



Exploring Block chain: The Future of Banking Technology

Bibhuti Bhusan Behera

Department of Business Management
Osmania University
Hyderabad

Abstract:

A blockchain is an ordered, decentralized, immutable ledger that allows a recording of transactions in a network. Over the recent years, blockchain has emerged to be a technology that can be applied in various sectors. Blockchain technology is considered as one of the revolutionary technologies that provide several benefits to the banking industry. The banks find blockchain technology is useful to enhance authenticity, security, transparency and risk management. This study aims to assess the possible impacts of blockchain technology in customer, banking services along with its challenges and limitations. Several banks are adapting blockchain technology to provide good service to the customers to improve efficiency of the transactions. The outcome would be included a good explanation of blockchain technology, how it works, future bank implementations and its challenges.

Keywords: Banking industry, blockchain technology, impact, Authenticity, banking services, security.

1. Introduction:

From the early history, banking industry has been acting as an intermediary to conduct financial transactions. They have been providing the trust required for flow of funds. Technology has always had an impact on banking system. With the advancement in information and technology, banks have consistently adapted their working style. Today, banks are connected with the technological networks such as SWIFT for information flow. So, banking industry is fully dependent on technologies to perform their day to day operations. Thus, blockchain could be the significant catalyst to help banking industry. Banks are often criticized as inefficient, expensive, and non-transparent. Fintech and neobanks such as PayPal, Revolut, N26, are disrupting traditional banks with their innovative solution. Blockchain proposes solution for these criticism as well as provides competitive advantage over the Fintech industry. Overtime, the interest in blockchain has grown intensely, and lately central banks and governments have also started exploring its use cases. With many banks around the world exploring the potential of blockchain, the future certainly looks promising. This exploratory paper aims to study the possible impacts of blockchain in banking industry along with its limitations and challenges.

This paper provides a good explanation of blockchain technology, the mechanism of blockchain and the use of blockchain technology in banking industry.

Working mechanism

Blockchain, the name is adapted from the way it works – blocks connected to form a chain. The transaction recorded in a block contains a hash (digital signature), hash of previous block and the ledger of all valid transactions. The hash links the block one after another and strengthens the verification of previous block. Thus, an immutable blockchain is formed. (Gupta 2018, 13- 14.)

DO BANKS NEED BLOCKCHAIN TECHNOLOGY?

Banking industry represents the major part of global economy. Banks are the biggest and oldest financial intermediaries around the world. Digitalization has shaped the banking industry and radically changed the banking system. The barter system was eradicated by commodity money which was then replaced by fiat money and now digital currency and digital payment are in place. Overtime, the technology facilitated Automated Teller Machine (ATM), electronic fund transfer, electronic clearing service, real-time gross settlement, online banking, debit and credit cards and mobile banking to the customers. Today, banking industry is reliant on the technology and therefore, blockchain could prove to be the game-changer in the industry. Blockchain technology allows recording of transaction in a block which are unchangeable. It removes third parties. Blockchain in a theory promises a big transformation in banking and finance sectors. It has the potential to disrupt the banking industry and bring a significant change.

Blockchain uses cryptography to provide the trust of third party. Finally, blockchains are distributed which allows both parties with the real time information of the transaction and thus leads to transparency. (Gupta & Gupta 2018.)

2. Review of Literature:

Author	Year of publishing	Title	study
Petrov, D.	2023	The impact of blockchain and distributed ledger technology on financial services	Know your customer, Smart contracts, Trade finance, Global payments, Capital market, Insurance, Regulations and compliance
Gupta, A.; Gupta, S.	2022	Blockchain technology: Application in the Indian banking sector	Digital currency, Trade finance, Cross border payment, Capital markets, Supply chain finance, Consortium accounts, Know your customer

Collomb, A.; Sok, K.	2021	Blockchain / Distributed Ledger Technology (DLT): What Impact on the Financial Sector?	Cross border payment, corporate finance, and governance, Financial accounting, Trade finance, Supply chain management
Isaksen, E.M.	2020	Blockchain Application and outlook in the banking industry	Cross border payment, Information system, Know your customer, Supply chain finance, Smart contracts

3. Research Questions

- a. What are the possible Advantages of blockchain technology banking industry?
- b. What are the pros and cons for the implementation of blockchain technology?

4. Research Objectives

- To assess the possible advantages of blockchain technology on Indian banking for sustainable development.
- To examine the Problems and cons of blockchain technology in Indian banking for sustainable development.

5. Hypothesis

H₀: There is no advantages of blockchain technology on Indian banking services

H₁: There is an advantages of blockchain technology on Indian banking services

6. Research Methodology

Studying the impact, problems and prospects of blockchain technology on customer and banking services required a research method that can capture qualitative data.

6.1 Data Collection: Secondary data has been used for the study such as Journals, Banking reports, RBI, IDRBT and NPCL reports and Websites.

7. DATA ANALYSIS:

7.1 THE IMPACT OF BLOCKCHAIN IN BANKING INDUSTRY

Blockchain technology has the potential to significantly impact customer banking services in several ways:

Security: Blockchain's inherent security features can help protect customer data and transactions, reducing the risk of fraud and hacking.

Faster Transactions: Blockchain can enable near-instantaneous cross-border transactions, reducing settlement times and making international transfers more efficient.

Reduced Costs: By eliminating intermediaries, blockchain can lead to cost savings for banks, which could potentially translate into lower fees for customers.

Transparency: Customers can have real-time visibility into their transactions on a public blockchain, enhancing trust and transparency.

Smart Contracts: Automation through smart contracts can streamline processes like loan approvals and insurance claims, improving customer service and reducing paperwork.

Financial Inclusion: Blockchain can make banking services more accessible to unbanked or under banked populations, enabling them to access financial services through smartphones.

Identity Verification: Blockchain-based identity solutions can enhance customer on boarding and KYC processes while safeguarding personal information.

7.2 Blockchain technology has the potential to significantly impact banking accounts and financial statements in several ways:

- 1. Enhanced Transparency:** Blockchain is often referred to as a "transparent ledger" because it allows all participants in a network to view the same information in real-time. In banking, this transparency can lead to greater trust between parties. Account balances and transaction history can be viewed securely by authorized parties, reducing the likelihood of disputes and fraud.
- 2. Reduced Settlement Times:** Blockchain enables near-instantaneous settlement of transactions, especially in cross-border payments. This can lead to faster updates of account balances and financial statements, reducing the need for reconciliation and the associated delays.
- 3. Immutable Records:** Once data is recorded on a blockchain, it becomes extremely difficult to alter or delete. This immutability ensures that financial records and account balances are tamper-proof, enhancing the integrity of financial statements.
- 4. Smart Contracts:** Smart contracts, which are self-executing agreements with the terms of the contract directly written into code, can automate various banking processes. These contracts can automatically trigger updates to account balances and financial statements when predefined conditions are met, such as interest payments, loan disbursements, or dividend distributions.
- 5. Streamlined Auditing:** Blockchain's transparency and immutability can simplify the auditing process. Auditors can access the blockchain to verify transactions and account balances, reducing the need for extensive manual record-keeping and reconciliation.
- 6. Reduced Frauds and Errors:** The secure nature of blockchain reduces the likelihood of fraudulent transactions and errors. This can lead to more accurate financial statements and account balances.

7. Efficient Cross-Border Transactions: Blockchain can significantly reduce the costs and time associated with cross-border transactions. As a result, foreign exchange transactions and international fund transfers can be reflected more promptly in financial statements.

8. Cost Savings: By reducing the need for intermediaries and streamlining processes, blockchain technology has the potential to reduce operational costs for banks. These cost savings can positively impact financial statements and, potentially, the fees and charges associated with banking services.

7.3 Blockchain technology has demonstrated notable performance and potential in the banking sector, offering several advantages and improvements in various aspects of financial services to the banker and customer:

1. Security and Fraud Prevention: Blockchain's robust security features, including cryptographic encryption and decentralized data storage, make it highly resistant to fraud and cyberattacks. This enhances the overall security of banking operations.

2. Reduced Transaction Costs: By eliminating intermediaries in financial transactions, such as correspondent banks in cross-border payments, blockchain can significantly reduce transaction costs for banks. This can lead to cost savings for both banks and their customers.

3. Faster Settlements: Traditional financial systems often involve lengthy settlement processes due to the involvement of multiple parties. Blockchain's ability to settle transactions in near real-time can reduce settlement times and improve liquidity management.

4. Enhanced Transparency: Blockchain's transparent and immutable ledger ensures that all participants have access to the same data in real-time. This transparency can improve trust among banks and their customers.

5. Cross-Border Payments: Blockchain has the potential to streamline and expedite cross-border payments by providing a single, shared source of truth for all involved parties. This can reduce the time and costs associated with international money transfers.

6. Smart Contracts: Banks can use smart contracts to automate various processes, such as loan origination, trade finance, and insurance claims processing. This can lead to increased efficiency and reduced administrative overhead.

7. Identity Verification: Blockchain can enhance Know Your Customer (KYC) and Anti-Money Laundering (AML) processes by securely storing and sharing customer identity information. This reduces duplication of efforts and improves compliance.

8. Financial Inclusion: Blockchain can extend banking services to underserved populations by providing access through digital wallets and mobile devices, potentially bridging the financial inclusion gap.

However, challenges like scalability, regulatory concerns, and the need for industry-wide adoption must be addressed for these benefits to be fully realized.

7.4 BLOCKCHAIN OFFERS THESE BENEFITS, IT'S IMPORTANT TO CONSIDER THE FOLLOWING PERFORMANCE-RELATED LIMITATIONS AND CHALLENGES:

1. **Scalability:** Blockchain networks must handle a high volume of transactions efficiently to be viable for large-scale banking operations. Scalability solutions are actively being developed to address this issue.
2. **Regulatory Compliance:** Banks must navigate complex regulatory landscapes when implementing blockchain solutions, which can vary from one jurisdiction to another.
3. **Interoperability:** Achieving interoperability between different blockchain networks and legacy financial systems remains a challenge, as seamless integration is necessary for widespread adoption.
4. **Energy Consumption:** Some blockchain networks, especially proof-of-work-based systems like Bitcoin, consume significant amounts of energy. This has raised environmental concerns and led to exploration of more energy-efficient consensus mechanisms.
5. **Data Privacy:** While blockchain offers transparency, it can pose challenges regarding data privacy. Information stored on a public blockchain is accessible to anyone, which can be problematic for certain applications that require confidentiality.
6. **Irreversible Transactions:** The immutability of blockchain is a strength but can be a limitation when errors occur. Transactions are typically irreversible, which can lead to problems if funds are sent to the wrong address or in case of fraudulent activities.
7. **Lack of Governance:** Decentralization means there's often no central authority to make decisions. This can lead to disputes and forks (e.g., Bitcoin vs. Bitcoin Cash) when communities disagree on network upgrades.
8. **User Experience:** Cryptocurrency wallets and blockchain applications can be challenging for non-technical users to understand and use. Improving the user experience is critical for mainstream adoption.
9. **Smart Contract Vulnerabilities:** Smart contracts are prone to bugs and vulnerabilities that can be exploited by malicious actors, leading to financial losses.
10. **Long Confirmation Times:** While some blockchains offer fast confirmations, others can have longer confirmation times, making them less suitable for certain applications that require near-instantaneous transactions.
11. **Legal and Ethical Concerns:** The use of blockchain in various industries raises legal and ethical questions, such as ownership of digital assets, copyright issues, and the potential for illicit activities.
12. **Cost and Complexity:** Developing and maintaining blockchain solutions can be costly and complex, especially for businesses without prior experience in the technology.

13. **Limited Adoption:** Blockchain adoption is still relatively low compared to traditional systems. Many organizations are cautious about transitioning to blockchain due to the challenges and uncertainties involved.

It's important to note that these challenges are actively being addressed by developers, regulators, and businesses as blockchain technology continues to mature. While blockchain offers significant potential, it is not a one-size-fits-all solution, and its limitations must be carefully considered when implementing it in various applications.

Conclusion:

In summary, blockchain technology has shown promise in enhancing the performance of banking services by improving security, reducing costs, increasing transparency, and enabling innovative applications. However, addressing scalability, regulatory compliance, interoperability, and energy consumption issues is essential for its continued success in the sector.

Blockchain technology is regarded as a new tool for business organizations with many potential applications for secure transactions without an intermediation. Blockchain has been used for financial for various purposes like. Blockchain permits agreements and contracts inherently with security features and enables customer relationship directly with IoT and cloud technologies. It can able to solve the banking and customer problems and trusted third party is present for marketing services. It introduces a new digital business model in banking industry. It creates a common platform for devices to communicate in a distributed environment securely. Blockchain possesses low trading cost, exchanging of information securely and enables high agile value. In future, it works on the development of scalability and interoperability features in the blockchain technology for secured transactions.

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