[Author name]

[Email address]

**A Literature Review of Blockchain Initiative in Finance**

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## **A Literature Review of Blockchain Initiative in Finance**

### **Background**

Blockchain is a distributed ledger that allows for safe and trustworthy transactions without the involvement of a third party. It has sparked considerable interest in various industries, including government, finance, and banking. Blockchain technology is appropriate for sectors where diverse data storage and transaction types often necessitate using a third party to validate the transactions, resulting in transaction cost and authentication concerns (Osmani et al., 2020). The origins of Blockchain technology may be traced back to Satoshi Nakamoto's renowned article on Bitcoin, which outlines Blockchain technology as a way of direct financial transactions between parties without using a trusted third party (Nakamoto, 2008).

It is a decentralized ledger in which all transactions are safely aggregated in blocks linked to the next in a chain. A new block is appended to the chain when it is added. The blockchain is a specific type of distributed ledger that keeps a log of recorded data in the form of the ledger in which a new transaction or information can be appended at the end, and it comprises a distributed database holding records of all transactions and events. It does not permit changes to previously saved data objects (Osmani et al., 2020).

Blockchain has been categorized by researchers into three types (Alam et al., 2021):

1. Public Blockchain: Anyone may create, amend, and validate a block on a public blockchain, and every node can participate in the consensus process. Every user with comparable resources has equal permission to create a new node. It is sometimes referred to as Permissionless Blockchain or Public Permissionless Blockchain.
2. Private Blockchain: It allows a subset of the network's certified users to make, edit, and generate transactions inside the ledger. Only a restricted number of users can participate in the consensus and fresh block creation processes. It is also known as Permissioned Blockchain or Private Permissioned Blockchain.
3. Hybrid (federated) blockchain: This form of blockchain is a blend of a public and private blockchain that strikes a balance and delivers benefits for both. It lets all users participate in the consensus method, but only specific individuals can construct a new node that has been officially specified. It is sometimes referred to as a Public Permissioned Blockchain.

According to a 2014 World Bank survey, around 18% of residents lack access to financial services owing to a lack of digital identification or the inability to provide evidence of identity. There are several difficulties with the existing financial system, such as excessive transaction costs and the present financial system's financial sustainability. Some of the major difficulties of equitable growth in the financial sector may be overcome by utilizing Blockchain technology to lower transaction costs and times, lower infrastructure investment costs, and facilitate a secure digital identity. As a result, Blockchain technology in the financial industry is a new application. The financial business is massive; there is a huge opportunity to incorporate Blockchain technology in the financial sector (Hassija et al., 2020).

### **Research Questions**

• What is the scope of blockchain deployment in the finance industry?

• What are the instances of existing blockchain technology implementations in the financial sector ?

• What are the obstacles to effective Blockchain deployment in the financial industry ?

### **Methodology**

A thorough review of the existing literature, including pertinent academic-based research databases, was conducted. It entailed analyzing diverse research contributions published in peer-reviewed journals, academic publications, and technical reports to identify associated advantages, opportunities, costs, and risks.

### **Data Analysis:**

The study was qualitative in nature, that is, case studies were examined and selected research articles that met the criteria. The criteria that was used was that the studies had explored the blockchain technology and the finance sector. They were obtained by a keyword search on Google Scholar and the UC library.

These were the findings:

#### **Benefits of Blockchain Adoption in the finance sector**

The new decentralized business model in the financial sector is also a significant enabler of emerging Blockchain applications. Blockchain technology developed from bitcoin and appeared more appropriate in the financial industry than in other areas. The financial sector requires real-time, rapid, automated, dependable solutions for record transparency and security. Blockchain technology can address demands in the banking sector such as cost-effective solutions by automating processes, dependability, record security, trust management while trading with unknown parties, transparency, efficiency, and decreased time (Hassija et al., 2020).

Blockchain is substantially less costly, and the transaction processing time is significantly reduced. Banks have been investigating how to leverage blockchain technology for clearing and settlement, trade finance, and syndicated loans. As a consequence, banks will be able to process payments faster and more precisely while lowering transaction processing costs. According to a global study of banking executives, over half believe blockchain will have a big influence in the future (Hassija et al., 2020).

It is highlighted that blockchain-based systems boost trade players' reliability and accountability. T trade participants must respect the norms outlined in trade papers and be held accountable for their acts. According to important contractual provisions, the transaction logs created by participant interactions are logged into the shared ledger. Transactional data that is examined and confirmed by the collaborative network prevents tampering efforts. The blockchain can also aid in transferring and identifying digital assets, making trade finance procedures easier throughout many handovers (Chang et al., 2019).

Encrypted keys and techniques such as digital signatures can be used to confirm the validity of digitized assets. Blockchain promise may be observed in the cost reduction of trade paperwork exchange. This capacity exemplifies the immutable and auditable characteristics of the blockchain platform in trade finance activities. Through the shared transaction ledger, efforts to process paper-based procedures are decreased, improving the timeliness and efficiency of trade operations (Chang et al., 2019).

#### **Implementation of case studies of Blockchain technology in the finance sector**

Some of the applications of the blockchain technology in the finance sector include:

Tunisia's La Poste Tunisienne has completed the "eDinar Digital Currency" program, making Tunisia the first country to issue a Blockchain-based cryptocurrency (Yli-Huumo et al. 2016)

The Reserve Bank of Australia has launched the "Developments in Financial System Architecture" project. It is experimenting with DLT-based money for Australia's reserve bank. This initiative was at its infant stage as of 2017 (Reserve Bank of Australia, 2017).

The Palestine Monetary Authority (PMA) has launched the "Palestinian e-Currency" program, making cryptocurrencies the primary currency for all payments and financial activities. This results in a safe, transparent, easy-to-use, and corruption-free financial infrastructure, allowing the reserve bank to overcome the constraint that prevents it from issuing its currency.

The People's Bank of China is working on a "Central Bank Digital Currency project," which would employ cryptocurrencies to minimize fraud, forgeries, corruption, and transaction costs, allowing for easier access to financial services. It will make cryptocurrencies more accessible, promote international transactions, and attract more investors, leading to fast economic growth.

#### **Gaps in the financial sector that Blockchain Technology that the Blockchain Technology can be applied in the future**

Loan assessment and risk evaluation: Proper loan appraisal and risk assessment are crucial for any financing agency's performance. These judgments require gathering information from numerous sources and weighing diverse aspects. In the case of human evaluation, the processing time is quite long, and the potential for prejudice and corruption are very significant. These variables have a detrimental impact on the organization's financial health. The Blockchain-based solution may employ interoperability ideas to combine multiple data sources to analyze, and smart contracts can be used to intelligently and automatically make decisions based on established variables. This method significantly reduces processing time and the likelihood of errors or corruption.

Cheque digitization and clearing: Cheques and other forms of payment may be effectively and securely automated utilizing Blockchain technology. On the other hand, most financial institutions have built IT solutions and automated financial transactions and cheque clearance facilities, which has cut the processing time. Nonetheless, these automated solutions need scanning and uploading Magnetic ink character recognition MICR-based cheques and other associated documents vulnerable to cybersecurity risks. A Blockchain-based cheque clearance system can provide an e-cheque facility that can be utilized across many platforms and organizations to give a high degree of security and transparency with rapid, automated transactions (Kouhizadeh, 2021).

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Gateways for payments: Payment gateways are the most important aspect of online transactions, and their security is essential for customer confidence in financial transactions. Blockchain-based payment gateways have the potential to dramatically simplify transaction processing while also providing a high degree of security. Transactions are easily traceable, and any fraudulent attempt is halted (Kabra et al., 2020).

#### **Challenges Facing Application of Blockchain Technology in Finance**

Blockchain technology can potentially improve the financial sector, but its implementation is still in its early stages. It is a sophisticated technology with numerous complexity, making it difficult to govern and construct an officially regulated infrastructure. It requires managers and offices to exercise extreme caution while employing it in the financial industry. The lack of a formal structure for the financial industry impedes blockchain application in the financial sector. Because established enterprises gain significantly from the present market, there is less motivation to use blockchain in the banking industry(Alam et al., 2021).

The pace of transactions on the blockchain is substantially faster than any other available alternative. Still, it moves slower than settlements in other wealthy nations. As a result, large-scale Blockchain implementation worldwide is hampered (Alam et al., 2021).

Interoperability is especially important in the financial sector since diverse industries, nations, and currencies may interact. There is no defined framework, and other firms and organizations are working on and utilizing another platform, which is a huge impediment. This problem must be addressed, but Blockchain technology is still being implemented. It is in the early stages of adoption, and it appears complex that a general framework will emerge and be accepted by everybody (Osmani et al., 2020).

However, within this constraint, interoperability difficulties must be handled for large platforms to interchange and share transactions (Alam et al., 2021).

Standardization: Because there is no worldwide standard/industry standard for Blockchain-based financial system design, interoperability is a problem. There is also an urgent need for a group that can prescribe and standardize it, as the Internet Engineering Task Force did for internet standards (Zhang et al., 2020.).

Talent Acquisition: The banking sector is a big employer of software engineers and other professional IT workers. A workforce specialized in Blockchain-based system development, maintenance, and operation requires numerous skilled personnel who are not readily available, which may impede financial sector deployment (Alam et al., 2021).

Culpability and legal framework: A uniform legal framework is required, as well as liability for individual acts that legitimate Blockchain-based financial transactions and currencies. Despite this, just a few nations have accepted and recognized it.

Scalability: With a large user base and high transaction rates, scalability is a key concern for Blockchain-based systems. Many people work in the financial industry (around half of the living population). A large amount of data is created, necessitating attention to scalability issues and solutions (Alam et al., 2021).

Regulatory risks: Blockchain applications (payments, loans, investing, and so on) are still in their infancy in the financial services industry, making regulation more complex and difficult (Osmani et al., 2020).

### **Conclusions**

The benefits of adopting blockchain technology, both in the general finance sector, that is, the banking sector and financial trading, have been highlighted in all of the studies utilized in this study; they include cost savings on transactions carried out in the respective sectors. The capacity to give openness and accountability in transactional activities.

(Osmani et al., 2020) and (Alam et al., 2021) investigated the implementation issues of blockchain technology, including scalability of implementation and a lack of regulation or standardized format for blockchain implementation in finance. (Chang et al., 2019) conducted research that recommended a paradigm change in the financial trading industry. The benefits reported were the same as in the prior research included in this review. However, (Chang et al. 2019) considered the hurdles as solely motivating reasons rather than issues confronting blockchain deployment in finance.

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