology from an Islamic perspective, as well as investigate its potential and utilization in accounting and auditing. Through a qualitative literature review methodology, this study analyzed relevant literature sources such as journals, reference books, and online documentation related to blockchain from an Islamic perspective. The main findings of this study show that blockchain is consistent with the Islamic accounting principles of accountability, fairness, and truthfulness by enabling transparent, secure, and immutable recording of transactions. The decentralized nature of blockchain eliminates the need for intermediaries, increases trust, and reduces costs. However, this research also identifies vulnerabilities such as 51% attacks and confidentiality issues on public blockchains that need to be addressed. Theoretically, this research contributes to the understanding of blockchain's compatibility with Shariah accounting principles, paving the way for the integration of this technology into the Shariah-compliant financial system. Practically, this research provides guidance for auditors, regulators, and technology providers to integrate blockchain into existing business procedures and change the current audit model. The novelty of this research lies in exploring the convergence of blockchain technology and Islamic accounting principles, providing valuable insights on how to harness the power of blockchain to strengthen accountability, fairness, and honesty in financial reporting while remaining compliant with Shariah guidelines. As such, this research makes a significant contribution to the existing literature and industry practice, and offers potential solutions to enhance the integrity and efficiency of the Islamic financial system.

ARTICLE INFO

Keywords:
Blockchain, Islamic Accounting, Accountability, Islamic Finance
JEL Classification:

INTRODUCTION

In the current era, the development of information technology has experienced a rapid and sophisticated increase since the start of the Industrial Revolution 4.0, this is marked by the emergence of the latest technology that can facilitate human life, such as the ease of obtaining

information, making electronic transactions and can generate startup growth such as e-commerce and financial technology. Fintech is a financial technology innovation that is present in the community using the latest model therefore people can enjoy modern, effective, and efficient financial transactions through internet technology. On the other hand, currently, Indonesian people have made the internet a good market share for fintech development (Septianda et al., 2022).

Indonesia with the largest Muslim-majority country sees the development of fintech in

Indonesia cannot be separated from the point of view of Islam. In Bappebti regulation No. 5 of 2019 concerning Technical Provisions for the Implementation of the Crypto Asset Physical Market on the Futures Exchange, it results that the government legalizes cryptocurrency trading, on the other hand, several religious authority institutions such as Muhammadiyah have issued a haram fatwa on the use of crypto money as a medium of exchange or investment (Septianda et al., 2022). Whereas in general blockchain and cryptocurrency are different things even though they are still interrelated. Crypto is used as a digital currency and blockchain as a means of technology and digital data storage that has a relationship with cryptocurrency transactions.

In accounting and auditing, blockchain is closely related to the process. The function of blockchain in accounting is to protect data integrity, share necessary information instantly and can be programmed and controlled automatically. In addition, the blockchain ecosystem will play a role in accounting information systems that will have a powerful impact on transaction verification, storage, and management of a group of computers to prevent unauthorized data changes.

Another advantage of implementing blockchain in accounting is that it will secure the data that has been posted on it, so auditors can trust the integrity of the data and perform various analyses. Moreover, automated and agile assurance can be enabled through "Smart Control", which is a computer program that will operate on the blockchain to automatically control business processes against predefined rules By incorporating other technologies (e.g. IoT) (Pratiwi, 2022) the system can enable real-time tracking and monitoring of physical object activities and automate the recording and measurement of business performance mechanism will facilitate real-time reliable accounting reporting to interested parties (e.g. managers, auditors, and investors).

From this background and previous studies, this research is conducted to explore and examine blockchain from the Islamic perspective as well as the potential and utilization of this technology for accounting and auditing, so that it will provide insight to auditors, regulators, and technology vendors, to facilitate the incorporation of blockchain in existing business procedures, and promote the transformation of the current audit model to the next generation.

LITERATURE REVIEW

Islamic Accounting

Accounting is a science that is now a socially constructed branch of science. This means that the construct of accounting science is strongly influenced by social development. The more advanced the social level of a society, the more advanced the accounting that develops in that

society, and vice versa. Efforts to bring accounting closer to the reality of culture, religion, and spirituality are in line with critical analyses of accounting concerning spirituality and local faith (Mulawarman, 2010).

Islamic accounting, also known as Islamic accounting, is an accounting system based on Islamic principles and values. It focuses on the use of Sharia principles in financial management and accounting and ensures that all transactions and business activities are conducted in a manner that complies with Islamic law (Huda, Zairifli, Ratih, Sa'diyah, & Latifah, 2023). Besides that, accounting is a system that converts transactions into financial information. In addition, Islamic transactions are transactions carried out following Islamic law. Therefore, it can be concluded that Islamic accounting handled in Islamic transactions is carried out by sharia law, namely according to Islamic law Al-Qur'an and Sunnah (Warsono, 2011).

Islamic Accounting Principles

According to Muhammad (2005), there are three main principles in Islamic accounting which is accountability, justice, and truth. These three values have become universal basic principles in Islamic accounting operations. According to Nurhayati and Wasilah (2014), there are some principles of Islamic accounting and financial statements based on the Qur'an and As-sunnah. There are Principles of Accountability, Principle of Justice, Principle of Truth, Prohibition of Usury, Risk Apportionment, Not Considering Money as Potential Capital, Prohibition of Speculative Activities, Contract Conformance, and Business Activities Must Be Shariah-Compliant.

Blockchain

Blockchain is a decentralized database that uses independent nodes to store and retrieve data (Lafountain, 2021). Blockchain technology connects blocks of data sequentially in a distributed ledger. Each block stores various content, including a ‘hash’, which is the unique identifier of the block itself. The hash identifies and links this block to all blocks, both previous and subsequent (Meth, 2019).

Therefore, it can be concluded that Blockchain is a collection of blocks containing transaction data that are linked (chain) and sorted with each other. Blockchain can be thought of as a digital data storage system where each newer block or the most recently linked block, must have hash information (hash = alphanumeric code that represents words, messages, or data) from the previous block. Each block will refer to the previous block and so on, forming a chain (Utomo, 2022).

Blockchain Principles

According to Iansiti and Lakhani (2017), There are 5 basic principles that the blockchain system has. The principles of blockchain are:

1. Distributed Database

   A large replicated ledger is inevitably synonymous with a database. Each participant in the blockchain has access to the entire database and no single participant acts as a data controller. Data from partners can be verified directly without the need for a third-party intermediary.

2. Peer-to-Peer Transmission
   Communication that occurs between peers or members in the blockchain system is done directly without the need for a coordination center or third party.
3. Transparency with Pseudonymity
   Transactions that occur between blockchain addresses are visible to anyone with system access. When changes are made, they are incorporated in another copy that is updated simultaneously. Users on the blockchain have a unique alphanumeric address identifying them. Users can remain anonymous or provide proof of their identity to others.
4. Irreversibility of Records
   Once a transaction is entered into the database, the record cannot be altered. Various computerized algorithms are deployed to ensure that the records in the database are permanent and available to everyone on the network.
5. Computation Logic
   The digital nature of the ledger means that blockchain transactions can be tied to computational logic and in essence programmed. Therefore, users can set up algorithms and rules that automatically trigger transactions between nodes.

How the Blockchain Works

Blockchain moves just like a banknote. Currently, when someone wants to make a transaction, there must be a third party that bridges between the first and second parties. These third parties are banks, governments, and companies engaged in finance. However, in some countries, many people do not trust the system in the bank or government because they are afraid that their money will be stolen by these third parties. With blockchain, the decentralized database built on top of blockchain eliminates the need for centralized institutions and databases. Everyone on the blockchain can see and validate transactions which creates transparency and trust. Trust lies at the core of blockchain; it provides a system of trust between people without the need for intermediaries involved in transactions. Blockchain allows people to transact between each other with something of value (Raharjo, 2022).

According to Sari (2024), the working process of blockchain, despite its complex underlying mechanism, can be generally explained in the following steps:

1. Blockchain software records transactions, which record the movement of physical or digital assets between parties in the network. Transaction details include information such as the parties involved, and the time, place, and amount of assets exchanged.
   a. Who was involved in the transaction?
   b. What happened during the transaction?
   c. When did the transaction occur?
   d. Where did the transaction take place?
   e. Why did the transaction occur?
   f. How many assets were exchanged?
   g. How many preconditions were fulfilled during the transaction?
2. The next step involves the approval of most participants in the network to validate the

transaction. These approval rules are set at the beginning of the network and vary depending on the type of network used.

3. Once consent is achieved, transactions are linked into blocks, which come with a cryptographic hash as a sign of security. This hash serves as a chain that links all blocks together, making it impossible to edit a block without detecting data tampering. This process makes the blocks and chains securely linked.
4. In the final step, the system distributes an updated copy of the central ledger to all participants, ensuring transparency and data security within the entire blockchain network.

Analogously, this process can be imagined as stacking wooden blocks to create a tower, `where each additional block strengthens the entire structure (Sari, 2024).

Blockchain Benefits

According to Raharjo (2022), blockchain has numerous benefits. The benefits of blockchain are:

1. Transparency
   Blockchain-based systems offer increased transparency compared to existing registries and ledgers. Changes to the ledger are visible to everyone on the network, and transactions cannot be changed or deleted once they have been entered into the blockchain. With existing registries, someone can go and change the database and hide the changes from others.
2. The Elimination of The Middle Man
   Most current transactions between people require intermediaries such as banks to provide trust and security for transactions. The advantage of Blockchain technology over existing systems is the ability to remove the middleman allowing transactions to occur directly between people instead of involving a third party. This greatly benefits the billions of people in the world who live in countries where they cannot trust third-party intermediaries due to corrupt governments, high crime rates, poor corporate regulations, manual record keeping or limited legal options for making claims.
3. Decentralization
   The decentralization of blockchain databases is a key component of how the middlemen can be removed while at the same time increasing transparency and trust. Blockchains are maintained on one shared ledger instead of multiple ledgers privately managed by different institutions. People and companies don't have to hand over control to a single institution when using blockchain. This makes collaboration between parties faster and easier to manage. To use the example of a group of banks transferring assets between each other, each bank would maintain its own ledgers and transaction records separately in the current structure and system. Using a blockchain-based ledger, they would only need to reconcile transactions to one shared ledger that all banks can access and agree on the correct record of transactions.
4. Security
   Data entered into the blockchain is immutable, meaning it cannot be changed or altered.

Each block of data on the blockchain can also be traced back to the first 'genesis block'. The immutability of the data entered by the combined blocks connects back to the first block on the blockchain, creating an easy-to-follow audit trail of every transaction on the blockchain.

5. Reduced costs

   Blockchain technology can significantly reduce costs in many industries by eliminating the middlemen involved in the process of recording and transferring assets. Each intermediary or layer involved in the transaction adds to the cost of recording and transferring assets. In the current system, when transferring assets or recording them, there are often multiple ledgers and databases maintained by each organization. Distributed ledgers allow parties to transfer assets on one shared ledger, reducing the cost of maintaining multiple ledgers in each organization.

Maintaining a ledger or database is expensive and often a very manual process with many people involved in checking the integrity of each ledger. Blockchain-based distributed ledgers reduce costs by replacing individual ledgers with one shared ledger, providing real-time settlement and auditing of all parties connected to the network whenever a transaction occurs.

Blockchain Weaknesses

Blockchain technology, while revolutionary in its potential to secure transactions and data, has its challenges. According to (Ndiaye & Konate, 2022), one significant vulnerability lies in the smart contracts deployed on blockchain platforms. These contracts are susceptible to programming errors, bad practices, and lack of correction systems, leading to potential security breaches and financial losses. The complexity of smart contracts and the difficulty in detecting and correcting vulnerabilities in already deployed contracts pose a significant challenge to the overall security of blockchain systems.

(Al-Abbasi & El-Medany, 2019) Highlights significant weaknesses in blockchain technology, particularly focusing on the risks associated with 51% of attacks and confidentiality issues in public blockchains. A 51% attack occurs when a majority of nodes, at least 51%, collude to validate fraudulent data, compromising the blockchain's integrity. This vulnerability is present in both permissioned and permissionless networks, raising concerns about data tampering if a majority of nodes act maliciously. The paper suggests that enhancing validation protocols according to specific business processes could mitigate this risk. Furthermore, the confidentiality of transactions in public blockchains is another major concern. While user identities remain pseudonymous, the transparency of transaction details like dates and amounts can lead to identity exposure through transaction pattern analysis. Proposed solutions include rotating public keys, using permissioned blockchains, and mixing transactions to obscure the true details from potential sniffers.

Additionally, the paper discusses the availability issues in public blockchains, where the network's decentralized nature and the anonymity of its operators can lead to nodes being excluded or compromised, affecting overall network availability. Despite the inherent strength of blockchain's distributed ledger in maintaining data integrity and availability, these

weaknesses highlight the need for robust security measures. Enhancing protocols and integrating decentralized identity management systems, especially in sectors like Bahrain's smart card system or with banks and insurance companies, could significantly improve blockchain's reliability and trustworthiness. Addressing these vulnerabilities is crucial for the broader adoption and integration of blockchain technology in various applications.

RESEARCH METHODOLOGY

This research is literature and the method used in this research is the library research method. According to Mestika, library research is a series of activities related to library data collection methods, reading and recording, and processing library collection materials only without requiring field research (Mestika, 2004).

The descriptive qualitative method is used in this research by collecting information from literature sources and books as the main object. The qualitative method is research conducted through actual information collection and produces data in the form of notes and descriptions (Waruwu, 2023). The literature used to collect data is through previous research such as journals, reference books, and online documentation related to Blockchain from an Islamic perspective.

RESULT AND DISCUSSION

Blockchain and Accounting

Blockchain technology can potentially transform the role of accountants, shifting their focus towards more prominent advisory roles and the verification of ledger transactions (Garanina et al., 2022). This shift is facilitated by the introduction of triple-entry accounting, a system where each transaction results in three entries, including a cryptographic signature that verifies the transaction's validity. This new accounting method enhances the accuracy and security of financial records.

Moreover, blockchain enables real-time recording of transactions, significantly increasing transparency within accounting systems. This immediate recording reduces the chances for earnings management by making all transactions visible and immutable. The enhanced transparency and security provided by blockchain technology compel accountants to adopt more rigorous and transparent accounting practices, thereby reinforcing the integrity of financial reporting.

The Future of Islamic Accounting

In the future, Islamic accounting is expected to play a significant role in the recording of business transactions, both in countries with Muslim populations and around the world. It is based on the key principles of Islamic accounting such as amanah (responsibility or accountability), fairness and truth. These principles ensure that financial records are more transparent and easier to trace to their source. A financial system based on Islamic accounting creates a more ethical financial system and focuses on the balance between material and spiritual matters, as Islamic accounting rejects capitalistic elements often found in conventional

systems, such as riba (which is interest) and gharar (which is excessive uncertainty) (Abdillah, n.d.).

In addition, Islamic accounting is based on Quranic verses, especially Surah Al-Baqarah: 282, which emphasize the importance of recording transactions accurately and fairly. This shows that Islamic accounting pays attention to both spiritual values and worldly aspects. By following these principles, Islamic accounting is expected to enhance the integrity and trustworthiness of financial statements by preventing unethical practices such as fraud and data manipulation.

History shows that Islamic accounting systems existed long before the invention of the two-entry diary system by Lucas Pacioli in Italy. Baitul Maal, the state treasury, used the "Kitabat Al-Amwal" to record the financial transactions of Muslims. With this strong history, Islamic accounting has a solid foundation on which to build.

With more Islamic financial institutions emerging around the world, especially in countries with large Muslim populations, Islamic accounting is expected to continue to grow and may eventually replace the conventional system (Hasanah, 2009). Its features, which emphasize ethics and responsibility, can make businesses more moral and remain viable in the eyes of God and the world.

Considering the promising prospects of Islamic accounting in the future, the implementation of blockchain technology can significantly contribute to strengthening key principles such as trustworthiness (accountability), fairness, and truth. Blockchain is a technology that supports a transparent, secure, and immutable record of transactions, which is consistent with the values promoted by Islamic accounting. Blockchain creates transaction records that are transparent and verifiable by all authorized parties, ensures that all financial information can be clearly traced, and supports the principle of trustworthiness. With a decentralized record-keeping system, blockchain is very difficult to tamper with, preventing fraud and data manipulation, thus upholding the principles of justice and truth.

In addition, blockchain enables real-time recording and verification of transactions, improving operational efficiency and ensuring that all transactions are recorded in a timely manner in accordance with Sharia principles. The technology also uses cryptography to secure data, maintaining the confidentiality and integrity of financial information. In addition, blockchain can ensure that all transactions are Sharia-compliant through the use of smart contracts that automatically reject transactions that involve riba or gharar. Thus, integrating blockchain into Islamic accounting not only increases transparency and security, but also reinforces ethical values, ensures that Islamic accounting remains relevant and adaptive to future technological developments, and meets the needs of an increasingly complex business world.

Implementing Blockchain in Islamic Accounting

Modern science has a fundamental weakness, namely cleaning itself from ethical aspects, normative aspects, and spiritual aspects. As a result, science (including accounting in it) becomes sterile (Abdilah, 2023) The application of blockchain technology can be an interesting

breakthrough in strengthening important aspects of Islamic accounting. In applying blockchain in Islamic accounting, of course, this must be in accordance with the principles of sharia or Islamic law in carrying out its operational activities. These principles prohibit usury (interest), speculation, and investment in business sectors prohibited by Islam. Sharia implementation of blockchain focuses on the principles of fairness, sustainability, and adherence to Islamic values in all aspects of its operations. (Tanjung & Nurlaila, 2023)

The application of blockchain technology is one solution to increase transparency, reliability, and accountability in Islamic financial reporting. The blockchain process starts when a transaction is taking place. (Zulhelmi et al , 2023) When someone makes a transaction, the transaction information will be disseminated to a peer-to-peer (P2P) network consisting of various nodes (individual computers). In a decentralized blockchain system, there is no reliance on a central authority to validate the authenticity of data. Instead, the validation process occurs between nodes to verify the validity of the information. Once a transaction is verified by the nodes and found to be valid, it is merged with other transactions to form a new data block in the main ledger (Tanjung & Nurlaila, 2023) This new block of data is then added to the blockchain, where the information is permanently stored and distributed to all participants in the network. The information in the blockchain can be accessed by anyone who has access to the network. Thus, the transaction is completed. Here's how blockchain works in general:

Image 1. How Blockchain works.
Source: https://www.gicindonesia.com/jurnal/trivia/apa-itu-blockchain-adalah

By using Sharia principles such as Sharia financial accounting standards (SAK) on blockchain technology, financial information can be stored in a decentralized manner in the form of a secure blockchain, where every transaction is recorded and can be verified by all parties involved. This eliminates the need for intermediaries and minimizes the risk of manipulation or human error.

CONCLUSION

Blockchain technology presents a promising opportunity to strengthen the principles and practices of Islamic accounting. The key principles of Islamic accounting - accountability, justice, and truthfulness - align well with the core attributes of blockchain like transparency, immutability, and decentralization.

By leveraging blockchain, Islamic financial institutions can enhance transparency by recording transactions on an immutable distributed ledger accessible to all authorized parties. This enables comprehensive auditing and traceability, upholding the principle of accountability (amanah). The tamper-proof nature of blockchain prevents fraudulent modifications, ensuring justice and truthfulness in financial reporting.

Furthermore, smart contracts on the blockchain can automatically enforce Sharia compliance by rejecting transactions involving riba (interest), gharar (excessive uncertainty), or prohibited business activities. This technological reinforcement of Islamic financial rules could promote wider adoption of ethical banking models.

However, challenges remain in addressing blockchain vulnerabilities like 51% attacks, privacy concerns over public ledgers, and the complexities of smart contract coding. Robust security protocols and permissioned blockchain networks may mitigate some of these risks for Islamic financial entities.

Overall, integrating blockchain with Islamic accounting principles has the potential to create a more transparent, ethical, and Sharia-compliant financial system fit for the digital age. As both domains continue evolving, further research into technical implementations and juristic guidance will be valuable to realize the full benefits of this convergence.

REFERENCES

Abdillah, S. O. S. (n.d.). AKUNTANSI SYARIAH SEBAGAI ORIENTASI DI MASA DEPAN DALAM PERWUJUDAN NILAI AMANAH, KEBENARAN, DAN KEADILAN.

Al-Abbasi, L., & El-Medany, W. (2019). Blockchain Security Architecture: A Review Technology Platform, Security Strength and Weakness.

Garanina, T., Ranta, M., & Dumay, J. (2022). Blockchain in accounting research: current trends and emerging topics. *Accounting, Auditing & Accountability Journal*, *35*. 10.1108/AAAJ-10-2020-4991 The current issue and full text archive of this journal is available on Emerald Insight at: https://www.emerald.com/insight/0951-3574.htm

Hasanah, N. (2009, Januari-Juni). AKUNTANSI SYARIAH DI INDONESIA PROSPEK DAN TANTANGANNYA DI MASA DEPAN. *AlFikra: Jurnal Iliah Keislaman*, *8*.

Huda, M. A., Zairifli, A. I., Ratih, D., Sa'diyah, H., & Latifah, E. (2023). AKUNTANSI SYARIAH SEBAGAI SUMBER INFORMASI BAGI PERUSAHAAN BERBASIS SYARIAH. *ECOTECHNOPRENEUR: JOURNAL ECONOMICS TECHNOLOGY AND ENTREPRENEUR*, *2*(2), 51-59. doi:https://doi.org/10.62668/ecotechnopreneur.v2i02.526

Iansiti, M., & Lakhani, K. (2017). The Truth about Blockchain. *Harvard Business Review*, 1-11. Retrieved from https://hbr.org/2017/01/the-truth-about-blockchain

Lafountain, C. (2021). Blockchain, cryptocurrencies, and non-fungible tokens: What libraries need to know. *Computers in Libraries*, 4-8. Retrieved

from https://www.proquest.com/trade-journals/blockchain-cryptocurrencies-non-fungible-tok ens/docview/2522181602/se-2?accountid=62100

Mestika, Z. (2004). *Metode Penelitian Kepustakaan.* Jakarta: Yayasan Bogor Indonesia.

Meth, M. (2019). *Blockchain in Libraries.* Chicago: ALA TechSource.

Muhammad. (2005). *Manajemen Bank Syariah.* Yogyakarta: UPP AMPYKPN.

Mulawarman, A. (2010). Integrasi Paradigma Akuntansi: Refleksi atas Pendekatan Sosiologi dalam Ilmu Akuntansi. *Jurnal Akuntansi Multiparadigma, 1*(1), 155-171. doi:https://doi.org/10.18202/jamal.2010.04.7086

Ndiaye, M., & Konate, K. (2022). *Security Strengths and Weaknesses of Blockchain Smart Contract System: A Survey, 16.*

Nurhayati, S., & Wasilah. (2014). *Akuntansi Syariah di Indonesia.* Jakarta: Salemba Empat.

Raharjo, B. (2022). *UANG MASA DEPAN : Blockchain, Bitcoin, Cryptocurrencies.* Semarang: Yayasan Prima Agus Teknik.

Sari, R. P. (2024, January 31). *Apa itu Blockchain? Pengertian, Cara Kerja dan Penerapannya*. Retrieved May 15, 2024, from Cloud Computing Indonesia: https://www.cloudcomputing.id/pengetahuan-dasar/blockchain-pengertian-cara

Tanjung, A. F., Wati, P., & Nurlaila. (2023). PENERAPAN TEKNOLOGI BLOCKCHAIN DALAM AKUNTANSI SYARIAH. *Jurnal Masharif al-Syariah: Jurnal Ekonomi dan Perbankan Syariah, 8*(2), 1218-1227. doi:http://dx.doi.org/10.30651/jms.v8i2.19282

Utomo, T. P. (2022). IMPLEMENTASI TEKNOLOGI BLOCKCHAIN DI PERPUSTAKAAN : PELUANG, TANTANGAN DAN HAMBATAN. *Buletin Perpustakaan, 4*(2), 173-200. Retrieved from https://journal.uii.ac.id/Buletin-Perpustakaan/article/view/22232

Warsono, S. (2011). *Akuntansi Transaksi Syariah.* Yogyakarta: Asgard Chapter.

Waruwu, M. (2023). Pendekatan Penelitian Pendidikan: Metode Penelitian Kualitatif, Metode Penelitian Kuantitatif dan Metode Penelitian Kombinasi (Mixed Method). *Jurnal Pendidikan Tambusai, 7*(1), 2896-2910. doi:https://doi.org/10.31004/jptam.v7i1.6187

Zulhelmi, T., Asih, V. S., & Helmiawan, M. A. (2023). Analysis of the Application of Blockchain and Artificial Intelligence to Overcome Accounting Fraud in Islamic Banking. *Indonesian Journal of Economics and Management, 4*(1), 184-193. doi:https://doi.org/10.35313/ijem.v4i1.5695