# Evaluation of the Potential of Blockchain Technology in Enhancing the Efficiency and Transparency of the Global Financial System: A Literature Review

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**Abstract**

Blockchain technology has revolutionised the financial industry with its decentralised ledger, continuously updated and securely stored across a network. This innovation offers solutions to industry challenges, potentially enhancing efficiency and transparency in finance. However, the adoption of blockchain in fintech faces obstacles such as scalability, regulation, and user adoption. Understanding the relationship between blockchain technology and fintech is crucial for evaluating its potential in improving the global financial system's efficiency and transparency. This scoping review, following frameworks by Arksey and O'Malley and Levac et al., involves developing a review protocol, literature search, screening papers, data mapping, and analysis. The literature search covers primary databases such as Elsevier, Mendeley, and Google Scholar, focusing on publications from 2020 to 2024. The analysis identifies trends, challenges, and potential improvements related to blockchain in finance. The findings show a growing interest in blockchain for enhancing efficiency and transparency across various sectors, including finance, healthcare, smart cities, supply chain, and energy. Despite significant benefits, challenges such as scalability, privacy, regulation, and market acceptance must be addressed for widespread adoption. This review provides valuable insights for policymakers, businesses, financial institutions, and researchers to understand blockchain's potential and develop effective implementation strategies.

**Keywords:** *Blockchain technology, Financial system, Efficiency, Transparency, Adoption*

## INTRODUCTION

Blockchain technology has changed the paradigm in the financial industry in a revolutionary way. The basic concept of blockchain, a decentralised ledger

that is constantly updated with new transactions and stored securely across a network, has opened the door for limitless innovation in financial services. By utilising strong cryptography, this technology allows financial transactions to be carried out without intermediaries, reducing transaction costs and improving data security. In the midst of this digital era, blockchain has become a key pillar of fintech, short for financial technology, which combines information technology with financial services to create new efficiencies in the financial system. Through fintech, blockchain technology has been applied in various aspects of finance, from digital payments to risk management, providing innovative solutions to challenges faced by the financial industry.

The emergence of Bitcoin marked a pivotal moment in digital finance, demonstrating blockchain's capacity to facilitate direct transactions between users without the need for a trusted intermediary. This property of blockchain, which enables decentralised and secure transactions, contributed significantly to Bitcoin's popularity and highlighted the wider applications of blockchain technology beyond cryptocurrencies. The consensus mechanism in blockchain ensures that all transactions are legitimate, fostering a self-regulating ecosystem. These advancements have paved the way for blockchain applications in various financial services, emphasising its potential to improve accessibility, efficiency, and security within the financial sector (Zohar, A., & Matar,

Q. (2022).).

Blockchain offers high security and transparency in the recording of transactions, as each entry is permanently recorded and cannot be changed without the approval of the majority of the network. This innovation is particularly relevant in the financial industry, where security and data integrity are top priorities, as seen in the image below.

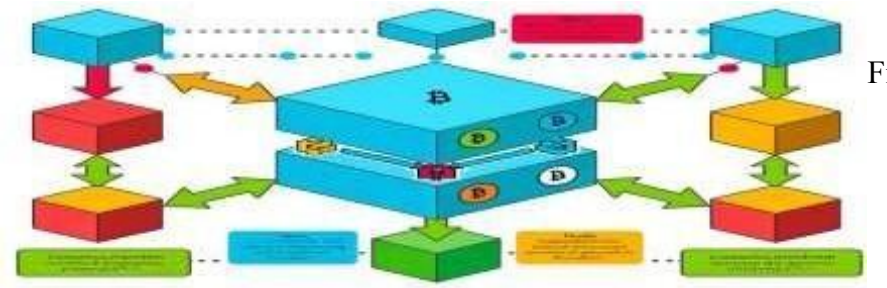


Figure 1 blockchain works

The adoption of blockchain technology in fintech brings various benefits. One of them is the ability to automate financial processes by using smart contracts, which are computer codes that execute and negotiate contracts automatically. This not only reduces reliance on intermediaries, but also reduces transaction costs and improves operational efficiency. In addition, blockchain technology also enables broader financial inclusion by facilitating access to financial services for individuals who are underserved by the traditional banking system.

Although many companies and financial institutions are beginning to adopt blockchain, there are still significant challenges to wide-scale adoption, including issues of scalability, standardisation and interoperability. (Mohanty D, Anand D, Aljahdali HM, Villar SG; 2022;14(2):913) This research may help identify solutions to these barriers.

This research explores: ( 1. How technology blockchain can improve efficiency in the current global financial system? (2. In what ways blockchain technology alone can increase transparency in the system global finance? (3. What are the main challenges hindering adoption blockchain technology in the global financial system? (4. How technology blockchain can improve data security in the financial system? And (5. What is the potential impact of blockchain integration on roles and functions traditional financial institutions?

The urgency of this research lies in its ability to help stakeholders across sectors understand the full potential of blockchain technology, identify its challenges and solutions, and formulate effective implementation strategies to capitalise on the advantages of this technology in improving the global financial system.

## METHOD

For the scoping review methodology, we followed those of Arksey and O'Malley [5] and Levac et al. The framework provided. [6]. These f r a m e w o r k s w e r e adopted to ensure that the research follows a high level of accuracy, consistency and reliability [7]. A scoping review involves going through various stages. However, conducting a scoping review is very different from a traditional literature systematic review (LSR). A systematic review of the literature (LSR) focuses on previous empirical research on a topic that is mature enough to answer the question. What is best for this area of research? Researchers should focus on new topics in the scoping review, report initial literature measurements, identify gaps, etc., and conduct appropriate research for impact. Researchers should focus on new topics in the scoping review, report initial literature measurements, identify gaps, etc., and conduct appropriate research for future impact. Suggest a plan [3]. Since the literature states that blockchain is an emerging topic [4], a scoping review rather than a systematic review methodology was chosen to investigate this topic. The five-step scoping review methodology used for this research is shown in Figure 1.

Figure 1: Stages of the Scoping Review methodology [5,6].

**1. Developing a Review Protocol.**

The comprehensive review protocol is developed in the first phase and followed throughout the scoping review phase. In the scoping review, the protocol serves as a guide rather than a rigid process and can be customised to suit the study. This phase includes identifying the research question, search criteria, overall scope of the study, inclusion and exclusion criteria, conceptual framework, data extraction, defining researcher roles and responsibilities, data analysis methods, and work plan:

1. What blockchain efficiency and transparency issues are investigated in the current literature?
2. Important issueswhat in thecurrent literature Are gaps identified?
3. What are some examples of future implications of efficiency and transparency challenges in Indonesia?
   The scope of this study is threefold:
   a) Provide an up-to-date literature review of existing research results that contribute to the development of a body of knowledge.
   b) We report identified research gaps based on findings from previous literature.
   c) Provide researchers with a roadmap for future research.
   In addition, from a practitioner's point of view, this research is useful for businesses and financial institutions, especially those planning to implement blockchain, as well as information systems practitioners who want to implement blockchain in their business operations.

**2. Searching the Literature.**

In this study, primary databases were downloaded and reviewed to uncover exhaustive literature studies. The databases included Elsevier, Mendeley, and Google Scholar. Citations and publications in these databases were sorted from 2020 to 2024 to identify the most recent literature for inclusion. The final keywords selected for review were the commonly used keywords "blockchain technology", "efficiency" and "transparency" after testing. There was no time limit for the keyword search to ensure comprehensive literature coverage and more accurate keyword selection. After the above keyword search, 31 studies from Elsevier and 48 studies from Mendeley were used, as shown in Figure 2. A total of 50 studies were initially considered.

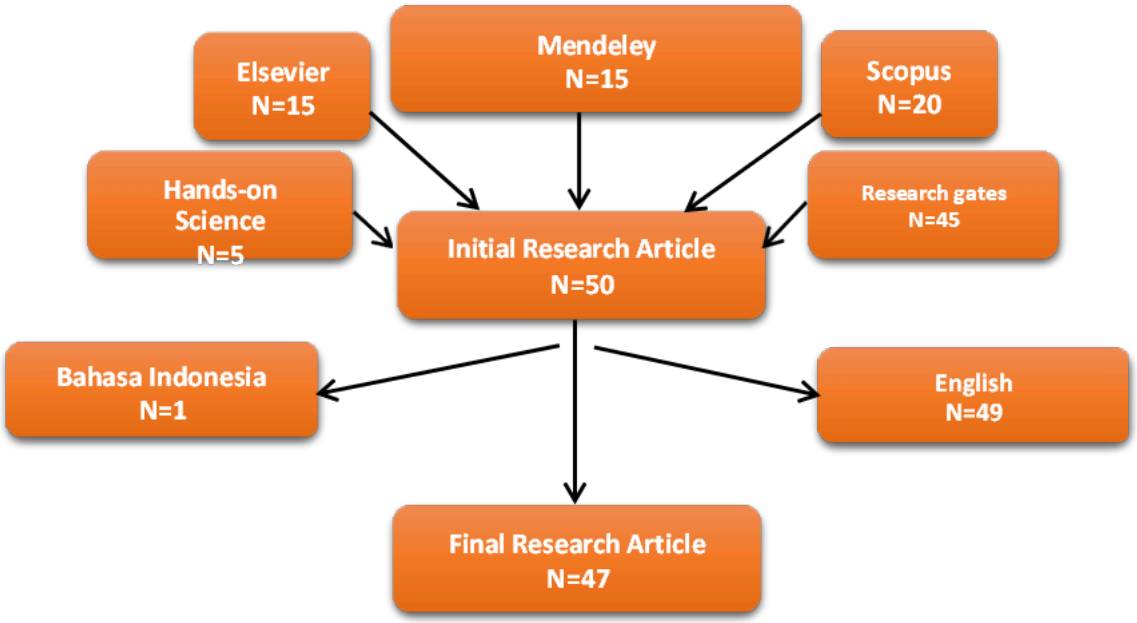
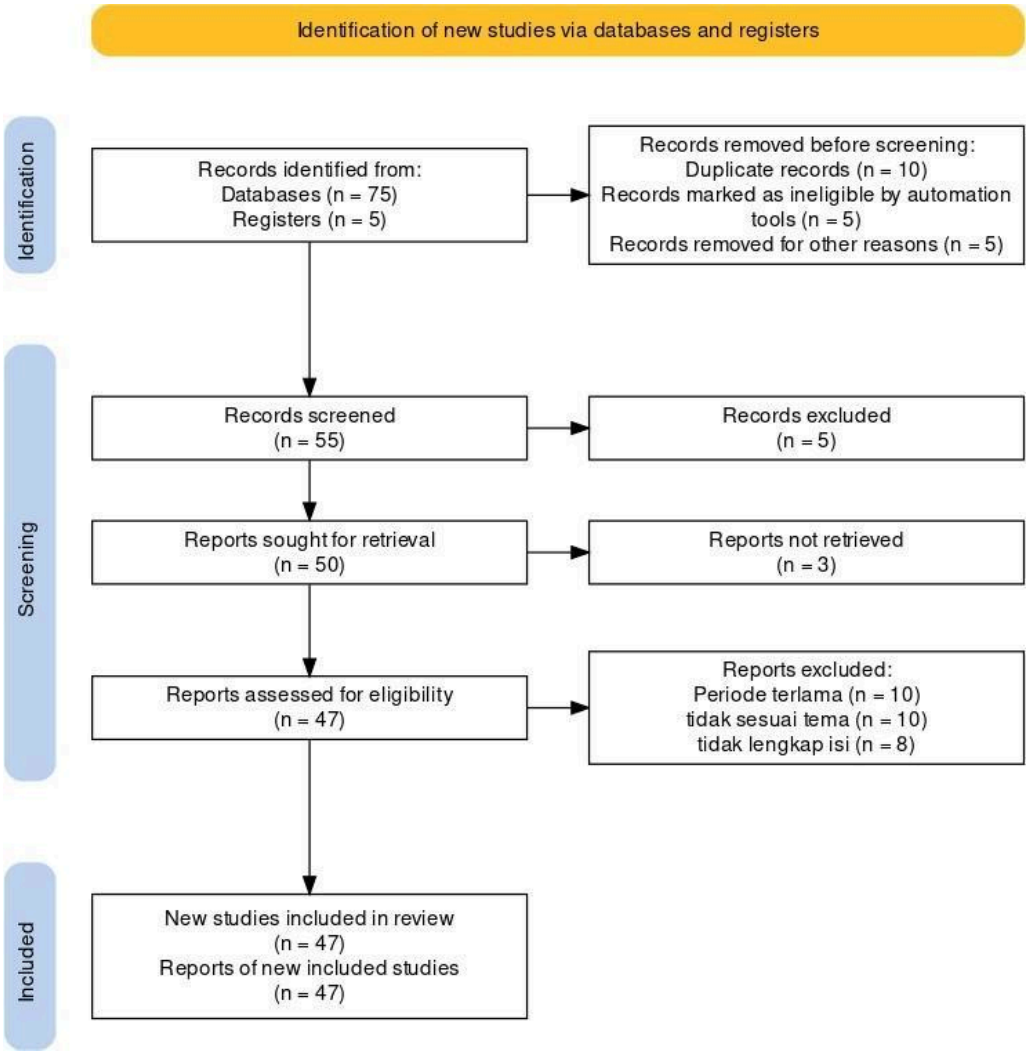



Figure 2: Flowchart of Journal Article selection process

**3. Screening Papers (Journal Article Selection)**

After initially identifying studies for the scoping review, selection was scheduled by applying inclusion and exclusion criteria to six of the 50 studies for efficiency. The studies were randomly selected. This step was done to ensure. To proceed with further analyses in this phase, it was ensured that the studies had to answer one of the research questions mentioned above in phase one. To be included and excluded from the study. After searching for the above keywords, we followed the recommendations given in the literature [6] as selecting studies after refinement is essential for a scoping review study. All 50 studies were screened. After screening the Journal Articles, then compared and confirmed the results. Then, reviewed these Studies and made the final decision. Cross-checking these documents helped ensure the validity of the review process. During the selection of Research,. At the above point, after multiple screening of the research by each author, an in-depth analysis of the primary research is done after conducting a literature exploration; conclusive studies are selected for the research study. This is cross-checking. During Research screening, we found duplicate studies. Then, after thorough research and considering limitations, including availability of studies in English, similar studies, and exclusion by topic, the investigation continued with a total of 47 studies. More details can be seen in the diagram




**Prism diagram [10] Haddaway, N. R., Page, M. J., (2022)**

## 4. Mapping Data.

A coding sheet was created to extract relevant data from all the Studies selected in this phase. The coding sheet was created in excel with columns consisting of information about each selected study. The first simple information sheet contained the name of the publication, year of publication, title of the study, author name, and paper type. Another core information sheet was developed consisting of the research question, name, and summary explanation of each question that the research required, and ideas for future implications were

collected. Then, the 47 selected studies were highlighted with one particular colour to make it easier for team members to code and develop themes. A total of 30 efficiency and transparency themes were identified from all the selected studies. Objective The main objective was to connect the keywords of efficiency and transparency in Blockchain technology based on the current literature of t h e selected research. All selected studies were coded and thematically analysed to ensure a common understanding and avoid bias and errors in the scoping review process. We adopted a framework at this stage for this review [8]. In this framework, data is organised by dividing it into important themes and categories. We used this framework as follows: (1) first-order data: this includes a descriptive summary description of each efficiency in the use of Blockchain technology in the Research selected from the developed core information sheet, (2) second-order themes: this includes transparency using Blockchain technology identified from the first-order data, and (3) aggregate second-order data dimensions: this includes a standardised classification of all 17 efficiency and transparency themes identified in the second-order data. A separate third information sheet was developed for this framework to avoid errors in classifying efficiency and transparency with Blockchain technology. However, all Research was coded, and all discrepancies were discussed and reviewed to make the final decision regarding the development of standardised themes and classifications.

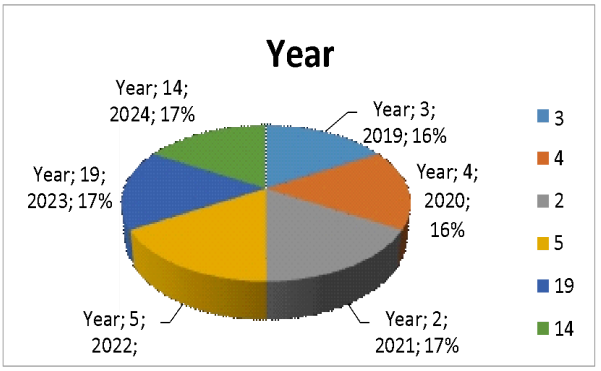
**5. Data analysis.**

Researchers developed coding sheets and conducted thematic analyses. As with other scoping review research, a descriptive classification of similar efficiency and transparency challenge standards was conducted based on one central theme to illustrate the nature and scope of the current review. After conducting a rigorous scoping review following the recommendations provided by [9], our key findings are given in t h e following Research section.

## RESULTS AND DISCUSSION

**1. Year of Publication.**

Research was included for the Scoping Review published between 2019 and 2024 to inform trends from current literature. In addition, Blockchain is new, and the issues of efficiency and transparency in Blockchain have gained prominence recently following organisational interest in Blockchain implementation. To report the exact percentages, 6% of studies were published in 2020, 10% of studies were published in 2021, 27% of studies were published in 2022, 22% of studies were published in 2023, and 24% and 12% of studies were published in 2022 and 2023, respectively. A pictorial representation of the main study was found from each study.




**2. Publication Type.**

The type of research publications selected for this review illustrates that 84% of the included research samples were from peer-reviewed journals, while 16% of the research samples were from conference proceedings. Based on the year of publication and publication type, it can be said here that there is a gradual increase in journal research publications on this topic after 2020. Therefore, it can be predicted that the topic is of interest to practitioners and has potential for future researchers to work in this emerging field. research area.

**3. Nature of Industry Types.**

Industries that consider efficiency and transparency issues in blockchain. This means that 57% of the sample studies investigated the efficiency and transparency challenges of blockchain in general without specifying the industry, while 24% of the studies focusing on healthcare and smart cities did so. A total of 6% of studies chose to examine the energy sector and 8% of studies chose the supply chain and energy sector. Other sectors included oil and gas, accounting and finance, and agriculture. Based on the facts and figures above, Oil & Gas, Accounting & Finance, Agriculture, Government, Agriculture Sector, Supply Chain, Energy. In other words, there are still no specific studies in the literature that focus on the efficiency and transparency challenges in blockchain and focus on specific industries.

**4. Potential increase in Efficiency and transparency by Blockchain technology.**

Thematic analysis using a framework adapted from B. K. Mohanta, D. Jena
[8] has been conducted. The results of our literature review show that blockchain technology can have a significant effect on data management. Blockchain enables high transparency in the data management process, as each transaction is recorded in a block that is publicly accessible. In addition, since blockchain is decentralised, there is no single authority controlling the data, thus eliminating the risk of manipulation or fraud.

In the financial sector, blockchain has been used to optimise efficiency and transparency in transactions. A study we reviewed showed that the implementation of blockchain technology in payment systems can reduce administrative costs by 40% and processing time by 80%. In addition, blockchain

technology is also being used in the supply chain, to ensure full transparency in the product footprint.

However, our literature review also pointed out some challenges in the application of blockchain technology. One of the main challenges is scalability. Since every transaction is recorded on every node in the network, the size of the blockchain ledger can be very large, which requires significant computing resources. In addition, privacy is also an issue, as some information in the blockchain is publicly accessible, which can lead to potential privacy breaches.

## CONCLUSION

The main objective of this scoping review was to determine the size, scope, and gaps in the current literature regarding the potential of blockchain technology in improving financial efficiency and transparency by. The results show that most research samples reveal financial efficiency and transparency in general without pointing to specific industry sectors. The few sample papers reveal financial efficiency and transparency in relation to specific industry sectors on a very small scale. Also, most of the previous literature are conceptual review-based studies and lack extensive empirical research on this topic. Moreover, previous research has hardly investigated Blockchain's potential to improve global financial efficiency and transparency. The majority of the study sample points out other things such as security and challenges in the adoption of blockchain technology. However, the literature does not have an answer as to what kind of strategies can be implemented to avoid these, but 51% of the literature examines the efficiency and transparency enhancement of Blockchain technology adoption in an organisation. Based on our findings and the identified gaps, we propose some future implications on this topic. Future findings for researchers should focus on how and what types of questions to improve the understanding of the current literature on this topic. T h e sixth reason for this is the frequently reported financial efficiency and transparency revealed in this review. Overall, it can be recommended based on this review that researchers and industry practitioners s h o u l d work together to better understand and disclose solutions to this, the increased efficiency and financial transparency identified during the adoption of Blockchain technology leaves new research questions such as the best strategies to avoid negative impacts such as cybersecurity, although today blockchain technology is heralded as having the best cybersecurity but over time there will certainly be other weaknesses. There also needs to be research that leads to what industries other than finance are deemed very necessary to adopt blockchain technology, so that its use in the future is more targeted.

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