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# BLOCKCHAIN AUTHENTICATION METHODS AND HADITH AUTHENTICATION METHODS (COMPARATIVE STUDY)

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**Abstract:**

Blockchain is a distribution system consisting of a set of blocks connected to each other using cryptographic technology. Each block consists of a set of information that is recorded in a decentralized manner and does not rely on one party to validate the transaction. Each block stores a reference to the previous block in the Block Chain network, any modifications or changes in one block will be immediately known because the changes are not contained in other blocks, this property is meant by distributed, known as DLT (Distributed Ledger Technology). The blockchain authentication method is a series of processes used to verify the validity of a transaction or information stored in the blockchain network. Similar to the blockchain, the hadith as the second source of law after the Qur'an, when conveyed by the Prophet Muhammad Saw to the companions (sahabah), the companion then distributed it to other companions not only the matan (the content of the hadith) but also the sanad (narrators). The authenticity of the hadith is maintained by the composition of the chain of narrators called sanad and the figure of the narrator who has the capability and is trusted to convey a hadith. This method is then known as decentralized and distributed information, which is the same information owned by many parties, so it is very difficult to make changes unless it changes all parties who receive the information (mutawatir). This research will compare the concepts of blockchain authentication methods and hadith authentication methods with a literature review approach.

**Keywords:** block chain, decentralize ledger, hadith, sanad, takhrij, authentication method

## Introduction

In the rapidly evolving digital era, the need for authentication and data verification systems has become crucial across various fields, particularly in information and communication technology (Aceto et al., 2019). One of the innovations attracting global attention is blockchain technology. Blockchain is known for enabling decentralized, transparent, and tamper-resistant data recording (Alsubhi, 2024; Ichikawa et al., 2017; Rijal & Saranani, 2023). This technology has been adopted across multiple sectors, from finance and logistics to healthcare (Sharma & Joshi, 2021).

Simultaneously, in the realm of Islamic scholarship, hadith authentication methods have been used for centuries to ensure the authenticity and validity of information conveyed by Prophet Muhammad (PBUH). This method involves examining the sanad (chain of narrators) and matan (content of hadith) as essential steps in preserving the purity of Islamic teachings (Jaiyeoba & Osmani, 2024; Rohman et al., 2019).

One of the driving factors behind the emergence of blockchain as an authentication solution is the increasing threat to data security, including the risk of data manipulation and forgery (Mazhar et al., 2023; Tariq et al., 2019; Zamani et al., 2020). In the digital world, data stored centrally is vulnerable to cyber-attacks and manipulation by irresponsible parties. Another factor is the need for systems that can provide transparency and accountability in digital transactions. Blockchain technology addresses this challenge by distributing data across multiple nodes in a network, ensuring that even if one node is compromised, the information in other nodes remains intact and verified (Awad et al., 2022).

Similarly, hadith authentication methods emerged as a response to the threat of fabricated hadiths that appeared after the death of Prophet Muhammad (PBUH). In Islamic history, the rise of individuals or groups spreading false hadiths for personal gain was one of the main factors prompting the development of hadith sciences, including the science of rijal al-hadith, which focuses on the study of hadith narrators (Hasbillah, 2017). Over time, hadith scholars developed rigorous classification and verification systems to ensure that the hadiths reaching the ummah were authentic and trustworthy.

The impact of lacking a robust authentication system can be detrimental. In technology, data manipulation can harm many parties and erode public trust in existing systems (Huq, 2021). In Islam, the spread of false hadiths can lead to deviations in religious practices and damage the foundations of Islamic teachings (Wazir et al., 2018). Therefore, authentication and verification are key factors in maintaining the integrity and truthfulness of information, both in technology and Islamic scholarship.

Blockchain and hadith authentication methods share several fundamental principles. Both systems emphasize the importance of distributed information and multi-layered verification (Krichen, 2023). In blockchain, each transaction recorded in a block is verified by a network of distributed nodes. Similarly, in hadith authentication, each narrator in the chain of sanad is scrutinized for credibility and fairness to ensure the authenticity of the transmitted hadith. If any narrator in the chain is found unreliable, the hadith they narrate may be classified as weak or even fabricated.

The novelty of this research lies in the comparative approach between blockchain authentication methods and hadith authentication methods (Wazid et al., 2021). Although these systems evolved in different contexts, the principles of decentralization and multi-layered verification they apply indicate potential integration concepts in future authentication system development (Bojič Burgos & Pustišek, 2024). This research seeks to examine how the principles of hadith authentication can be adapted to

develop more secure and efficient blockchain systems. Thus, this study not only contributes to technology but also enriches Islamic scholarship in addressing the challenges of the digital age (Abdullah, 2017; Jannah, 2024; Wahid, 2024).

The urgency of this research is increasingly felt with the rising need for systems that can guarantee the authenticity of information across various sectors (Checkland & Holwell, 2007). In the financial world, for example, blockchain technology is used to ensure transparency and security in digital transactions. In education and religion, hadith authentication methods remain a cornerstone in preserving the purity of Islamic teachings. Given the importance of these fields in modern society, research that explores the similarities and differences between these two authentication systems becomes highly relevant and pressing.

The primary goal of this research is to compare the authentication methods used in blockchain technology with those applied in hadith sciences. This study also aims to identify the potential application of hadith authentication principles in blockchain technology development. Thus, this research is expected to provide new insights into the development of more secure, transparent, and efficient authentication systems across various sectors.

The benefits of this research include enhancing the understanding of authentication concepts in two different fields—technology and Islamic scholarship. Additionally, the results of this study can serve as a reference for technology developers in designing more reliable authentication systems and for academics and scholars in further exploring the relevance of hadith authentication methods in addressing the challenges of the digital era. This research is also expected to be a starting point for integrating Islamic scholarship principles into the development of sustainable and high-utility technologies.

## Method

### A. Research Design and Approach

This research adopts a qualitative approach with a descriptive methodology, aiming to provide an in-depth comparison between blockchain authentication methods and hadith authentication methods. The study is conducted at the Institute of Technology and Business Ahmad Dahlan, Jakarta, Indonesia, over a period of six months, from January to June 2024. The focus of the research lies in exploring the structural similarities and differences between blockchain technology and the hadith authentication process.

### B. Scope and Focus of Research

The research encompasses several critical aspects, including component analysis, distribution methods, and authentication strategies applied in both blockchain and hadith sciences. The population in this study consists of literature and scholarly articles related to blockchain technology and hadith sciences, while

the sample is drawn from selected peer-reviewed journals, conference papers, and classical Islamic texts focusing on hadith studies.

### C. Data Collection and Instruments

The primary research instrument used is a document analysis framework that allows for the systematic examination of textual data from both technological and Islamic scholarly sources. This framework facilitates the identification of patterns, themes, and critical insights that bridge the gap between contemporary blockchain systems and traditional hadith verification methodologies.

### D. Data Sources and Population

Data collection involves an extensive review of secondary sources, including books, journal articles, and case studies that discuss blockchain implementation and hadith authentication processes. Additionally, expert interviews with scholars in Islamic studies and blockchain technology are conducted to gain further insights and validate findings.

### E. Research Structure and Analysis

The research design is structured to ensure a comprehensive analysis by segmenting the study into three main areas: blockchain components, distribution methods, and authentication strategies. Each segment is analyzed independently and then cross-referenced to highlight commonalities and distinctions. This comparative analysis provides a holistic understanding of how decentralized verification processes in blockchain mirror the multi-layered authentication processes in hadith sciences.

### F. Interpretation and Validation

The results of the analysis are interpreted through thematic analysis, focusing on recurring concepts such as transparency, immutability, and decentralized governance. These findings are then synthesized to formulate recommendations on how principles from hadith authentication can enhance blockchain technology and vice versa.

By conducting this research, the study aims to contribute not only to the academic discourse but also to practical applications in fields requiring robust authentication systems. The interdisciplinary nature of this research underscores its relevance to both technological advancements and the preservation of Islamic scholarly traditions.

## Results and Discussion

The results of this study highlight significant parallels between blockchain authentication methods and hadith authentication processes. A comprehensive analysis of literature and primary data reveals that both systems emphasize decentralization, distributed verification, and a multi-tiered approach to ensuring the integrity of information. Key findings include a detailed breakdown of blockchain components, such as hash functions, consensus mechanisms, and distributed ledger systems, juxtaposed with hadith components like sanad, matan, and the credibility of narrators. Through document analysis and expert interviews, it was found that blockchain's immutability aligns closely with the preservation methods used in hadith sciences. The study also illustrates how integrating blockchain principles with traditional hadith methodologies can enhance transparency and trust across sectors.

The discussion section delves into the implications of the findings, elaborating on how blockchain and hadith authentication methods address the urgent need for secure, verifiable systems in various domains. This section will explore the potential of cross-disciplinary insights to fortify blockchain technology, drawing from centuries of Islamic scholarship. Furthermore, comparisons will be made to prior studies to highlight the novelty of this approach and its contributions to both fields.

## Conclusion

Distributed ledger technology (DLT) as implemented in blockchain, introduced by Satoshi Nakamoto in 2008 with Bitcoin, shares similarities with the authentication methods practiced by Muslim scholars for over 1400 years, particularly in the validation of hadith. Both systems rely on structured components: in blockchain, the block header and block data resemble the sanad (chain of narrators) and matn (content) in hadith. Similarly, the distribution methods in both ensure authenticity by replicating and sharing data across a network, preventing unilateral alteration. Authentication in blockchain uses hash validation and consensus mechanisms, while hadith validation ensures a continuous, verified chain of narrators. These parallels highlight opportunities for Muslim scholars to adapt hadith authentication methods in fields requiring transparency and accountability, such as finance, particularly in managing Zakat, Waqf, Infaq, and Shadaqah through secure and transparent digital platforms.

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